Station	Latitude	Longitude	Species observed	
			Family	Species
Station-1	14° 17.800'N	74° 25.523'E	*Poaceae*	*Spinifex littoreus*
Station-2	14° 17.722'N	74° 25.520'E	Convolvulaceae	*Ipomoea pes-caprae*
Station-3	14° 17.492'N	74° 25.486'E	Aizoaceae	*Sesuvium portulacastrum*
Station-4	14° 17.322'N	74° 25.435'E	Asteraceae	*Launaea sarmentosa*
Station-5	14° 16.992'N	74° 25.531'E	Casuarinaceae	*Casuarina equisetifolia*
Station-6	14° 16.946'N	74° 25.543'E		

The present survey also revealed the presence of three salt marsh species represented by *Sesuvium portulacastrum, Porteresia coarctata* and *Scirpus littoralis.*

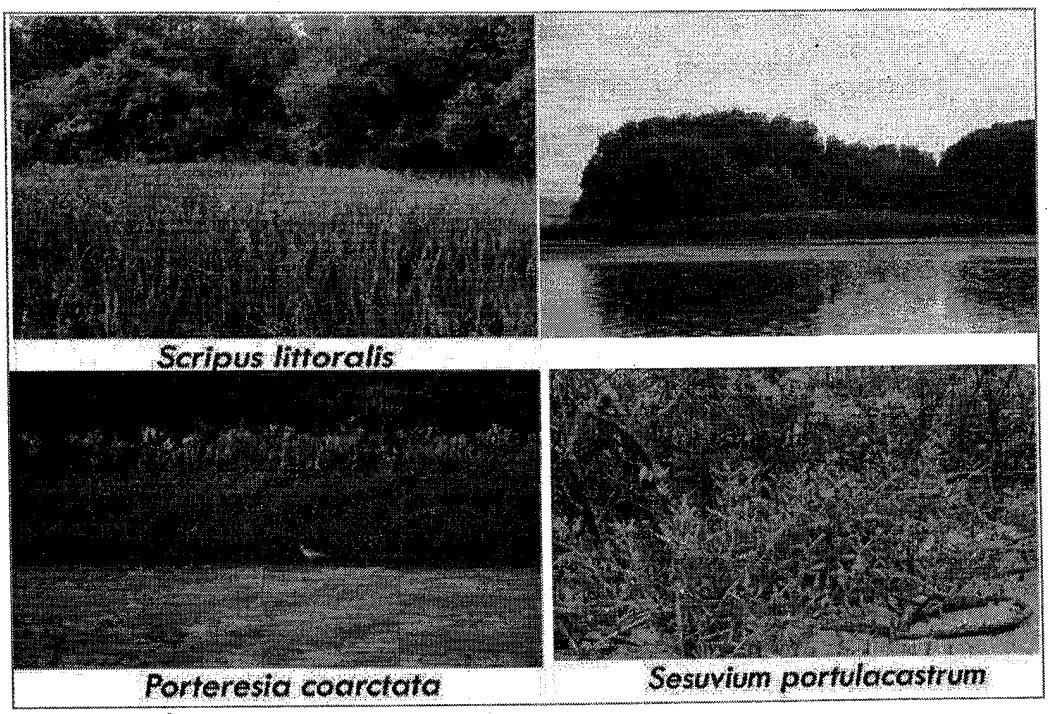


Exhibit 4: Species observed in salt marshes

1.5.4.3 Mangroves

Mangrove primary survey revealed presence of a total ten mangrove species belonging to five families.The dominant mangrove species were *Sonneratia alba*, and *Kandelia candel* followed by *Sonneratia caseolaris*, *Acrostichum aureum*, *Avicennia officinalis*, *Acanthus ilicifolius*, *Aegiceras corniculatum, Rhizophora mucronata,* and *Excoecaria agallocha*. Species such as *Bruguiera gymnorhiza* have only been found in one plot. Three common mangrove associates were found in majority of the mangrove plots.

Table 16: List of mangroves and the associate flora recorded during field survey

Family	Species
Acanthaceae	*Avicennia officinalis* (Linnaeus, 1753) *Acanthus ilicifolius* (Linnaeus, 1753)
Euphorbiaceae	*Excoecaria agallocha* (Linnaeus, 1759) Lythraceae *Sonneratia alba* Sm.

Family	Species
Lythraceae	*Sonneratia caseolaris* (Linnaeus)
Primulaceae	*Sonneratia caseolaris* (Linnaeus) *Aegiceras corniculatum (L.) Blanco*
Pteridaceae	*Acrostichum aureum L.*
Rhizophoraceae	*Rhizophora mucronata* (Lam) *Kandelia candel* (L.) *Bruguiera gymnorhiza* (L.) Lam.
Mangrove associated flora	
Family	**Species**
Apocynaceae	*Cerbera manghas*
Fabaceae	*Derris trifoliata*
Lamiaceae	*Volkameria inermis*

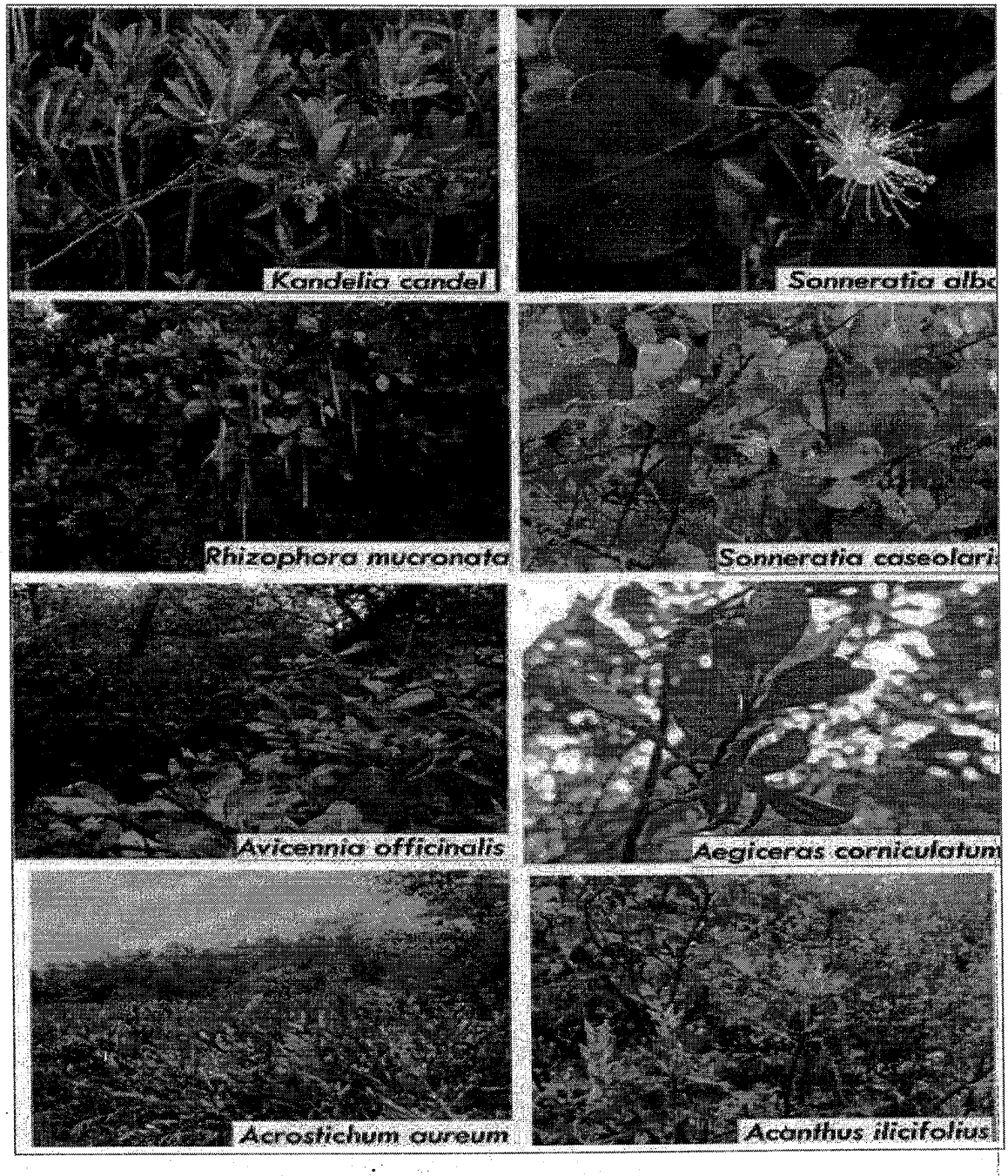


Exhibit 5: Mangrove species recorded during the survey

The overall tree density ranged between 1140/ha to 4400/ha at mangrove patch located oppositeto core area of proposed site. In project influence area, tree density value varied 2300/ha to 6500/ha. In terms of basal area, minimum (5.8 m^2/ha) and maximum (110.3 m^2/ha) was recorded. The mean girth and height minimum and maximum value recorded as 15.4cm and 4.7m and 43.3cm and 6.5m, respectively. Regeneration potential of mangrove ranged between1000/ha and 4800/ha and was due to huge plantation of *Kandelia candel* by the forest department. The complexity index of mangroves recorded varied 0.01 to 0.67.

1.5.4.4 Seagrass

In coastal areas of Karnataka, huge seagrass beds are not reported, however there are report oftwo species of seagrass *Ruppia maritima* and *Halophila beccarii* occurring along Swarnasita, Chakra, Haladi, Kollur, and Venkatapur estuary.

In Honnavar, there is no earlier reports or scientific publication mentioning the occurrence of seagrass. However, during our survey, we found presence of huge seagrass bed of *Halophila* sp. occurring adjacent to the mangrove forest patch situated in the sharavathi estuary. The seagrass bed is located 3.4 km away towards the south direction of the proposed core project site area. The approximate area of seagrass was found to be around five to seven hectares, however more detailed season sampling is required to confirm the exact area and the presence of any other seagrass species.

Seagrass are listed as Ecologically Sensitive areas as per CRZ notification, 2019 and classified as CRZ1A and protected under the Environment (Protection) Act 1986.

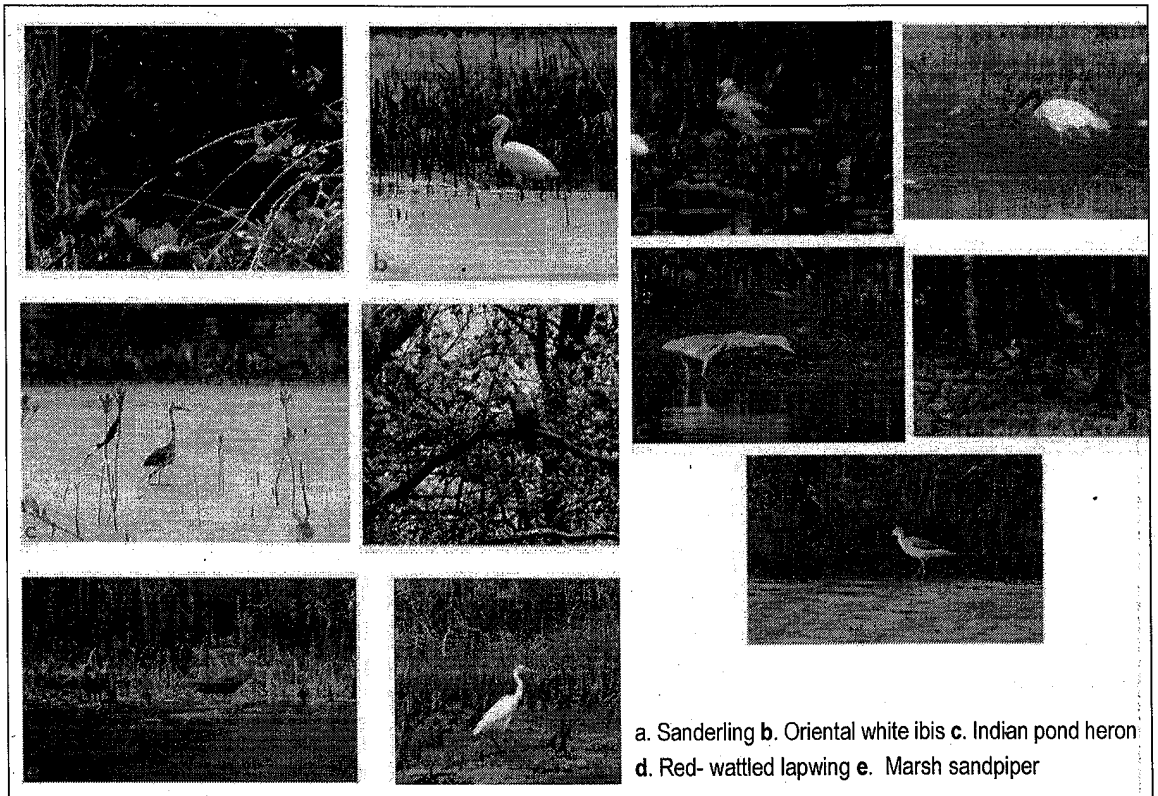
1.5.4.5 Avifauna in mangrove area

During our mangrove survey, we have recorded avifauna found foraging from the saltmarsh and mangrove areas. A total eleven species were recorded, out of which Oriental white ibis was categorized as near threatened (NT) according IUCN Red List of Threatened Species.

Table 17: Avifauna in mangrove area

Common name	Species
Little cormorant	*Microcarbo niger*
Little egret	*Egretta garzetta*
Grey heron	*Ardea cinerea*
Brahminy kite	*Haliastur indus*
Grey-headed swamphen	*Porphyrio poliocephalus*
Median egret	*Ardea intermedia*
Oriental white ibis	*Threskiornis melanocephalus*
Indian pond heron	*Ardeola grayii*
Red-wattled lapwing	*Vanellus indicus*
Sanderling	*Calidris alba*
Marsh sandpiper	*Tringa stagnatilis*

The avifauna documented was based on a rapid field survey in the month of April, 2024. Hence, the data should not be treated as a comprehensive or conclusive account of the avifauna found in mangrove area of Honnavar/Sharavati estuary. Avifauna species spotted during the survey is shown in **Exhibit 6**.



a. Little cormorant **b.** Little egret **c.** Grey Heron **d.** Brahminy kite **e.** grey-headed swamphen **f.** Median egret

a. Sanderling **b.** Oriental white ibis **c.** Indian pond heron **d.** Red- wattled lapwing **e.** Marsh sandpiper

Exhibit 6: Avifauna species in mangrove area

1.6 Terrestrial Flora and Fauna

Biodiversity encompasses a variety of existing life forms, the ecological roles they perform and the genetic diversity they contain (FAO, 1989).

The Honavar is situated on the northern bank of the river Sharavathi to the north of Bhatkal and to the south of Karwar. The river Sharavathi is navigable up to Gersoppa in the up Ghat. The present Honavar is also called Ponnavaru or Honnavaruin ancient times which literally means golden village. This place might have derived its name from the plant name Honnavar, which is called Tangadi (Gaz.Kar.VII.Kan:925) in Kannada[1].

1.6.1 General Description of Study Area

For better understanding of the habitat setup and identification of influences/impacts, the study was carried in both core zone and buffer zone.

Core Zone (Project area) study: Quantification has been done for the trees, shrubs, herbs, grasses and terrestrial & arboreal fauna in the core area. Status of natural vegetation, soil type, and associated services were also recorded. Maximum effort has been taken to assess the damage to be caused by the activity (if any) in the core zone and suggest appropriate implementable conservation action plan (if any). Project area mainly dominated by *Cocos nucifera, Casuarina equisetifolia* and *Acacia auriculiformis.*

[1] Working Plan for the Forests of Honnavar Division (2022-2023)

Buffer zone/PIA (Study area) study:

The following habitats are investigated in the study area:

- Vegetation type (Agriculture, Plantation types, Avenue plantations, Mangroves and Reserve Forests)
- Terrain type (Plain & Undulating)
- Aquatic Habitat (lentic and lotic)

The forests in the study area represent a wide range of diversity in composition and quality due to edaphic, biotic and climatic factors. The UttaraKannada District is primarily an agriculture District with very limited presence of Industry. The district is known for its Dhan (paddy), Pan (Betel) and Meen (Fish). The vegetation ranges from jungle and coastal area comprising species like *Acacia auriculiformis, Acacia nilotica, Alstonia scholaris, Anacardium occindentale, Areca catechu, Azadirachta indica, Butea monosperma, Cassia fistula, Casuarina equisetifolia, Ceiba pentandra, Cocos nucifera, Cordia dichotoma, Excoecaria agallocha, Ficus benghalensis, Ficus racemosa, Ficus religiosa, Limonia acidissima, Mangifera indica, Manilkara zapota, Melia azedarach, Pandanus fascicularis, Peltophorum pterocarpum, Phoenix sylvestris, Phyllanthus emblica, Pongamia pinnata, Psidium guajava, Syzygium cumini, Tamarindus indica, Terminalia arjuna, Terminalia catappa, Thespesia populnea, Avicennia marina, Avicennia officinalis, Bruguiera gymnorrhiza, Ceriops decandra, Rhizophora mucronate and Sonneratia alba.*

The following forest types (as per H. G. Champion and S. K. Seth's classification) occur in the study area includes

- 1AC4 (Evergreen Forest)
- 2AC2 (Semi-evergreen Forest)
- 3BC1 (Teak bearing Moist Deciduous Forests)
- 3BC2 (Moist Mixed Deciduous Forests)
- 2/E4 (Lateritic semi-evergreen Forests)
- 5/E5 (Lateritic Thorn Forests)
- 3BC2S1 (Secondary Moist Deciduous forests)

The study area was divided in two major parts namely the Core area and Buffer area.

Core Zone study: The area within the project boundary is the core zone area; almost entire region was thoroughly investigated. Quantification has been done for the trees, shrubs, herbs, grasses and terrestrial and arboreal fauna in the core area. Maximum effort has been taken to assess the damage to be caused by the activity in the core zone and suggest conservation action plan accordingly if any.

Buffer zone Study: The area within the 15 km from the core zone area or from the project site boundary is considered as buffer zone area/Study area. The following habitats are investigated in the study area.

- Vegetation type (RFs, Agriculture and Villages)
- Terrain type (Plain, Undulating)
- Road network (Avenue plantation)
- Aquatic Habitat (Lentic, lotic and Marine)

1.6.2 Methodology for Ecological Survey

The primary data was collected by visual observations as well as by discussion with villagers. The field investigation and satellite imagery data shows that the study area is a mixture of

Agricultural, Coconut-Casuarina plantation, barren/wasteland and waterbodies. Tropical dry thorny forests vegetation is observed within the study area.

Methodology for study of Flora & Fauna consisted of detailing taxonomic accounts based on visual observation, direct visual enumeration of plant species was carried out to generate data on flora. With regard to fauna, circumstantial evidence based on footprints, feathers, skin, hair, hooves etc. and the habitat features, reports from locals especially the local residents. These observations were supplemented by published literature and data including the reports, records and working plans of the forest department.

The ecological studies were carried out in Summer season and also considered secondary date conducted covering the post monsoon season and Winter season (2023-2024).

Flora: Phyto-sociological aspects of the study were carried out by perambulating and sampling through quadrat sampling method. Sample plots were selected in such a way to get maximum representation of different types of vegetation and plots were laid out in different parts of the areas. Accordingly, quadrats of 20 m x 20 m for the trees, 5 m x 5 m for shrubs and 1 m x 1 m for herbs. The plants were identified using state floras and also by using updated check list from www.theplantlist.org.

Fauna: Surveys were conducted by using transect method of 500 to 1000 m in all major habitats and recorded the species through direct and indirect evidence. Species were identified using standard field guides like mammals by Vivek Menon (2003), Reptiles by Whitaker and Captain (2004), Amphibians by Daniel (2005), Birds by Grimmet *et.al* (1998) and Butterflies by Isaac Kehimkar (2008). Scheduling of species is made as per the Indian Wildlife Protection act (1972) and IUCN to check the Rare Endangered Endemic and Threatened (REET) species. For fauna no quantitative assessment is made as it can be done through a detailed species specific and seasonal survey. Migratory paths for the birds and mammals were discussed with locals and forest department. Habitats used by for foraging, nesting, breeding and other ecological parameters were ascertained.

The authenticity of field observations are confirmed through discussions with local people and based on secondary data collected from different Government offices like Karnataka Forest Department (Wildlife wing), NGO's and Fisheries Department etc.

1.6.3 Status of Flora

1.6.3.1 Core Area

The core area is port site located on coastal sand pit and mostly plain and other proposed development area (road & rail and ancillary sites) are plain and undulating with commercial plantations. Trees such as *Acacia auriculiformis, Anacardium occindentale, Cocos nucifera, Cerbera odollam, Casuarina equisetifolia, Pandanus fascicularis, Pongamia pinnata* are observed. There are no Reserve Forests (RF) or Biosphere Reserves or National Parks or Wildlife Sanctuaries or other Protected Areas within a radius in core area. Due to sandy conditions the core area is sparsely occupied with vegetation.

The plant resources in core area consist of 17 species belonging to 12 families. The floral forms include Trees with 7 sp. followed by 3 Shrubs sp., 5 Herbs & Grass sp. and 2 sp. climbers.

1.6.3.2 Phytosociological studies in Core Zone

Among trees species *Acacia auriculiformis* (13.25), *Cocos nucifera* (12.67), *Casuarina equisetifolia (12.37), Pongamia pinnata (9.34), Anacardium occindentale, Cerbera odollam &*

Pandanus fascicularis (12.50), *Cereus triangularis* (9.78) and *Launaea sarmentosa* (9.60) are the dominating in the core area.

1.6.3.3 Species Diversity Index in Core area

There are two important indices to denote the diversity such as Shannon Wiener Index (H') and Simpson diversity Index. The trees in core area showed Shannon Wiener Index (H') value as 1.82 and Simpson Index values as 0.181. The shrubs in core area showed Shannon Wiener Index (H') value as 0.868 and Simpson Index values as 0.5. The herbs in core area showed Shannon Wiener Index (H') value as 1.47 and Simpson Index values as 0.26. Majority portion of the site is barren and remaining areas is under plantations hence the species diversity values interpret very less diversity in plant composition and major area is devoid of any vegetation except the herbaceous flora.

1.6.3.4 Buffer Area

The buffer area, i.e., 15 km radial distance around the project site, comprises mostly of agricultural crops, and commercial plantations and few reserve forest blocks. Forest type ranges between Dense scrub and Fairly Dense scrub. The different soils in the study area are Saline and Saline Alkali Soils, Coastal Alluvial Soil, Coastal Sandy Soils. Predominate soils encountered in the study area are Sandy Clay soils which are confined to the coastal village areas.

The plant resources of the buffer area account about 224 plants species belonging to 46 families. The predominant life forms includes Trees (93 sp.), Shrubs (50 sp.), Herbs (42 sp.), Grass (27 sp.) and Climbers (12 sp.).

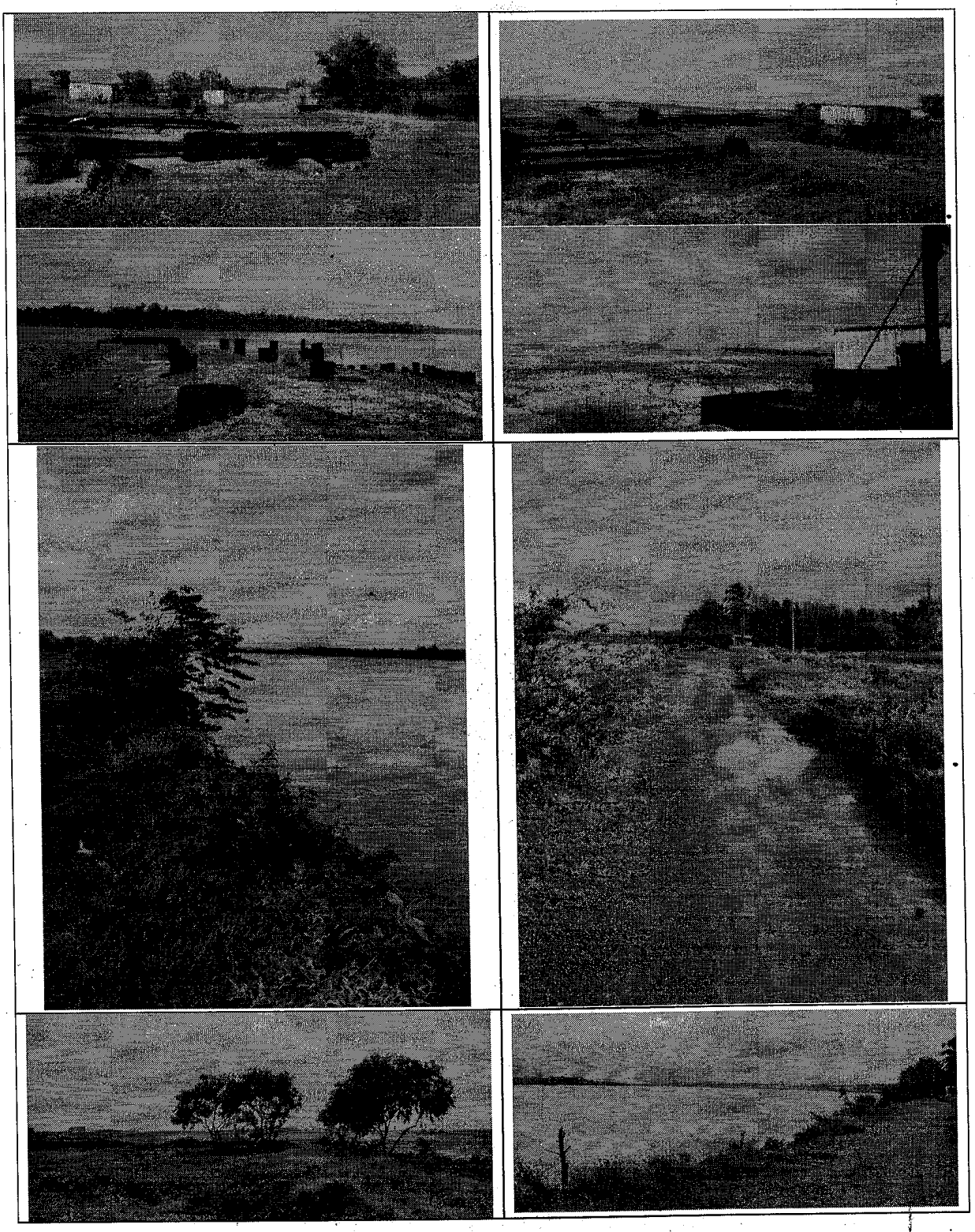
Phytosociological studies in Buffer Zone

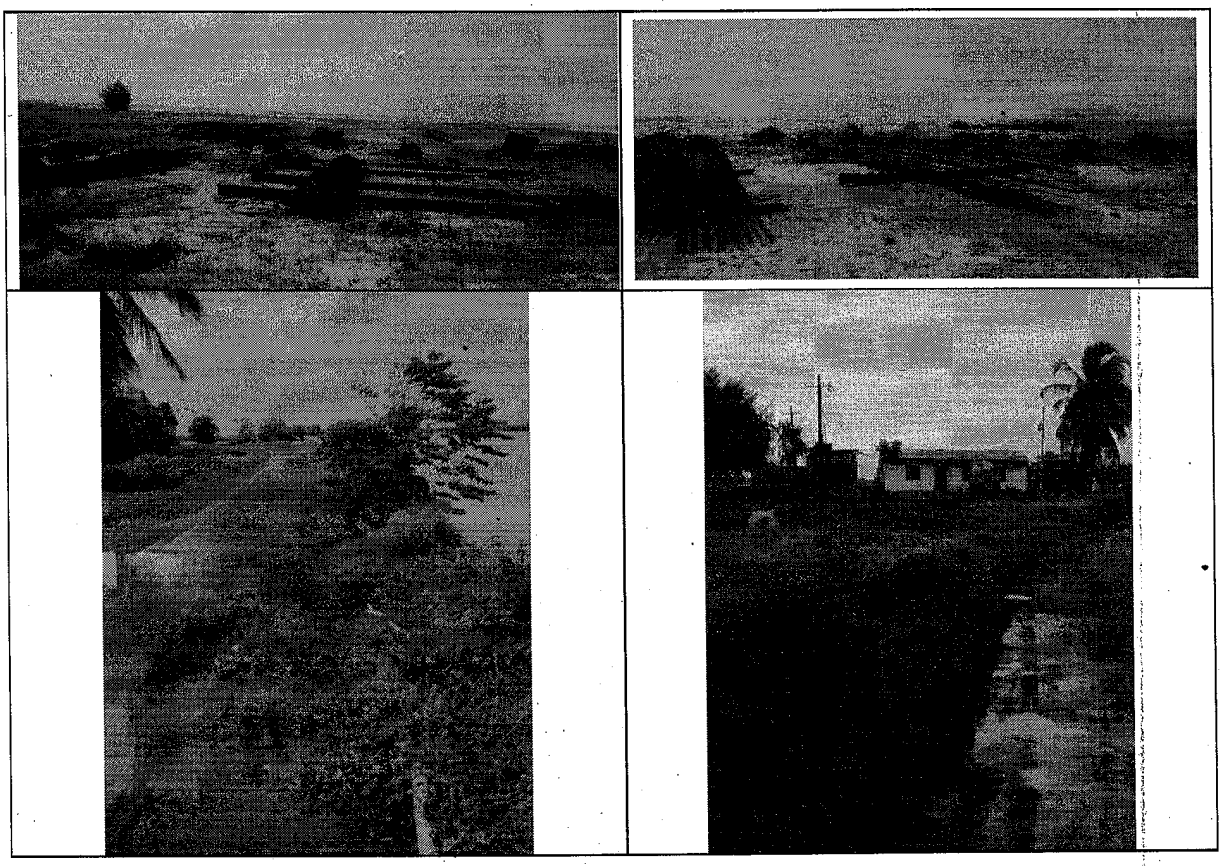
Among trees species *Cocos nucifera (82.25), Areca catechu (62.59), Acacia auriculiformis (42.47), Terminalia catappa (35.74), Syzygium cumini (32.41), Anacardium occindentale (31.36), Casuarina equisetifolia (30.49), Ficus religiosa (30.36), Mangifera indica (29.92), Cassia fistula (28.56), Pandanus fascicularis (28.42), Avicennia marina (27.59), Azadirachta indica (25.93), Melia azedarach (25.81), Excoecaria agallocha (25.70), Thespesia populnea (25.31), Acacia nilotica (24.65), Terminalia arjuna (24.43), Ceriops decandra (22.71), Cordia dichotoma (22.06), Ficus racemosa (21.94), Psidium guajava (21.94), Tamarindus indica (21.71), Alstonia scholaris (21.28), Limonia acidissima (21.05) and Peltophorum pterocarpum* (21.05) are dominating. Among herbaceous species, Lantana camara (53.57), *Ricinus communis* (47.67), *Vitex negundo* (31.18), *Justicia adhatoda* (26.95), *Ixora coccinea* (23.51), *Ziziphus mauritiana* (22.29), *Canthium parviflorum* (18.77), *Clerodendrum inerme* (18.77), *Calotropis gigantea* (18.49), *Duranta repens* (18.49), *Atalantia wightii* (18.24), *Sesuvium portulacastrum* (18.24), *Ardisia solanacea* (18.06) and *Launaea sarmentosa* (18.06) are dominating.

Species Diversity Index in Buffer area

The trees in Buffer area showed Shannon Wiener Index (H') value as 3.40 and Simpson diversity Index values as 0.045. The shrubs in Buffer area showed Shannon Wiener Index (H') value as 2.66 and Simpson Index values as 0.08. The herbs in Buffer area showed Shannon Wiener Index (H') value as 2.83 and Simpson Index values as 0.06. The species diversity in the buffer area interprets moderate diversity in plant composition due to the occurrence of agricultural farmlands, commercial plantations and coastal belt plantation.

Habitat features of the core and buffer areas presented below.





1.6.4 Status of Fauna

1.6.4.1 Core Area

A total of 5 bird species were recorded in the study period representing Common Myna, Pond Heron, Cattle Egret, House Crow, Little Egret are the common species which are encountered during the survey period.

1.6.4.2 Buffer Area

During the study period; there is no direct evidence of major wild animal species observed. Through indirect evidences and also by interacting with the local fishermen community pug marks of jackal and wild boar were observed near the sea coast.

By direct and indirect evidences, a total of 80 species were recorded in the study area which include Mammals 5 sp., Birds 26 sp., Herpetofauna 19 sp., Invertebrates 25 sp.

Mammals: Common species includes Common Indian Field Mouse, Striped Squirrel, Indian palm squirrel or three-striped palm squirrel, Indian Hare and Indochinese rhesus macaque.

Birds: Common bird species of the area include Common Myna, Pond Heron, Cattle Egret, House Crow, Little Egret, Shikra, Jungle Myna, Common Iora, Small Blue Kingfisher, White Breasted Waterhen, House Swift, Grey Heron, Purple Heron, Rock Pigeon, Indian Roller, Indian Couckoo, Black Drongo, Koel, White Breasted Kingfisher, Brahminy Kite, Tailor Bird, House Sparrow, Spotted Dove, Common Sandpiper, Common Babbler, Jungle Babbler.

Herpetofauna: Common species includes Ferguson's Toad, Common Indian Toad, Common skittering Frog, Bamboo tree frog, Indian pond frog, Malabar Gliding frog, The Vine Snake, Indian Gamma Cat Snake, Forest Lizard, Common Garden Lizard, Coastal Day Gecko,

Common rat snake, Bronze backed Tree Snake, Southern House Gecko, Hump nosed Pit Viper, Gunther's Supple Skink, Indian Cobra, Rat Snake, Russels viper.

Invertebrates: Common species Hedge blue, Caper White or pioneer, Plain Puffin, Common castor, Common pierrot, Common gull, Black rajah, Plain tiger, Common tiger, Common Indian Crow, Small grass yellow, Grass Jewel, Common jay, Danaid egg fly, Yellow pancy, Blue pansy, Common sailor, Common Rose, Common mime, Common Mormon, Common leopard, Rounded pierrot, Blue tiger, Common Four ring and Tiny grass blue.

Among the fauna in study area the Species richness was high in birds (87 sp.) followed by Herpetofauna (33 sp.), Mammals (26 sp.). Invertebrates (50 sp.), This clearly indicates the moderate representation of species composition with low levels of energy transfer, predation, composition and niche availability.

1.6.5 Fisheries

Karnataka state emerged as a maritime State in 1956 with the reorganization of the states. The fisheries sector plays an important role in the socio-economic development of State in view of its contribution to the food basket, nutritional security, foreign exchange earnings, employment generation and income. Traditionally, Karnataka coast is known as "Mackerel Coast" and the pelagic fishery wealth of Karnataka coast, mainly comprising mackerel and oil sardine. An estimated 6.04 lakh tones of marine fish were landed in Karnataka in 2023, a 13% decrease from record landing in 2022. Honnavar is a historical estuarine port town in the Uttara Kannada district of Karnataka with huge population of fishers. Major species of fishes landing in Uttara Kannada district are listed in following **Table 18**.

The Sharavathi, a westward flowing river joins the Arabian sea at Honnavar, forming an ever shifting river mouth in the region. Several diversified methods of traditional fishing are used in this estuary almost throughout the year. These include gill nets, cast nets, hook & line, pole & line, drag nets, scoop nets, light fishing, scare line, crab fishing with traps and clam fishing by hand-picking at low tide or by dragging bagnets of wire meshes. In addition, many areas in Honnavar have been used by fishers for generations for drying fishes and park their boat equipment that employs more than 15,000 people. **Table 19** represent fisheries data in Sharavati River as per personal discussion with Dr. Sreekanth G B, Senior Scientist, Fisheries Resource Management, ICAR - Central Coastal Agricultural Research Institute, Goa.

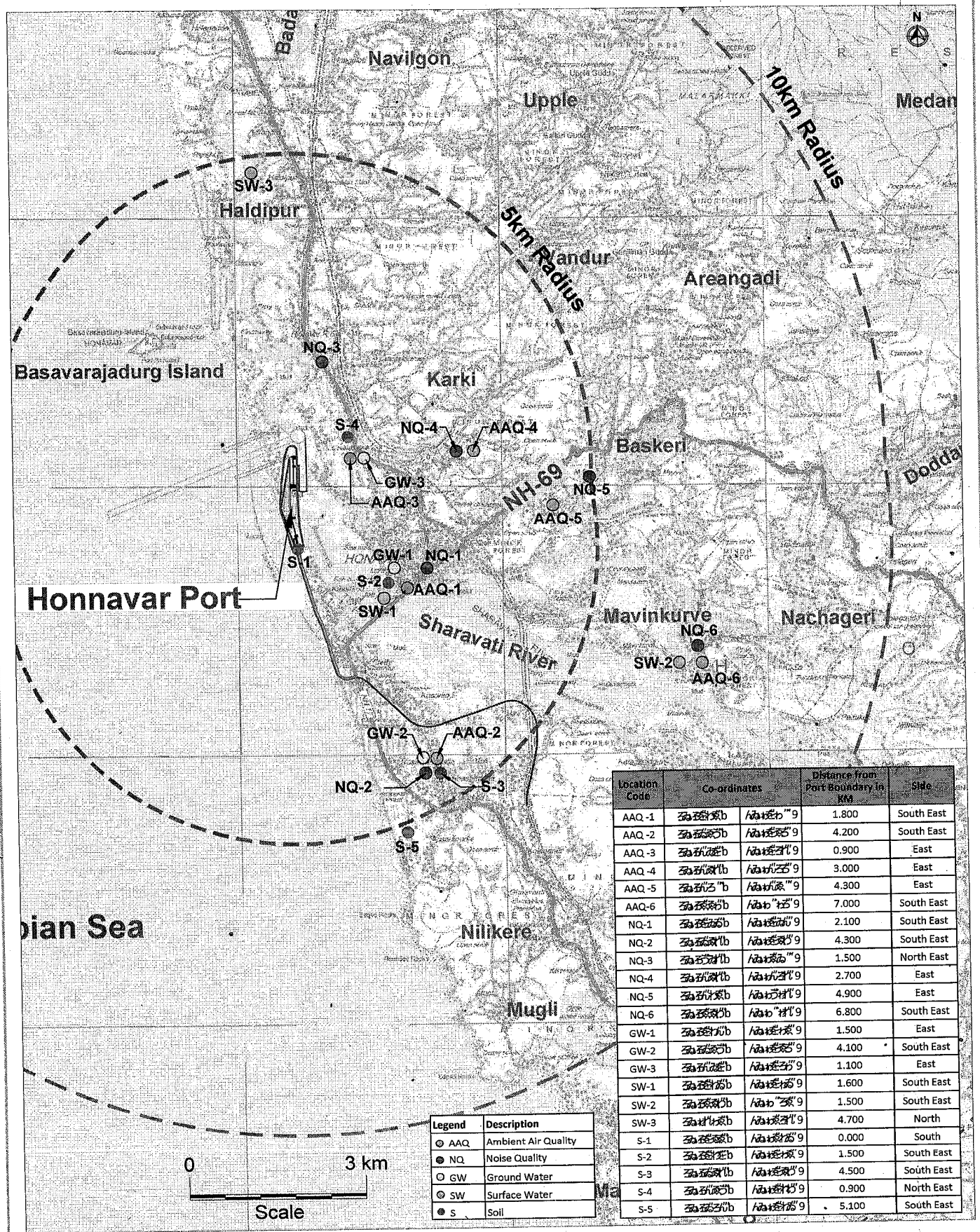
Table 18: List of major species of fishes landing in Uttara Kannada district

Species	
Mackerel	Crabs-Charybdis spp.
Oil sardine	Croakers
Anchovies	Horse Mackerel
Big jawed jumper	Little Tuna (kawa kawa)
Bull's eye	Metapenaeus spp.
Setipinn	Parapenaeopsis spp.
Soles	Silverbelliesa,
Tuna and	Squids
Penaeid-Penaeus spp.	Wolf herring
Other clupeids	Other sardines

Table 19: List of major species of fishes in Sharavati River

Species	Percentage	Species	Percentage
Nematalosa nasus	1.952	*Paraplagusia bilineata*	0.130
Lates calcarifer	0.211	*Sphyraena jello*	0.472
Ambassis ambassis	5.481	*Hemiramphus far*	0.195
Apogon hyalosoma	0.358	*Strongylura strongylura*	0.130
Etroplus suratensis	2.147	*Sphyraena barracuda*	0.098

Species	Percentage	Species	Percentage
Glossogobius giuris	1.854	*Hyporhamphus limbatus*	0.098
Scatophagus argus	1.692	*Escualosa thoracata*	3.188
Barbodes carnaticus	0.976	*Sardinella longiceps*	2.668
Dawkinsia filamentosa	0.553	*Sardinella gibbosa*	1.431
Gerres filamentosus	2.814	*Sardinella fimbriata*	1.252
Sillago sihama	2.863	*Terapon jarbua*	3.953
Mugil cephalus	22.300	*Terapon theraps*	2.977
Moolgarda cunnesius	15.631	*Terapon puta*	2.375
Liza parsia	6.913	*Pelates quadrilineatus*	0.520
Monodactylus argenteus	0.618	*Siganus vermiculatus*	0.260
Eleutheronema tetradactylum	0.228	*Siganus argenteus*	0.114
Lutjanus johnii	0.146	*Atule mate*	0.358
Lutjanus argentimaculatus	0.146	*Caranx ignobilis*	0.179
Lutjanus rivulatus	0.098	*Opisthopterus tardoore*	0.163
Lutjanus russelli	0.033	*Carangoides chrysophrys*	0.130
Thryssa mystax	1.854	*Arius arius*	0.081
Stolephorus commersonii	1.008	*Carangoides praeustus*	0.033
Thryssa malabarica	1.008	*Chrysochir aureus*	0.033
Stolephorus indicus	0.748	*Formio niger*	0.081
Lactarius lactarius	2.505	*Drepane punctata*	0.130
Leiognathus splendens	2.049	*Himantura bleekeri*	0.016
Secutor insidiator	1.008	*Platax orbicularis*	0.016
Cynoglossus arel	0.520	*Scomberomorus commerson*	0.049
Cynoglossus macrostomus	0.488	*Colletteichthys dussumieri*	0.049
Secutor ruconius	0.423	*Grammoplites scaber*	0.033
Pseudorhombus javanicus	0.130	*Platycephalus indicus*	0.033



Location Code	Co-ordinates		Distance from Port Boundary in KM	Side
AAQ -1	ಸಾಮಾನ್ಯ	ಸಾಮಾನ್ಯ	1.800	South East
AAQ -2	ಸಾಮಾನ್ಯ	ಸಾಮಾನ್ಯ	4.200	South East
AAQ -3	ಸಾಮಾನ್ಯ	ಸಾಮಾನ್ಯ	0.900	East
AAQ -4	ಸಾಮಾನ್ಯ	ಸಾಮಾನ್ಯ	3.000	East
AAQ -5	ಸಾಮಾನ್ಯ	ಸಾಮಾನ್ಯ	4.300	East
AAQ-6	ಸಾಮಾನ್ಯ	ಸಾಮಾನ್ಯ	7.000	South East
NQ-1	ಸಾಮಾನ್ಯ	ಸಾಮಾನ್ಯ	2.100	South East
NQ-2	ಸಾಮಾನ್ಯ	ಸಾಮಾನ್ಯ	4.300	South East
NQ-3	ಸಾಮಾನ್ಯ	ಸಾಮಾನ್ಯ	1.500	North East
NQ-4	ಸಾಮಾನ್ಯ	ಸಾಮಾನ್ಯ	2.700	East
NQ-5	ಸಾಮಾನ್ಯ	ಸಾಮಾನ್ಯ	4.900	East
NQ-6	ಸಾಮಾನ್ಯ	ಸಾಮಾನ್ಯ	6.800	South East
GW-1	ಸಾಮಾನ್ಯ	ಸಾಮಾನ್ಯ	1.500	East
GW-2	ಸಾಮಾನ್ಯ	ಸಾಮಾನ್ಯ	4.100	South East
GW-3	ಸಾಮಾನ್ಯ	ಸಾಮಾನ್ಯ	1.100	East
SW-1	ಸಾಮಾನ್ಯ	ಸಾಮಾನ್ಯ	1.600	South East
SW-2	ಸಾಮಾನ್ಯ	ಸಾಮಾನ್ಯ	1.500	South East
SW-3	ಸಾಮಾನ್ಯ	ಸಾಮಾನ್ಯ	4.700	North
S-1	ಸಾಮಾನ್ಯ	ಸಾಮಾನ್ಯ	0.000	South
S-2	ಸಾಮಾನ್ಯ	ಸಾಮಾನ್ಯ	1.500	South East
S-3	ಸಾಮಾನ್ಯ	ಸಾಮಾನ್ಯ	4.500	South East
S-4	ಸಾಮಾನ್ಯ	ಸಾಮಾನ್ಯ	0.900	North East
S-5	ಸಾಮಾನ್ಯ	ಸಾಮಾನ್ಯ	5.100	South East

Legend	Description
AAQ	Ambient Air Quality
NQ	Noise Quality
GW	Ground Water
SW	Surface Water
S	Soil

PROJECT: ENVIRONMENT AND CRZ CLEARANCE FOR DEVELOPMENT OF BARGE/VESSEL LOADING FACILITY FOR 4.9 MTPA AT HONNAVAR, UTTARA KANNDA

TITLE: TERRESTRIAL MONITORING LOCATION MAP

ASSYSTEM INDIA LIMITED

PROJECT NO: C1241301

DATE: 23.08.2024

MADE: JMH

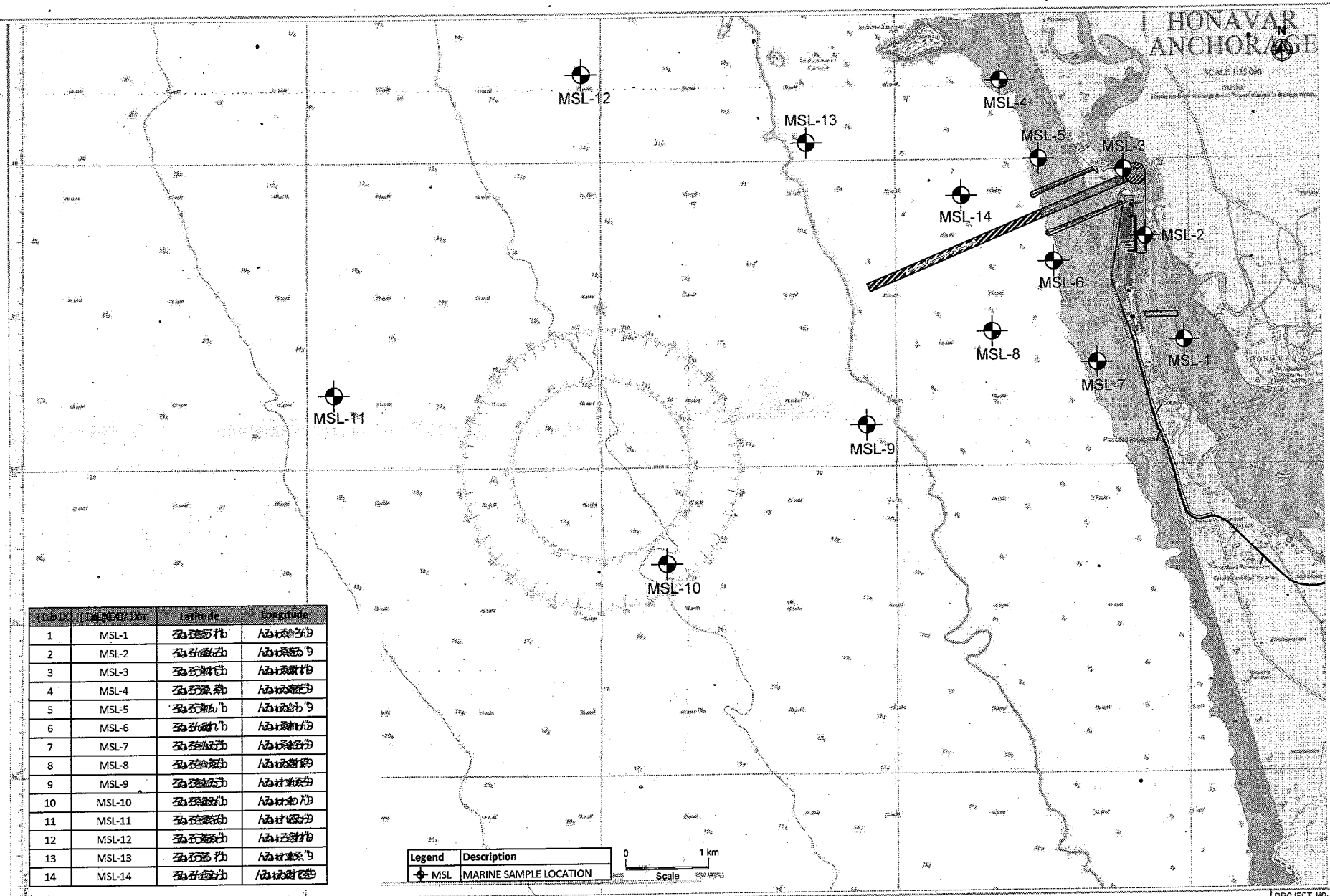
FIGURE NO: FD0301

REV: 0

PATH: REFER BOTTOM LEFT CORNER OF THE DRAWING

AUTO PATH: URBAN PLANNING & ENV DEPT\BUSINESS DEVELOPMENT 2024-25\18 -HONNAVAR PORT\TERRAIN-TERRESTRIAL MONITORING LOCATION MAP.DWG

TBA



Sub ID	Sample ID	Latitude	Longitude
1	MSL-1	[illegible]	[illegible]
2	MSL-2	[illegible]	[illegible]
3	MSL-3	[illegible]	[illegible]
4	MSL-4	[illegible]	[illegible]
5	MSL-5	[illegible]	[illegible]
6	MSL-6	[illegible]	[illegible]
7	MSL-7	[illegible]	[illegible]
8	MSL-8	[illegible]	[illegible]
9	MSL-9	[illegible]	[illegible]
10	MSL-10	[illegible]	[illegible]
11	MSL-11	[illegible]	[illegible]
12	MSL-12	[illegible]	[illegible]
13	MSL-13	[illegible]	[illegible]
14	MSL-14	[illegible]	[illegible]

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PATH: REFER BOTTOM LEFT CORNER OF THE DRAWING

PROJECT: ENVIRONMENT AND CRZ CLEARANCE FOR DEVELOPMENT OF BARGE/VESSEL LOADING FACILITY FOR 4.9 MTPA AT HONNAVAR, UTTARA KANNDA

TITLE: MARINE SAMPLE LOCATION MAP

ASSYSTEM INDIA LIMITED

PROJECT NO: C1241301

DATE: 23.08.2024

MADE: JMH

FIGURE NO: FD0302 REV: 0

1261

AUTO PATH: \URBAN PLANNING & ENV DEPT\BUSINESS DEVELOPMENT 2024-25\10 - HONNAVAR PORT\DWGS\2_MARINE SAMPLE LOCATION MAP.DWG

ENVIRONMENTAL BASELINE DATA GENERATION REPORT

FOR

M/s. HONNAVAR PORT (P). LTD.

Kasarkod Tonka,
Honnavar Taluka, Uttar Kannada District,
Karnataka-581342.

Sponsored

M/s. G.V.P.R Engineers Limited

Aditya Jayraj, Rd Number 37, CBI Colony,
Jubilee Hills, Hyderabad, Telangana 500033, INDIA

CONDUCTED BY

VISON LABS
ENVIRONMENTAL CONSULTANTS & ANALYTICAL SERVICES

Recognized by MoEF & CC, GOI, Sr.no.1680 (E),
ISO 9001:2015 & ISO 45001:2018
H.No.16-11-23/37/A, 2nd Floor, Union Bank Building,
Opp: R.T.A Office, Musarambagh, Hyderabad.
Tel Fax: 040 – 24544320,
Website: visonlabs.com
Email info@visonlabs.com & vison.labs@gmail.com

REPORT

FOR

M/s. HONNAVAR PORT (P). LTD.

Kasarkod Tonka,
Honnavar Taluka, Uttar Kannada District,
Karnataka-581342.
(Postmansoon Season)

To

M/s. G.V.P.R Engineers Limited

Aditya Jayraj, Rd Number 37, CBI Colony,
Jubilee Hills, Hyderabad, Telangana 500033, INDIA

For and behalf of Vison Labs

Approved By	: T Laxmikanth Reddy
Signed	:
Position	: Chief Executive/Technical Manager
Date	: 12.01.2024

This report has been prepared by Vison Labs with all reasonable skill, care and diligence within the terms of the contract with the client, incorporating our General Terms and Conditions of Business and taking account of the resources devoted to it by agreement with the client. We disclaim any responsibility to the client and others in respect of any matters outside the scope of the above.
This report is confidential to the client and we accept no responsibility of whatsoever nature to third parties to whom this report, or any part thereof, is made known, any such party relies on the report at their own risk.

ACKNOWLEDGEMENT

Vison Labs expresses our sincerely thanks to management of **G.V.P.R Engineers Limited,** HYDERABAD Telangana to conduct Environmental Baseline monitoring **Post Monsoon Season** Ambient Air Quality (AAQM) monitoring, Noise, Water and Soil analysis at HONNAVAR PORT (P). LTD. Kasarkod Tonka, Honnavar Taluka, Uttar Kannada District, Karnataka-581342

We hereby also express our thanks to all other staff for their support during field study & data collection.

SCOPE OF WORK

Monitoring of Ambient Air Quality, Water quality, Soil quality and Ambient Noise Quality measurement are part of the scope of work given to M/s Vison Labs. The environmental Monitoring has been carried out at HONNAVAR PORT (P). LTD. Kasarkod Tonka, Honnavar Taluka, Uttar Kannada District, Karnataka-581342.

A] Ambient Air Quality Locations:

Location Code	Location Name	Co-Ordinates
AAQ -1	Honnavar Near Port Office	N:14^{0}16'.35", E 74^{0}26'29"
AAQ -2	Kasarkod Village Near Sub Station	N:14^{0}14'.58", E 74^{0}26'51"
AAQ -3	Karki Village, Havyka Sabha Bhavan	N:14^{0}17'.46", E 74^{0}26'10"
AAQ -4	Ramtirth Village, Near RTO Office	N:14^{0}17'.50", E 74^{0}27'11"
AAQ -5	Kulkod Village, Near Govt School	N:14^{0}17'.19", E 74^{0}27'59"
AAQ-6	Hosad Village, Near Primary School	N:14^{0}15'.52", E 74^{0}29'21"

AAQ: Ambient Air Quality

B] Ambient Noise Quality Locations:

Location Code	Location Name	Date of Monitoring	Co-Ordinates
ANQ-1	Honnavar, Near Sharavathi Circle	14.11.2023	N:14^{0}16'.44", E 74^{0}26'47"
ANQ-2	Kasarkod, Near Primary school	16.11.2023	N:14^{0}14'.50", E 74^{0}26'53"
ANQ-3	Karki, Near Primary School	18.11.2023	N:14^{0}18'.40", E 74^{0}25'49"
ANQ-4	Ramtirth, Near RTO Office	20.11.2023	N:14^{0}17'.50", E 74^{0}27'10"
ANQ-5	Kulkod, Near Church	24.11.2023	N:14^{0}17'.35", E 74^{0}28'20"
ANQ-6	Hosad, Near Bus Stop	26.11.2023	N:14^{0}15'.53", E 74^{0}29'20"

ANQ: Ambient Noise Quality

C] Ground Water Quality Location:

Location Code	Bore Well Location	Date of Sampling	Co-Ordinates
GW-1	Honnavar, Near Coastal Police Station	08.11.2023	N:14^{0}16'.37", E 74^{0}26'25"
GW-2	Kasarkod, Near Ganesh Mandir	08.11.2023	N:14^{0}14'.58", E 74^{0}26'51"
GW-3	Karki, Near Bus Stop	08.11.2023	N:14^{0}17'.46", E 74^{0}26'12"

GW: Ground Water

D] Surface water Quality Location:

Location Code	Location Name	Sample Collection Dates	Co-Ordinates
SW-1	Sharavati River Near Honavar	08.11.2023	N:14^{0}16'.34", E 74^{0}26'24"
SW-2	Badgane River Near Pavinkurve	08.11.2023	N:14^{0}15'.53", E 74^{0}29'15"
SW-3	Sharavati River Near Hosad	08.11.2023	N:14^{0}20'.25", E 74^{0}25'10"

SW: Surface Water

E] Soil Quality Location

Location Code	Location Name	Sample Collection Dates	Co-Ordinates
S-1	Project Site	08.11.2023	N:14^{0}16'.55", E 74^{0}25'34"
S-2	Honnavar, Near fish Market	08.11.2023	N:14^{0}16'.36", E 74^{0}26'25"
S-3	Kasarkod, Near Ganesh Temple	08.11.2023	N:14^{0}14'.50", E 74^{0}26'53"
S-4	Karki, Near sharadha Hospital	08.11.2023	N:14^{0}17'.58", E 74^{0}26'03"
S-5	Apsarakonda, Near Beach	08.11.2023	N:14^{0}14'.17", E 74^{0}26'34"

S: Soil

MONITORING AND ANALYSIS METHODOLOGY

The consultant had Pre-identified the monitoring stations for Air, Water and Noise. Time bound program for carrying out fieldwork was prepared and was followed as far as possible. The IS methods are followed to decide the monitoring stations, analysis of different samples and also alternative methods are used, where the cross verification is required.

Ambient Air Quality Monitoring:

Respirable Dust Samplers (RDS) with gaseous attachment have been used for $PM_{10}/PM_{2.5}$, Sampling. RDS with Gaseous attachment assembly is used for the collection of gaseous pollutants such as SO_2, NO_2, O_3, NH_3 and CO.

Ambient Air monitoring instruments

Instrument	Make	Model No.	Range and Sensitivity	
			PM10/PM2.5	Gases
Respirable Dust Sampler (RDS) Fine Particulate Sampler (APM 550) Eco-tech Combo	Aeroviron Envirotech M/s. ECO Tech	RDS 9000 APM 550 AAS 271	PM_{10} 2.3 m^3/hour $PM_{2.5}$ 1.0 m^3/hour ±0.02 m^3/hour	0 – 3 LPM ± 0.2 LPM

Testing Method to be followed for Ambient Air Quality

Particular		Testing Method to be Followed
Ambient Air Monitoring Parameter		
A	PM_{10}	IS 5182 (Part 23) :2006
B	$PM_{2.5}$	CPCB guidelines for the measurement of Ambient Air Pollutants, Vol. I
C	SO_2 (Sulfur Dioxide)	IS: 5182(Part 2):2001 (Reaffirmed 2017, with Improved West & Gaeke Method
D	NO_2 (Nitrogen Dioxide)	IS 5182 (Part 6): 2006 Modified Jacobs – Hochheiser Method / Arsenite Method
E	CO (Carbon Monoxide)	NIOSH 6604: 15thMay 1996
F	Ozone as O_3	IS 5182 (Part 9) 1974, RA-2014
G	Ammonia as NH_3	IS 5182 P-25 2018
H	Lead as Pb	IS 5182 (Part-22) 2004, RA - 2014
I	Arsenic as AS	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011,
J	Nickle as Ni	IS 5182 P-26 2020
K	Benzine as C_6H_6	IS: 5182 P 11 – 2006
L	Benzo[a]pyrene as BaP	IS: 5182 P 12 – 2004

Noise Level Measurement

Instant sound level meter is used for the collection of data related to noise at an interval of one hour per reading. Noise level for 24 hours was conducted location.

Noise (Sound) Measuring Instrument

Instrument	Make	Model No.	Detection Limit
Integrated Sound Level Measurement Instrument Standard Accessories	HTC	SL-1352	Lower level: 35-80dB(A) Higher level: 80-130dB(A)

Testing Method to be followed

Sr.No.	Particular		Testing Method to be Followed
1	Noise Level Measurement		
	A	Noise Level in dB (A) for continuous 24 hours at 1 hour interval	Comply With IEC61672-1 Class2 Standard

Water Quality Survey

Water samples were collected in Pre-sterilized sampling container. Chemical and Metals analysis was carried out as per standard Methods for water Analysis, Published by BIS, APHA, etc.

Soil Quality Survey

Soil samples were collected in sealed sampling Polyethylene covers. Chemical and Metals analysis was carried out as per standard Methods for Soil Analysis, Published by FAO & BIS etc.

Quality Assurance

VISON LABS is accredited by Ministry of Environment and forests &CC, GOVT. OF INDIA and follows quality systems as per ISO 9001:2015, ISO 45001:2018 and Accredited by NAB vide Certificate Number – TC5064. The QA/QC procedures are laid prior to sample collection and laboratory analysis. It includes the standard procedures of sample collection, preservation, transportation and laboratory analysis with all documented procedures and continuous monitoring of Quality Control Division.

AMBIENT AIR QUALITY

The Ambient Air Quality has been monitored at six locations. The table showing Ambient Air Quality is present in **Table -1 to Table-6 respectively.**

Ambient Air Quality Monitoring Locations

S.No.	Code	Location Name	Co-Ordinates
1	AAQ -1	Honnavar Near Port Office	N:14^{0}16'.35", E 74^{0}26'29"
2	AAQ -2	Kasarkod Village Near Sub Station	N:14^{0}14'.58", E 74^{0}26'51"
3	AAQ -3	Karki Village, Havyka Sabha Bhavan	N:14^{0}17'.46", E 74^{0}26'10"
4	AAQ -4	Ramtirth Village, Near RTO Office	N:14^{0}17'.50", E 74^{0}27'11"
5	AAQ -5	Kulkod Village, Near Govt School	N:14^{0}17'.19", E 74^{0}27'59"
6	AAQ-6	Hosad Village, Near Primary School	N:14^{0}15'.52", E 74^{0}29'21"

TABLE-01

AMBIENT AIR QUALITY MONITORING RESULTS

Location Name : AAQ-1 , Honnavar Near Port Office

Date	PM_{10} µg/m³	$PM_{2.5}$ µg/m³	SO_2 µg/m³	NO_2 µg/m³	O_3 µg/m³	CO mg/m³	NH_3 µg/m³	C_6H_6 µg/m³	Pb µg/m³	BaP ng/m³	As ng/m³	Ni ng/m³
Post-Monsoon Season												
02.10.2023	45.8	22.8	8.6	19.8	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
03.10.2023	51.1	26.6	9.5	22.0	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
09.10.2023	49.0	24.5	8.2	20.9	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
10.10.2023	56.9	27.0	9.6	19.6	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
16.10.2023	53.4	26.3	8.3	22.1	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
17.10.2023	47.3	24.5	8.0	20.7	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
23.10.2023	50.0	25.1	9.5	21.3	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
24.10.2023	48.5	23.7	8.2	20.5	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
30.10.2023	51.1	24.2	9.3	18.4	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
31.10.2023	42.3	21.1	7.8	21.3	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
06.11.2023	45.4	23.6	8.6	20.1	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
07.11.2023	48.1	22.3	7.2	19.8	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
13.11.2023	49.2	25.7	8.9	22.0	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
14.11.2023	54.4	27.8	9.1	18.6	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
20.11.2023	46.1	22.5	9.6	19.2	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
21.11.2023	48.8	24.4	8.2	20.2	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
27.11.2023	43.3	22.6	8.1	18.1	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
28.11.2023	45.1	23.8	9.3	20.0	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
04.12.2023	56.4	27.5	8.2	19.7	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
05.12.2023	43.7	22.9	7.0	22.6	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
11.12.2023	49.0	24.6	9.5	20.7	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
12.12.2023	46.6	22.3	8.4	21.8	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
18.12.2023	51.0	25.1	9.2	22.2	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
19.12.2023	44.5	21.5	7.6	20.5	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
Asthmatic mean	**48.6**	**24.3**	**8.6**	**20.5**	**<5.0**	**<1.0**	**<10.0**	<0.01	<0.01	<0.1	<0.1	<0.1
Maximum	**56.9**	**27.8**	**9.6**	**22.6**	**<5.0**	**<1.0**	**<10.0**	**<0.01**	**<0.01**	**<0.1**	**<0.1**	**<0.1**
Minimum	**42.3**	**21.1**	**7.0**	**18.1**	**<5.0**	**<1.0**	**<10.0**	**<0.01**	**<0.01**	**<0.1**	**<0.1**	**<0.1**
Percentile Values												
75th percentile	**51.0**	**25.3**	**9.3**	**21.4**	**<5.0**	**<1.0**	**<10.0**	**<0.01**	**<0.01**	**<0.1**	**<0.1**	**<0.1**
98th percentile	**56.7**	**27.7**	**9.6**	**22.4**	**<5.0**	**<1.0**	**<10.0**	**<0.01**	**<0.01**	**<0.1**	**<0.1**	**<0.1**

Note:1. Monitoring and Sampling done by Mr. Aravind Redyy & Mr. U.Gunavardhan Reddy o n behalf VISON LABS as per Guidelines for the Measurement of Ambient Air Pollutants - CPCB

2. Sample Collection, Storage, Transportation and analysis done as per relevant test methods BIS & Guidelines for the Measurement of Ambient Air Pollutants - CPCB

Sr. Chemist:

Authorized by
T. Laxmikanth Reddy – Technical Manager

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TABLE-02

AMBIENT AIR QUALITY MONITORING RESULTS

Location Name : AAQ-2 , Kasarkod Village Near Sub Station

Date	PM_{10} µg/m³	$PM_{2.5}$ µg/m³	SO_2 µg/m³	NO_2 µg/m³	O_3 µg/m³	CO mg/m³	NH_3 µg/m³	C_6H_6 µg/m³	Pb µg/m³	BaP ng/m³	As ng/m³	Ni ng/m³
Post-Monsoon Season												
02.10.2023	36.0	17.5	6.6	14.0	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
03.10.2023	30.6	16.1	6.5	13.1	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
09.10.2023	41.6	20.7	6.9	14.3	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
10.10.2023	37.7	19.8	6.3	16.2	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
16.10.2023	32.3	17.2	6.0	14.4	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
17.10.2023	44.6	21.5	6.4	13.1	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
23.10.2023	28.6	14.5	5.9	12.2	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
24.10.2023	35.0	18.5	7.4	15.9	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
30.10.2023	31.2	16.3	7.0	14.2	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
31.10.2023	38.5	18.2	6.2	16.5	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
06.11.2023	46.3	22.5	6.8	14.2	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
07.11.2023	34.8	17.7	7.2	14.7	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
13.11.2023	30.4	16.1	6.5	13.7	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
14.11.2023	42.6	20.4	8.0	16.9	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
20.11.2023	36.8	19.4	7.8	16.5	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
21.11.2023	29.5	17.1	6.2	14.7	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
27.11.2023	35.0	18.5	7.1	15.5	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
28.11.2023	32.2	16.3	6.5	14.3	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
04.12.2023	43.0	21.6	8.2	15.2	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
05.12.2023	32.2	16.0	6.4	14.0	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
11.12.2023	30.7	14.2	6.1	12.5	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
12.12.2023	38.0	19.5	7.2	14.6	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
18.12.2023	35.5	17.1	7.5	13.2	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
19.12.2023	46.0	22.5	8.2	15.8	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
Asthmatic mean	**36.2**	**18.3**	**6.9**	**14.6**	**<5.0**	**<1.0**	**<10.0**	**<0.01**	**<0.01**	**<0.1**	**<0.1**	**<0.1**
Maximum	**46.3**	**22.5**	**8.2**	**16.9**	**<5.0**	**<1.0**	**<10.0**	**<0.01**	**<0.01**	**<0.1**	**<0.1**	**<0.1**
Minimum	**28.6**	**14.2**	**5.9**	**12.2**	**<5.0**	**<1.0**	**<10.0**	**<0.01**	**<0.01**	**<0.1**	**<0.1**	**<0.1**
Percentile Values												
75th percentile	**39.3**	**20.0**	**7.3**	**15.6**	**<5.0**	**<1.0**	**<10.0**	**<0.01**	**<0.01**	**<0.1**	**<0.1**	**<0.1**
98th percentile	**46.2**	**22.5**	**8.2**	**16.7**	**<5.0**	**<1.0**	**<10.0**	**<0.01**	**<0.01**	**<0.1**	**<0.1**	**<0.1**

Note:1. Monitoring and Sampling done by Mr. Aravind Redyy & Mr. U.Gunavardhan Reddy o n behalf VISON LABS as per Guidelines for the Measurement of Ambient Air Pollutants - CPCB

2. Sample Collection, Storage, Transportation and analysis done as per relevant test methods BIS & Guidelines for the Measurement of Ambient Air Pollutants - CPCB

Sr. Chemist:

Authorized by
T. Laxmikanth Reddy – Technical Manager

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TABLE-03

AMBIENT AIR QUALITY MONITORING RESULTS

Location Name : **AA-3 ,** Karki Village, Havyka Sabha Bhavan

Date	PM_{10} µg/m³	$PM_{2.5}$ µg/m³	SO_2 µg/m³	NO_2 µg/m³	O_3 µg/m³	CO mg/m³	NH_3 µg/m³	C_6H_6 µg/m³	Pb µg/m³	BaP ng/m³	As ng/m³	Ni ng/m³
Post-Monsoon Season												
02.10.2023	29.6	14.6	5.4	13.5	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
03.10.2023	33.2	17.4	5.6	12.0	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
09.10.2023	35.0	18.6	5.8	12.5	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
10.10.2023	27.4	14.2	5.4	13.6	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
16.10.2023	37.2	18.6	5.2	12.7	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
17.10.2023	30.5	15.2	5.5	12.7	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
23.10.2023	33.9	15.8	5.7	14.3	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
24.10.2023	38.4	18.7	5.4	12.1	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
30.10.2023	32.8	15.8	5.0	12.3	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
31.10.2023	40.1	18.1	5.7	10.8	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
06.11.2023	41.9	16.7	5.4	12.7	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
07.11.2023	38.9	19.1	5.8	13.5	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
13.11.2023	36.7	15.9	5.7	14.7	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
14.11.2023	33.1	15.7	6.0	12.5	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
20.11.2023	39.8	15.8	5.6	14.0	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
21.11.2023	36.5	16.6	5.7	13.2	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
27.11.2023	31.0	15.1	5.9	12.9	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
28.11.2023	35.3	17.9	5.6	11.0	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
04.12.2023	39.5	18.7	5.4	11.6	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
05.12.2023	38.8	17.3	5.7	11.2	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
11.12.2023	34.2	15.6	5.9	13.6	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
12.12.2023	30.5	15.2	5.7	12.7	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
18.12.2023	37.0	18.2	6.0	14.1	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
19.12.2023	32.0	14.8	6.2	14.3	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
Asthmatic mean	**35.1**	**16.7**	**5.6**	**12.9**	**<5.0**	**<1.0**	**<10.0**	**<0.01**	**<0.01**	**<0.1**	**<0.1**	**<0.1**
Maximum	**41.9**	**19.1**	**6.2**	**14.7**	**<5.0**	**<1.0**	**<10.0**	**<0.01**	**<0.01**	**<0.1**	**<0.1**	**<0.1**
Minimum	**27.4**	**14.2**	**5.0**	**10.8**	**<5.0**	**<1.0**	**<10.0**	**<0.01**	**<0.01**	**<0.1**	**<0.1**	**<0.1**
Percentile Values												
75th percentile	**38.5**	**18.1**	**5.8**	**13.6**	**<5.0**	**<1.0**	**<10.0**	**<0.01**	**<0.01**	**<0.1**	**<0.1**	**<0.1**
98th percentile	**41.1**	**18.9**	**6.1**	**14.5**	**<5.0**	**<1.0**	**<10.0**	**<0.01**	**<0.01**	**<0.1**	**<0.1**	**<0.1**

Note:1. Monitoring and Sampling done by Mr. Aravind Redyy & Mr. U.Gunavardhan Reddy o n behalf VISON LABS as per Guidelines for the Measurement of Ambient Air Pollutants - CPCB

2. Sample Collection, Storage, Transportation and analysis done as per relevant test methods BIS & Guidelines for the Measurement of Ambient Air Pollutants - CPCB

Sr. Chemist:

Authorized by

T. Laxmikanth Reddy – Technical Manager

Monitoring conducted by M/s Vison Labs, Hyderabad. Recognized by MoEF& CC, ISO 9001:2015 , OHSAS: 45001-2018 & Accredited by NAB vide Certificate Number – TC5064

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TABLE-04
AMBIENT AIR QUALITY MONITORING RESULTS

Location Name : AAQ-4 , Ramtirth Village, Near RTO Office

Date	PM_{10} µg/m³	$PM_{2.5}$ µg/m³	SO_2 µg/m³	NO_2 µg/m³	O_3 µg/m³	CO mg/m³	NH_3 µg/m³	C_6H_6 µg/m³	Pb µg/m³	BaP ng/m³	As ng/m³	Ni ng/m³
Post-Monsoon Season												
05.10.2023	34.0	16.7	5.6	16.6	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
06.10.2023	37.5	20.4	6.2	17.7	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
12.10.2023	40.4	19.6	5.8	16.5	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
13.10.2023	35.7	17.8	6.0	13.6	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
19.10.2023	41.0	20.0	6.5	18.4	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
20.10.2023	32.7	15.0	5.8	15.2	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
26.10.2023	43.4	21.1	7.0	16.1	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
27.10.2023	36.3	18.0	5.5	15.3	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
02.11.2023	31.9	16.6	5.2	14.7	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
03.11.2023	42.5	21.6	6.4	18.6	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
09.11.2023	35.0	15.8	5.3	14.4	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
10.11.2023	37.5	18.7	5.8	15.8	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
16.11.2023	38.7	18.6	6.1	17.4	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
17.11.2023	35.0	17.4	5.2	18.2	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
23.11.2023	40.2	22.2	5.9	19.6	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
24.11.2023	32.9	16.1	6.4	15.4	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
30.11.2023	40.5	21.3	5.9	19.6	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
01.12.2023	36.3	18.4	6.6	16.2	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
07.12.2023	32.6	16.9	6.4	15.8	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
08.12.2023	40.9	19.5	6.8	16.3	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
14.12.2023	43.0	22.0	5.9	19.3	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
15.12.2023	35.6	18.5	6.5	15.4	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
21.12.2023	38.5	19.4	6.2	14.6	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
22.12.2023	42.4	20.6	6.8	17.3	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
Asthmatic mean	**37.7**	**18.8**	**6.1**	**16.6**	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
Maximum	**43.4**	**22.2**	**7.0**	**19.6**	**<5.0**	**<1.0**	**<10.0**	**<0.01**	**<0.01**	**<0.1**	**<0.1**	**<0.1**
Minimum	**31.9**	**15.0**	**5.2**	**13.6**	**<5.0**	**<1.0**	**<10.0**	**<0.01**	**<0.01**	**<0.1**	**<0.1**	**<0.1**
Percentile Values												
75th percentile	**40.6**	**20.5**	**6.4**	**17.8**	**<5.0**	**<1.0**	**<10.0**	**<0.01**	**<0.01**	**<0.1**	**<0.1**	**<0.1**
98th percentile	**43.2**	**22.1**	**6.9**	**19.6**	**<5.0**	**<1.0**	**<10.0**	**<0.01**	**<0.01**	**<0.1**	**<0.1**	**<0.1**

Note:1. Monitoring and Sampling done by Mr. Aravind Redyy & Mr. U.Gunavardhan Reddy o n behalf VISON LABS as per Guidelines for the Measurement of Ambient Air Pollutants - CPCB

2. Sample Collection, Storage, Transportation and analysis done as per relevant test methods BIS & Guidelines for the Measurement of Ambient Air Pollutants - CPCB

Sr. Chemist:

Authorized by
T. Laxmikanth Reddy – Technical Manager

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TABLE-05

AMBIENT AIR QUALITY MONITORING RESULTS

Location Name : **AAQ-5 ,** Kulkod Village, Near Govt School

Date	PM_{10} µg/m³	$PM_{2.5}$ µg/m³	SO_2 µg/m³	NO_2 µg/m³	O_3 µg/m³	CO mg/m³	NH_3 µg/m³	C_6H_6 µg/m³	Pb µg/m³	BaP ng/m³	As ng/m³	Ni ng/m³
Post-Monsoon Season												
05.10.2023	28.6	15.1	4.6	12.5	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
06.10.2023	22.7	11.8	4.8	11.6	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
12.10.2023	33.1	14.6	5.1	14.2	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
13.10.2023	26.5	13.2	5.3	12.0	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
19.10.2023	24.1	12.7	4.9	12.7	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
20.10.2023	28.5	15.2	5.2	13.0	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
26.10.2023	30.0	16.0	4.8	15.4	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
27.10.2023	24.1	12.5	4.6	14.5	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
02.11.2023	27.1	14.4	5.1	13.9	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
03.11.2023	35.6	16.7	5.3	14.2	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
09.11.2023	28.5	14.2	4.8	13.1	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
10.11.2023	32.0	15.0	4.5	14.1	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
16.11.2023	25.7	13.3	4.3	12.6	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
17.11.2023	30.6	14.2	4.6	14.1	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
23.11.2023	25.5	13.2	5.2	13.4	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
24.11.2023	28.2	14.2	5.0	13.7	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
30.11.2023	24.9	11.0	4.8	14.9	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
01.12.2023	36.4	18.5	4.6	13.2	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
07.12.2023	27.0	14.7	5.3	15.7	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
08.12.2023	33.5	16.2	5.1	13.0	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
14.12.2023	26.7	13.3	5.6	13.2	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
15.12.2023	27.6	14.4	5.2	14.6	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
21.12.2023	24.2	12.9	5.1	11.3	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
22.12.2023	27.0	14.0	5.4	12.5	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
Asthmatic mean	**28.3**	**14.2**	**5.0**	**13.5**	**<5.0**	**<1.0**	**<10.0**	**<0.01**	**<0.01**	**<0.1**	**<0.1**	**<0.1**
Maximum	**36.4**	**18.5**	**5.6**	**15.7**	**<5.0**	**<1.0**	**<10.0**	**<0.01**	**<0.01**	**<0.1**	**<0.1**	**<0.1**
Minimum	**22.7**	**11.0**	**4.3**	**11.3**	**<5.0**	**<1.0**	**<10.0**	**<0.01**	**<0.01**	**<0.1**	**<0.1**	**<0.1**
Percentile Values												
75th percentile	**30.2**	**15.0**	**5.2**	**14.2**	**<5.0**	**<1.0**	**<10.0**	**<0.01**	**<0.01**	**<0.1**	**<0.1**	**<0.1**
98th percentile	**36.0**	**17.7**	**5.5**	**15.6**	**<5.0**	**<1.0**	**<10.0**	**<0.01**	**<0.01**	**<0.1**	**<0.1**	**<0.1**

Note:1. Monitoring and Sampling done by Mr. Aravind Redyy & Mr. U.Gunavardhan Reddy o n behalf VISON LABS as per Guidelines for the Measurement of Ambient Air Pollutants - CPCB

2. Sample Collection, Storage, Transportation and analysis done as per relevant test methods BIS & Guidelines for the Measurement of Ambient Air Pollutants - CPCB

Sr. Chemist:

Authorized by
T. Laxmikanth Reddy – Technical Manager

Monitoring conducted by M/s Vison Labs, Hyderabad. Recognized by MoEF& CC, ISO 9001:2015 , OHSAS: 45001-2018 & Accredited by NAB vide Certificate Number – TC5064

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TABLE-06

AMBIENT AIR QUALITY MONITORING RESULTS

Location Name : **AAQ-6** Hosad Village, Near Primary School

Date	PM_{10} µg/m³	$PM_{2.5}$ µg/m³	SO_2 µg/m³	NO_2 µg/m³	O_3 µg/m³	CO mg/m³	NH_3 µg/m³	C_6H_6 µg/m³	Pb µg/m³	BaP ng/m³	As ng/m³	Ni ng/m³
Post-Monsoon Season												
02.10.2023	30.5	15.7	5.8	15.0	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
03.10.2023	33.9	16.4	5.1	16.3	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
09.10.2023	35.6	19.2	6.3	15.2	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
10.10.2023	38.9	20.4	5.2	16.4	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
16.10.2023	31.4	15.8	5.5	14.3	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
17.10.2023	35.6	18.9	5.7	16.2	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
23.10.2023	30.7	14.3	5.2	12.6	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
24.10.2023	32.8	17.0	4.8	13.8	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
30.10.2023	38.6	19.7	6.1	14.2	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
31.10.2023	35.7	16.4	5.2	15.3	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
06.11.2023	32.5	15.9	5.7	13.6	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
07.11.2023	28.9	13.7	5.2	14.3	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
13.11.2023	31.5	15.6	5.8	15.7	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
14.11.2023	27.3	13.2	6.1	14.0	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
20.11.2023	36.4	18.0	5.7	17.3	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
21.11.2023	30.9	14.9	6.1	14.6	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
27.11.2023	34.8	17.6	6.4	15.8	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
28.11.2023	25.4	12.9	5.8	13.4	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
04.12.2023	33.9	16.2	5.1	15.5	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
05.12.2023	31.0	15.9	5.7	14.1	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
11.12.2023	36.3	17.3	5.4	15.4	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
12.12.2023	28.8	14.6	6.2	13.6	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
18.12.2023	33.0	16.5	5.6	14.8	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
19.12.2023	35.9	18.3	6.1	15.5	<5.0	<1.0	<10.0	<0.01	<0.01	<0.1	<0.1	<0.1
Asthmatic mean	**32.9**	**16.4**	**5.7**	**14.9**	**<5.0**	**<1.0**	**<10.0**	**<0.01**	**<0.01**	**<0.1**	**<0.1**	**<0.1**
Maximum	**38.9**	**20.4**	**6.4**	**17.3**	**<5.0**	**<1.0**	**<10.0**	**<0.01**	**<0.01**	**<0.1**	**<0.1**	**<0.1**
Minimum	**25.4**	**12.9**	**4.8**	**12.6**	**<5.0**	**<1.0**	**<10.0**	**<0.01**	**<0.01**	**<0.1**	**<0.1**	**<0.1**
Percentile Values												
75th percentile	**35.6**	**17.7**	**6.1**	**15.6**	**<5.0**	**<1.0**	**<10.0**	**<0.01**	**<0.01**	**<0.1**	**<0.1**	**<0.1**
98th percentile	**38.8**	**20.1**	**6.4**	**16.9**	**<5.0**	**<1.0**	**<10.0**	**<0.01**	**<0.01**	**<0.1**	**<0.1**	**<0.1**

Note:1. Monitoring and Sampling done by Mr. Aravind Redyy & Mr. U.Gunavardhan Reddy o n behalf VISON LABS as per Guidelines for the Measurement of Ambient Air Pollutants - CPCB

2. Sample Collection, Storage, Transportation and analysis done as per relevant test methods BIS & Guidelines for the Measurement of Ambient Air Pollutants - CPCB

Sr. Chemist:

Authorized by
T. Laxmikanth Reddy – Technical Manager

Monitoring conducted by M/s Vison Labs, Hyderabad. Recognized by MoEF& CC, ISO 9001:2015 , OHSAS: 45001-2018 & Accredited by NAB vide Certificate Number – TC5064

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Observations

PM_{10}: The maximum value for PM_{10} observed at **Honnavar (AAQ-1) 56.9** $\mu g/m^3$ and minimum value for PM_{10} at **Kulkod Village (AAQ-5) 22.7** $\mu g/m^3$. The 24 hours applicable limit inside the plant premises 100 $\mu g/m^3$ for industrial, Residential-100 $\mu g/m^3$ area.

$PM_{2.5}$: The maximum value for $PM_{2.5}$ observed at **Honnavar (AAQ-1) 27.8** $\mu g/m^3$ and minimum value for $PM_{2.5}$ at **Kulkod Village (AAQ-5) 11.0** $\mu g/m^3$. The 24 hours applicable limit inside the plant premises 60 $\mu g/m^3$ for industrial, Residential-60 $\mu g/m^3$ area.

SO_2: The maximum value for SO_2 observed at **Honnavar (AAQ-1) 9.6** $\mu g/m^3$ and minimum value for SO_2 at **Kulkod Village (AAQ-5) 4.3** $\mu g/m^3$. The 24 hours applicable limit inside the plant premises 80 $\mu g/m^3$ for industrial, Residential-80 $\mu g/m^3$ area.

NO_2: The maximum value for NO_2 observed at **Honnavar (AAQ-1) 22.6** $\mu g/m^3$ and minimum value for NO_2 at **Kulkod Village (AAQ-5) 11.3** $\mu g/m^3$. The 24 hours applicable limit inside the plant premises 80 $\mu g/m^3$ for industrial, Residential-80 $\mu g/m^3$ area.

O_3: The value of O_3 observed in All Locations is Below Detectable Limit. The 1 hour applicable limit for industrial, Residential Rural and Other Areas is 180 $\mu g/m^3$.

CO: Corban Monoxide Value Observed all monitoring locations <1.0 mg/m^3. The 24 hours applicable limit inside the plant premises 2.0 mg/m^3 for industrial, Residential-2.0 mg/m^3 area.

NH_3: The value of NH_3 observed in All Locations is Below Detectable Limit. The 24 hours applicable limit for industrial, Residential Rural and Other Areas is 400 $\mu g/m^3$.

Pb: The values of Pb observed in All Locations are Below Detectable Limit. The 24 hours applicable limit for industrial, Residential Rural and Other Areas is 1.0 $\mu g/m^3$.

As: The value of AS observed in All Locations are Below Detectable Limit. The Annual average applicable limit for industrial, Residential Rural and Other Areas is 6 ng/m^3.

Ni: The values of Ni observed in All Locations are Below Detectable Limit. The Annual average applicable limit for industrial, Residential Rural and Other Areas is 20 ng/m^3.

C_6H_6: The values of C6H6 observed in All Locations are Below Detectable Limit. The Annual average applicable limit for industrial, Residential Rural and Other Areas is 5 $\mu g/m^3$.

Benzo (a) Pyrene (BaP): The values of BaP observed in All Locations are Below Detectable Limit. The Annual average applicable limit for industrial, Residential Rural and Other Areas is 1 ng/m^3.

Results and Conclusions:

The results of the monitored data indicate that the ambient air quality of the region in general is conformity with respect to norms of National Ambient Air Quality standards of CPCB, at all locations monitored.

NOISE QUALITY

AMBIENT NOISE LEVELS IN THE STUDY AREA

The statistical analysis is done for measured noise levels at Six locations in the study area. The parameters are analyzed for L_{day} and L_{night}, the statistical analysis results are given in **TABLE-7**

Ambient Noise Quality Locations

Location Code	Location Name	Date Of Monitoring	Co-Ordinates
ANQ-1	Honnavar, Near Sharavathi Circle	14.11.2023	N:14^{0}16'.44", E 74^{0}26'47"
ANQ-2	Kasarkod, Near Primary school	16.11.2023	N:14^{0}14'.50", E 74^{0}26'53"
ANQ-3	Karki, Near Primary School	18.11.2023	N:14^{0}18'.40", E 74^{0}25'49"
ANQ-4	Ramtirth, Near RTO Office	20.11.2023	N:14^{0}17'.50", E 74^{0}27'10"
ANQ-5	Kulkod, Near Church	24.11.2023	N:14^{0}17'.35", E 74^{0}28'20"
ANQ-6	Hosad, Near Bus Stop	26.11.2023	N:14^{0}15'.53", E 74^{0}29'20"

TABLE-7

AMBIENT NOISE LEVELS IN THE STUDY AREA

All the values are expressed in dB (A)

Time	ANQ-1	ANQ-2	ANQ-3	NQ-4	ANQ-5	ANQ-6
HOURS						
06:00 – 07:00	52.3	41.3	43.9	46.3	39.6	38.8
07:00 – 08:00	54.7	44.4	45.9	48.4	43.8	41.9
08:00 – 09:00	56.9	47.5	46.7	47.2	45.9	43.7
09:00 – 10:00	59.5	51.5	50.5	51.4	48.1	45.6
10:00 – 11:00	55.2	52.0	52.6	54.0	51.7	42.8
11:00 – 12:00	54.6	49.7	49.3	50.5	49.3	41.0
12:00 – 13:00	58.5	48.5	48.3	48.7	50.2	39.0
13:00 – 14:00	56.9	47.4	46.1	51.0	48.7	42.7
14:00 – 15:00	59.4	50.2	49.7	52.4	46.8	44.7
15:00 – 16:00	61.8	48.5	52.1	53.3	50.0	46.5
16:00 – 17:00	58.2	51.3	53.9	54.6	49.9	48.4
17:00 – 18:00	59.5	49.5	48.6	50.0	46.7	45.7
18:00 – 19:00	62.7	48.8	53.0	49.5	45.5	44.6
19:00 – 20:00	60.6	46.5	50.2	48.6	43.1	43.7
20:00 – 21:00	59.2	44.3	48.3	50.9	40.7	41.5
21:00 – 22:00	57.5	45.9	47.5	47.9	39.4	40.4
22:00 – 23:00	51.4	42.8	44.1	45.8	40.1	39.5
23:00 – 24:00	46.8	39.1	42.5	42.1	38.2	36.1
24:00 – 01:00	43.3	36.6	39.7	41.6	37.7	35.2
01:00 – 02:00	40.8	35.5	37.9	38.4	35.6	34.4
02:00 – 03:00	39.6	37.0	36.2	39.5	34.8	36.2
03:00 – 04:00	40.7	35.5	38.6	34.9	36.6	35.6
04:00 – 05:00	43.7	36.0	40.4	37.2	37.2	35.5
05:00 – 06:00	49.8	40.3	41.2	42.3	38.5	37.1
Leq Day	**58.5**	**48.6**	**49.8**	**50.8**	**47.5**	**43.8**
Leq Night	**46.5**	**38.6**	**40.7**	**41.4**	**37.6**	**36.5**

Observations

a) Day Time Noise Levels (L_{day})

The daytime (L_{day}) noise levels are observed to be in the range of 43.8 – 58.5 dB (A).

b) Night time Noise Levels (L_{night})

The nighttime (L_{night}) Noise levels were observed to be in the range of 36.5 – 46.5 dB (A).

Sr. Chemist:

Authorized by
T. Laxmikanth Reddy – Technical Manager

GROUND WATER QUALITY

Seven Ground Water Samples was collected and analyzed. The analytical results are given in **TABLE-08**

TABLE – 08

WATER ANALYSIS TEST REPORT

S. No.	Sample description & Location given by Customer	Appearance of the Sample	Sample condition	Sample collection Date	Sample Collection Time	Sample Quantity	Sample Registration Date	Analysis starting Date	Analysis Completion Date	Mode of Packing
GW-1	Honnavar, Near Coastal Police Station	Clear Liquid	Found Ok	08.11.2023	10.30 am	2 ltr	09.11.2023	09.11.2023	15.11.2023	Sterile Sampling Bottles
GW-2	Kasarkod, Near Ganesh Mandir	Clear Liquid	Found Ok	08.11.2023	11.40 am	2 ltr	09.11.2023	09.11.2023	15.11.2023	Sterile Sampling Bottles
GW-3	Karki, Near Bus Stop	Clear Liquid	Found Ok	08.11.2023	12.30 pm	2 ltr	09.11.2023	09.11.2023	15.11.2023	Sterile Sampling Bottles
Sampling done by Mr. U.Gunavardhan Reddy on behalf VISON LABS as per VL/SOP/M/24(Biological) & VL/SOP/C/53(Chemical)										

TEST RESULTS

S.No.	Parameter	Units	Test Methods	GW-01	GW-02	GW-03	Drinking Water Limits As per IS: 10500; 1991:2012	
							Acceptable Limits	Acceptable Limits
1	Temperature at site	°C	IS 3025 (Part 9) 1984	26.1	26.4	25.6	--	--
2	pH at 25 °C	-	IS:3025 (Part 1) 1983	6.86	7.30	6.95	6.5 – 8.5	NR
3	Conductivity at 25 °C	µS/cm	IS:3025 (Part 14)1984	96	286	66	--	--
4	Total Dissolve solids	mg/L	IS:3025 (Part 16) 1984	62	186	43	500	2000
5	Total Solids	mg/L	IS 3025 (Part 15) - 1984	62	186	43	--	--
6	Turbidity	NTU	IS 3025 (Part 10) 1984	<1.0	<1.0	<1.0	1	5
7	Color	CU	IS:3025 (Part 4) 1983	<01	<01	<01	5	15
8	Odor	-	IS:3025 (Part 5) 1983	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
9	Taste	--	IS 3025 (Part 48) - 1984	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
10	Total Hardness as $CaCO_3$	mg/L	IS 3025 (Part 21) 2009	20	80	10	200	600
11	Total Alkalinity	mg/L	IS 3025 (Part 23) 1986	20	60	10	200	600
12	Calcium as Ca	mg/L	IS 3025 (Part 40) 1991	4.0	20.0	2.0	75	200
13	Magnesium as Mg	mg/L	IS 3025 (Part 46) 1994	2.4	7.2	1.2	30	100
14	Chloride as Cl	mg/L	IS 3025 (Part 32) 1984	10	40.0	10.0	250	1000
15	Sodium as Na	mg/L	IS 3025 (Part 45) 1993	11.0	26.7	9.2	--	--
16	Potassium as K	mg/L	IS 3025 (Part 45) 1993	1.6	2.3	0.8	--	--
17	Sulphate as SO_4	mg/L	APHA 24th Edn:2023 - 4500 SO_4 E	10.5	20.8	6.6	200	400
18	Nitrates as NO_3	mg/L	IS 3025 (Part 34) 1988	2.5	5.0	1.2	45	NR

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19	Iron as Fe	mg/L	IS 3025 (Part 53) 2014	<0.04	0.08	<0.04	0.3	NR
20	Fluorides as F^-	mg/L	IS 3025 (Part 60) 2008	<0.10	0.50	<0.10	1.0	1.5
21	Salinity	ppt	APHA 24th ed 2520 B	0.02	0.07	0.02	--	--
22	Anionic detergent as MBAS	mg/L	IS 31428 Annex K	<0.01	<0.01	<0.01	--	--
23	Residual Free Chlorine	mg/L	IS 3025 (Part 26) - 1986	<0.02	<0.02	<0.02	<0.02	<0.02
24	Chemical Oxygen Demand	mg/L	IS 3025 (Part 58) 2006	<04	<04	<04	--	--
25	Bio chemical oxygen Demand	mg/L	IS 3025 (Part 44) 1993	<02	<02	<02	--	--
26	Dissolved Oxygen	mg/L	IS 3025 (Part 38) 1989	<01	<01	<01	--	--
27	Total Kjeldahl Nitrogen	mg/L	IS 3025 Part 34 -1988	<01	<01	<01	--	--
28	Ammoniacal Nitrogen as N	mg/L	IS 3025 Part 34 -1988	<01	<01	<01	--	--
29	Phosphate as PO_4	mg/L	IS 3025 (Part 31) 1988	<0.02	<0.02	<0.02	--	--
30	Copper as Cu	mg/L	IS 3025 (Part 42) 1992	<0.01	<0.01	<0.01	0.05	1.5
31	Zinc as Zn	mg/L	IS 3025 (Part 49) 1994	<0.01	<0.01	<0.01	5	15
32	Manganese as Mn	mg/L	APHA 24th rd Ed 3111-B	<0.01	<0.01	<0.01	0.1	0.3
33	Arsenic as As	mg/L	IS 3025 (Part-37) 1988	<0.01	<0.01	<0.01	0.01	0.05
34	Lead as Pb	mg/L	IS 3025 (Part 47) 1994	<0.01	<0.01	<0.01	0.01	NR
35	Mercury as Hg	mg/L	IS 3025(Part-48) 1994	<0.01	<0.01	<0.01	0.001	NR
36	Cadmium as Cd	mg/L	IS 3025 (Part 41) 1992	<0.01	<0.01	<0.01	0.003	NR
37	Selenium as Se	mg/L	IS 3025 Part 56 2003	< 0.01	< 0.01	< 0.01	0.01	NR
38	Total Chromium	mg/L	IS 3025 (Part 52) 2003	<0.01	<0.01	<0.01	0.05	NR
39	Phenolic Compounds	mg/L	IS 3025 (Part 43) 1992	<0.01	<0.01	<0.01	0.001	0.002
40	Cyanide as CN	mg/L	IS 3025 Part 27 1986	< 0.01	< 0.01	< 0.01	0.05	NR
41	Coliform	CFU/100 ml	IS 15185: 2016	Not detected	Not detected	Not detected	Shall Not be Detectable in any 100mL	
42	Faecal Coliforms	MPN/100 ml	IS 1622: 1981	<02	<02	<02	--	--

NR – No Relaxation

NOTE: Limits as per Drinking Water Specification IS 10500:2012

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Sr. Chemist:

Authorized by
T. Laxmikanth Reddy – Technical Manager

SURFACE WATER QUALITY

Six Surface water samples was collected and analyzed. The analytical results are given in **TABLE-09**

TABLE –09

WATER ANALYSIS TEST REPORT

S. No.	Sample description & Location given by Customer	Appearance of the Sample	Sample condition	Sample collection Date	Sample Collection Time	Sample Quantity	Sample Registration Date	Analysis starting Date	Analysis Completion Date	Mode of Packing
1	Sharavati River Near Honavar	Clear Liquid	Found Ok	08.11.2023	11:10 am	2 ltr	09.11.2023	09.11.2023	15.11.2023	Sterile Sampling Bottles
2	Badgane River Near Pavinkurve	Clear Liquid	Found Ok	08.11.2023	12.40 pm	2 ltr	09.11.2023	09.11.2023	15.11.2023	Sterile Sampling Bottles
3	Sharavati River Near Hosad	Clear Liquid	Found Ok	08.11.2023	01:30 pm	2 ltr	09.11.2023	09.11.2023	15.11.2023	Sterile Sampling Bottles

Sampling done by Mr. U.Gunavardhan Reddy on behalf VISON LABS as per VL/SOP/M/24(Biological) & VL/SOP/C/53(Chemical)

TEST RESULTS

S.No.	Parameter	Units	Test Methods	SW-1	SW-2	SW-3	IS:2296 Class C Limits
1	Temperature at site	°C	IS 3025 (Part 9) 1984	25.2	25.0	26.1	--
2	pH at 25 °C	-	IS:3025 (Part 1) 1983	6.88	6.75	6.68	6.5 – 8.5
3	Conductivity at 25 °C	µS/cm	IS:3025 (Part 14)1984	80	120	128	--
4	Total Dissolve solids	mg/L	IS:3025 (Part 16) 1984	52	78	84	1500
5	Total Suspended Solids	mg/L	IS 3025 (Part 17) - 1984	18.6	12.4	8.2	--
6	Total Solids	mg/L	IS 3025 (Part 15) - 1984	70.6	90.4	92.2	--
7	Turbidity	NTU	IS 3025 (Part 10) 1984	22.8	20.8	13.5	--
8	Color	CU	IS:3025 (Part 4) 1983	50	50	50	300
9	Odor	-	IS:3025 (Part 5) 1983	Agreeable	Agreeable	Agreeable	--
10	Taste	--	IS 3025 (Part 48) - 1984	Agreeable	Agreeable	Agreeable	
11	Total Hardness as $CaCO_3$	mg/L	IS 3025 (Part 21) 2009	20	20	30	--
12	Total Alkalinity	mg/L	IS 3025 (Part 23) 1986	10	20	30	--
13	Calcium as Ca	mg/L	IS 3025 (Part 40) 1991	4.0	4.0	8.0	--
14	Magnesium as Mg	mg/L	IS 3025 (Part 46) 1994	2.4	2.4	2.4	--
15	Chloride as Cl	mg/L	IS 3025 (Part 32) 1984	10.0	15	15.0	600
16	Sodium as Na	mg/L	IS 3025 (Part 45) 1993	7.8	16.6	13.8	--
17	Potassium as K	mg/L	IS 3025 (Part 45) 1993	0.8	1.6	1.6	--

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18	Sulphate as SO_4	mg/L	IS 3025 (Part 24) 1986	12.4	14.3	8.50	400
19	Nitrates as NO_3	mg/L	IS 3025 (Part 34) 1988	2.5	3.7	3.7	50
20	Iron as Fe	mg/L	IS 3025 (Part 53) 2014	0.04	0.04	0.04	50.0
21	Fluorides as F^-	mg/L	IS 3025 (Part 60) 2008	0.20	0.10	0.10	1.5
22	Salinity	ppt	APHA 23rd ed 2520 B	0.02	0.03	0.03	--
23	Anionic detergent as MBAS	mg/L	IS 31428 Annex K	<0.01	<0.01	<0.01	--
24	Residual Free Chlorin	mg/L	IS 3025 (Part 26) - 1986	<0.02	<0.02	<0.02	--
25	Dissolved Oxygen	mg/L	IS 3025 (Part 38) 1989	4.2	4.0	4.8	4.0
26	Bio chemical oxygen Demand	mg/L	IS 3025 (Part 44) 1993	05	06	05	--
27	Chemical Oxygen Demand	mg/L	IS 3025 (Part 58) 2006	20	30	20	--
28	Total Kjeldahl Nitrogen	mg/L	IS 3025 Part 34 -1988	<1.0	<1.0	<1.0	--
29	Ammoniacal Nitrogen as N	mg/L	IS 3025 Part 34 -1988	<1.0	<1.0	<1.0	--
30	Phosphate as PO_4	mg/L	IS 3025 (Part 31) 1988	<0.01	<0.01	<0.01	--
31	Copper as Cu	mg/L	IS 3025 (Part 42) 1992	<0.01	<0.01	<0.01	1.5
32	Zinc as Zn	mg/L	IS 3025 (Part 49) 1994	<0.01	<0.01	<0.01	15.0
33	Manganese as Mn	mg/L	APHA 23rd Ed 3111-B	<0.01	<0.01	<0.01	--
34	Arsenic as As	mg/L	IS 3025 (Part-37) 1988	<0.01	<0.01	<0.01	0.2
35	Lead as Pb	mg/L	IS 3025 (Part 47) 1994	<0.01	<0.01	<0.01	0.1
36	Mercury as Hg	mg/L	IS 3025(Part-48) 1994	<0.01	<0.01	<0.01	--
37	Selenium as Se	mg/L	IS 3025 Part 56 2003	< 0.01	<0.01	< 0.01	--
38	Total Chromium	mg/L	IS 3025 (Part 52) 2003	<0.01	<0.01	<0.01	0.05
39	Cadmium as Cd	mg/L	IS 3025 (Part 41) 1992	<0.01	<0.01	<0.01	0.01
40	Cyanide as CN	mg/L	IS 3025 Part 27 1986	< 0.01	<0.01	<0.01	--
41	Phenolic Compounds	mg/L	IS 3025 (Part 43) 1992	<0.01	<0.01	<0.01	0.005
42	Coliform	MPN/100 ml	APHA 23rd Ed 9221 B	130	210	180	5000
43	Faecal Coliforms	MPN/100 ml	APHA 23rd Ed 9221 B	20	26	30	--

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Sr. Chemist:

Authorized by
T. Laxmikanth Reddy – Technical Manager

SOIL QUALITY ANALYSIS

Ten Soil samples was collected and analyzed. The analytical results are given in below **Table-10**

TABLE – 13

SOIL ANALYSIS TEST REPORT

S. No.	Sample description & Location given by Customer	Sample condition	Sample collection Date	Sample Quantity	Sample Registration Date	Analysis Starting Date	Analysis Completion Date	Mode of Packing
S1	Project Site	Found Ok	08.11.2023	1 kg	09.11.2023	09.11.2023	15.11.2023	Self Lock Cover
S2	Honnavar, Near fish Market	Found Ok	08.11.2023	1 kg	09.11.2023	09.11.2023	15.11.2023	Self Lock Cover
S3	Kasarkod, Near Ganesh Temple	Found Ok	08.11.2023	1 kg	09.11.2023	09.11.2023	15.11.2023	Self Lock Cover
S4	Karki, Near sharadha Hospital	Found Ok	08.11.2023	1 kg	09.11.2023	09.11.2023	15.11.2023	Self Lock Cover
S5	Apsarakonda, Near Beach	Found Ok	08.11.2023	1 kg	09.11.2023	09.11.2023	15.11.2023	Self Lock Cover

SOIL SAMPLING RESULTS

S.No	Parameter	Units	Test Method	S-1	S-2	S-3	S-4	S-5
1	Texture			Sandy Clay	Sandy Clay	Sandy Clay	Sandy Clay	Sandy Clay
	Sand	%	FAO Method 2007	52	45	58	60	40
	Silt	%	FAO Method 2007	26	20	16	17	28
	Clay	%	FAO Method 2007	22	35	26	23	32
2	pH at 25 °C	-	IS 2720(Part 26):1987	6.50	6.82	7.12	6.86	7.08
3	Conductivity at 25 °C	µs/cm	IS 14767:2000	126	135	176	168	140
4	Available Water Holding Capacity	Inch/Foot	Department of Agriculture & Cooperation Ministry of Agriculture Government of India	5.2	3.6	5.8	4.5	2.3
5	Infiltration Rate	mm/hr	P.K Behara	18.6	20.5	17.3	15.2	16.4
6	Bulk Density	g/cm^3	FAO Method 2007	2.04	2.50	2.60	1.50	2.62
7	Permeability	Cm/hr	P.K Behara	4.2	3.8	4.0	3.2	3.5
8	Porosity	%	FAO Method 2007	0.52	0.48	0.45	0.52	0.36
9	Organic mater	%	IS 2720(Part 22):1972	0.85	1.10	0.92	0.64	0.75
10	Organic Carbon	%	IS 2720(Part 22):1972	0.52	0.64	0.44	0.36	0.38
11	Lead as pb	mg/kg	ISO/TS 16965:2013	<01	<01	<01	<01	<01
12	Zinc as Zn	mg/kg	ISO/TS 16965:2013	0.92	0.58	0.46	0.32	0.42
13	Nickel as Ni	mg/kg	ISO/TS 16965:2013	<01	<01	<01	<01	<01

14	Manganese as Mn	mg/kg	ISO/TS 16965:2013	<01	<01	<01	<01	<01
15	Chromium as Cr	mg/kg	ISO/TS 16965:2013	<01	<01	<01	<01	<01
16	Copper as Cu	mg/kg	ISO/TS 16965:2013	0.08	0.12	0.14	0.10	0.16
17	Iron as Fe	mg/kg	ISO/TS 16965:2013	0.50	0.64	0.48	0.52	0.60
18	Cadmium as Cd	mg/kg	ISO/TS 16965:2013	<01	<01	<01	<01	<01
19	Sodium Absorption Ratio (SAR)	meq/kg	IS 11624:1986, RA-2001	1.30	1.22	1.10	1.46	1.05
20	Available Nitrogen as N	mg/kg	IS 14684: 1999	430	412	398	454	420
21	Available Phosphorus as P	mg/kg	FAO Method 2007	158	172	136	185	126
22	Available Potassium as K	mg/kg	FAO Method 2007	90	78	82	91	75

Sr. Chemist:

Authorized by
T. Laxmikanth Reddy – Technical Manager

1280

VISON LABS ACCRIDATIONS
MOEF & CC

केन्द्रीय प्रदूषण नियंत्रण बोर्ड
CENTRAL POLLUTION CONTROL BOARD
Speed Post पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय, भारत सरकार
MINISTRY OF ENVIRONMENT, FOREST & CLIMATE CHANGE, GOVT. OF INDIA

F. No. LB/99/7/2021-INST LAB-HO-CPCB-HO/Pvt./ 11029 20th March 2024

Recognition Letter

To,

The Head of Laboratory,
M/s Vison Labs
16-11-23/37/A, Opp-RTA Office, Moosarambagh,
Malakpet, Hyderabad -500036,
Telangana, India.

Subject: Recognition of M/s Vison Labs 16-11-23/37/A, Opp-RTA Office, Moosarambagh, Malaknet, Hyderabad -500036, Telangana as Environmental laboratory under the Environmental (Protection) Act- 1986– reg.

Sir

With reference to your application dated 28/12/2023 along with acceptance of the terms & conditions of the guidelines for recognition of environmental laboratories under the Environmental (Protection) Act, 1986, submitted to Central Pollution Control Board (CPCB), the Competent Authority of CPCB has accorded approval for renewal of recognition of Environmental laboratory and Govt. Analysts. Subsequently, **M/s Vison Labs 16-11-23/37/A, Opp-RTA Office, Moosarambagh, Malakpet, Hyderabad -500036, Telangana** shall be notified considering the current requirement of mandatory accreditation / certifications of the laboratory **with a validity up to 22/07/2025** in the Gazette Notification of India.

2. The following analysts have been approved as Government Analysts:
   1. T. Laxmikanth Reddy
   2. L. Chandra Shekar Reddy
   3. K. Jitender Reddy

3. The laboratory should compulsorily follow the accepted terms and conditions and may undertake the following tests:
   a. **Physical Tests:** Conductivity, Colour, pH, Fixed & Volatile Solids, Total Solids, Total Dissolved Solids, Total Suspended Solids, Turbidity, Temperature, Velocity & Discharge Measurement of Industrial Effluent Stream, Odour, Salinity, Settleable Solids and Sludge Volume Index (SVI).
   b. **Inorganic (General and non-metallic):** Acidity, Alkalinity, Ammoniacal Nitrogen, Chloride, Chlorine Residual, Dissolved Oxygen, Fluoride, Total Hardness, Total Kjeldahl Nitrogen (TKN), Nitrite Nitrogen, Nitrate Nitrogen, Phosphate, Sulphate, Sulphite, Silica, and Cyanide.
   c. **Inorganic (Trace Metals):** Boron, Cadmium, Calcium, Total Chromium, Chromium Hexavalent, Copper, Iron, Lead, Magnesium, Mercury, Nickel, Potassium, Sodium, Sodium Absorption Ratio, Zinc, Arsenic, Aluminium, Beryllium, Barium, Lithium, Manganese, Selenium, Silver, Strontium, Tin, Antimony, Cobalt and Vanadium.
   d. **Organics (General) and Trace Organics:** Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Oil and Grease, Phenolic Compounds, Pesticides (each) (Organo-Chlorine and Organo Nitrogen-Phosphorus) Poly Chlorinated Biphenyl (PCBs) each, Polynuclear Aromatic Hydrocarbons (PAHs) each and Organic Carbon (in solid), Carbon/Nitrogen Ratio.
   e. **Microbiological Test:** Total Coliform, Faecal Coliform, *E. coli, Faecal Streptococci*, Total Plate Count and *Enterococcus*.

Contd.

'परिवेश भवन' पूर्वी अर्जुन नगर, दिल्ली-110032
Parivesh Bhawan, East Arjun Nagar, New Delhi - 110032
दूरभाष/Tel: 43102030, 22305792, वेबसाईट/Website : www.cpbc.nic.in

f. **Toxicological Tests:** Bioassay method for evaluation of toxicity using fish and Measurement of toxicity factor using zebra fish (dimensionless toxicity test).

g. **Characterization of Hazardous waste:** Preparation of Leachate (TCLP extract/water extract), Ignibility (Flash point), and Measurement of Heavy Metals/ Pesticides in the waste and leachate.

h. **Soil/Sludge/Sediment and Solid Waste:** Boron, Cation Exchange Capacity (CEC), Electrical Conductivity, Nitrogen (Available), Organic Carbon/Matter (Chemical Method), pH, Phosphorous (Available), Phosphate (Ortho), Phosphate (Total), Potassium, SAR in Soil Extract, Sodium, Soil moisture, TKN, Calorific Value, Ammonia, Bicarbonate, Calcium, Calcium carbonate, Colour, Heavy metal, Magnesium, Nitrate, Nitrite, Pesticide, Sulphate, Sulphur, TOC, and Water holding capacity.

i. **Ambient Air/ Fugitive Emissions:** Nitrogen Dioxide (NO_2), Sulphur Dioxide (SO_2), Total Suspended Particulate Matter, Respirable Suspended Particulate Matter PM_{10}, Ammonia, Carbon Monoxide, Lead, Ozone, Benzene Toluene Xylene (BTX), Polycyclic Aromatic Hydrocarbon (PAH) Benzo-a-pyrine & others and $PM_{2.5}$.

j. **Stack Gases/ Source Emission:** Particulate Matter, Sulphur Dioxide, Velocity & Flow, Carbon Dioxide, Carbon Monoxide, Temperature, Oxygen, Oxides of Nitrogen, Acid mist, Ammonia, Chlorine, Hydrogen Sulphide and Carbon Disulphide.

k. **Noise Level:** Noise Level Measurement (20-140 dBa) and Ambient Noise and Source Specific Noise.

l. **Meteorological:** Ambient Temperature, Wind Direction, Wind Speed, Relative Humidity, Solar Radiation and Rainfall

4. The laboratory shall compulsorily participate in the Analytical Quality Control (AQC) Exercise conducted by the CPCB to ascertain the capability of the laboratory and analysts. The lab shall submit quarterly progress report on the sample analysis carried out to CPCB.

5. The surprise inspection / periodic surveillance of the recognized environment laboratory will be undertaken to assess its proper functioning systematic operation and reliability of data generated at the laboratory by a Joint Team as per the Notification.

6. The laboratory should have the mandatory requisite accreditation and certificate of the ISO: 17025 and ISO:45001 as per rules. This recognition is subject to such accreditations and renewals as applicable and in case of serious non-compliance of any of the terms and conditions, the laboratory may be black listed for a minimum period of two years and civil/criminal proceedings, as applicable, may be initiated for performing functions on behalf of the Government in an unauthorized manner.

7. **M/s Vison Labs, Hyderabad, Telangana** is required to apply for further renewal of recognition through online using CPCB web portal (https://cpcbepalab.in/epalab) before expiry of recognition with mandatory accreditation / certification concerned.

Yours faithfully,

K. R 12/3/24

(Dr. K. Ranganathan)
Scientist-E & Divisional Head
Instrumentation laboratory

डॉ. के. रंगनाथन / Dr. K. Ranganathan
वैज्ञानिक 'ई' / Scientist 'E'
केंद्रीय प्रदूषण नियंत्रण बोर्ड
Central Pollution Control Board
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय, भारत सरकार
(M/o Environment, Forest & Climate Change, Govt. of India)
पर्यावरण भवन, पूर्वी अर्जुन नगर, दिल्ली-110032
Parivesh Bhawan, East Arjun Nagar, Delhi-110032

ISO CERTIFICATE

Scan this QR Code with smartphone to verify the certificate

CERTIFICATE OF REGISTRATION

This is to certify that:

M/S VISON LABS

H.NO. 16-11-23/37/A, FALT NO. 205, OPP: RTA OFFICE, MUSARAMBAGH, MALAKPET, HYDERABAD, TELANGANA - 500036, INDIA

the management system of the above organisation has been assessed and found to comply with the requirements of the management system standards detailed below:

STANDARD

ISO 9001:2015

Quality Management System

Certification Scope

Providing Environmental Consultancy and Analytical Services

Certification Calendar

Certificate Number UAF200695191	Date of Registration 23-Jul-2022
Client ID VI2154	Valid From 20-Jun-2023
Revision No. 01	Valid Until 19-Jun-2024

*Note: Certification cycle expiry date of this certificate is 22-Jul-2025.

Note: Surveillance 02 will be due in the month of Jun-2024.

Authorised Signatory

UAF CP 015 4834

*The full duration validity of this certificate is subject to successful & timely completion of the surveillance audit(s). This certificate remains the property of SAGACI Certifications Private Limited and shall have to be returned back when demanded. Information about this certificate can be inquired at the official website of certification.

SAGACI Entrusted Recognition

SAGACI CERTIFICATIONS PRIVATE LIMITED

THIS CERTIFICATE IS ISSUED BY SAGACI CERTIFICATIONS PRIVATE LIMITED ACCREDITED BY UNITED ACCREDITATION FOUNDATION INC., UAF, 400 NORTH CENTER DR STE 212, NORFOLK, VA 23502, USA. AND WILL REMAINS VALID SUBJECT TO MAINTAINING ITS SYSTEM TO THE REQUIRED STANDARD(S). THIS WILL BE MONITORED REGULARLY BY SAGACI.

Monitoring conducted by M/s Vison Labs, Hyderabad. Recognized by MoEF& CC, ISO 9001:2015 , OHSAS: 45001-2018 & Accredited by NAB vide Certificate Number – TC5064

OHSAS CERTIFICATE

Scan this QR Code with smartphone to verify the certificate

CERTIFICATE OF REGISTRATION

This is to certify that:

M/S VISON LABS

H.NO. 16-11-23/37/A, FALT NO. 205, OPP: RTA OFFICE, MUSARAMBAGH, MALAKPET, HYDERABAD, TELANGANA - 500036, INDIA

the management system of the above organisation has been assessed and found to comply with the requirements of the management system standards detailed below

STANDARD

ISO 45001:2018

Occupational Health & Safety Management System

Certification Scope

Providing Environmental Consultancy and Analytical Services

Certification Calendar

Certificate Number UAFZ006455192	Date of Registration 23-Jul-2022
Client ID VI2154	Valid From 20-Jun-2023
Revision No. 01	Valid Until 19-Jun-2024

'Note1': Certification cycle expiry date of this certificate is - 22-Jul-2025

Note2: Surveillance 02 will be due in the month of Jun-2024

Authorised Signatory

UNITED ACCREDITATION FOUNDATION UAF CB #51-0027

IAF

*The full duration validity of this certificate is subject to successful & timely completion of the surveillance audit(s). This certificate remains the property of SAGACI Certifications Private Limited and shall have to be returned back when demanded. Information about this certificate can be inquired at the official website of certification.

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NABL CERTIFICATE

National Accreditation Board for Testing and Calibration Laboratories

NABL

CERTIFICATE OF ACCREDITATION

VISON LABS

has been assessed and accredited in accordance with the standard

ISO/IEC 17025:2017

"General Requirements for the Competence of Testing & Calibration Laboratories"

for its facilities at

16-11-23/37/A, FLAT NO. 205, 2ND FLOOR, MOOSARAMBAGH, MALAKPET, HYDERABAD, TELANGANA, INDIA

in the field of

TESTING

Certificate Number: TC-5064

Issue Date: 26/11/2023 **Valid Until:** 25/11/2025

This certificate remains valid for the Scope of Accreditation as specified in the annexure subject to continued satisfactory compliance to the above standard & the relevant requirements of NABL.
(To see the scope of accreditation of this laboratory, you may also visit NABL website www.nabl-india.org)

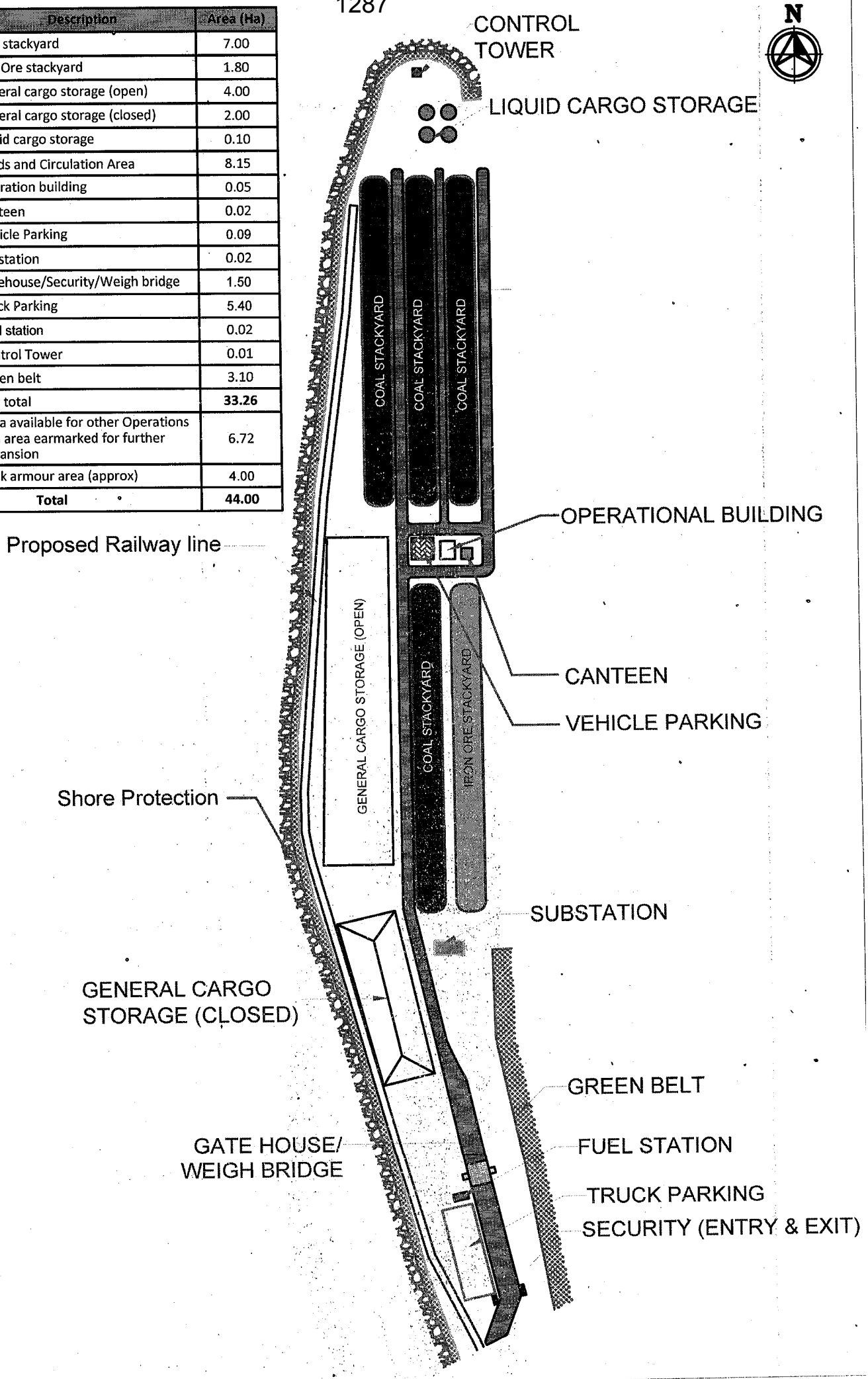
Name of Legal Entity: Vison Labs

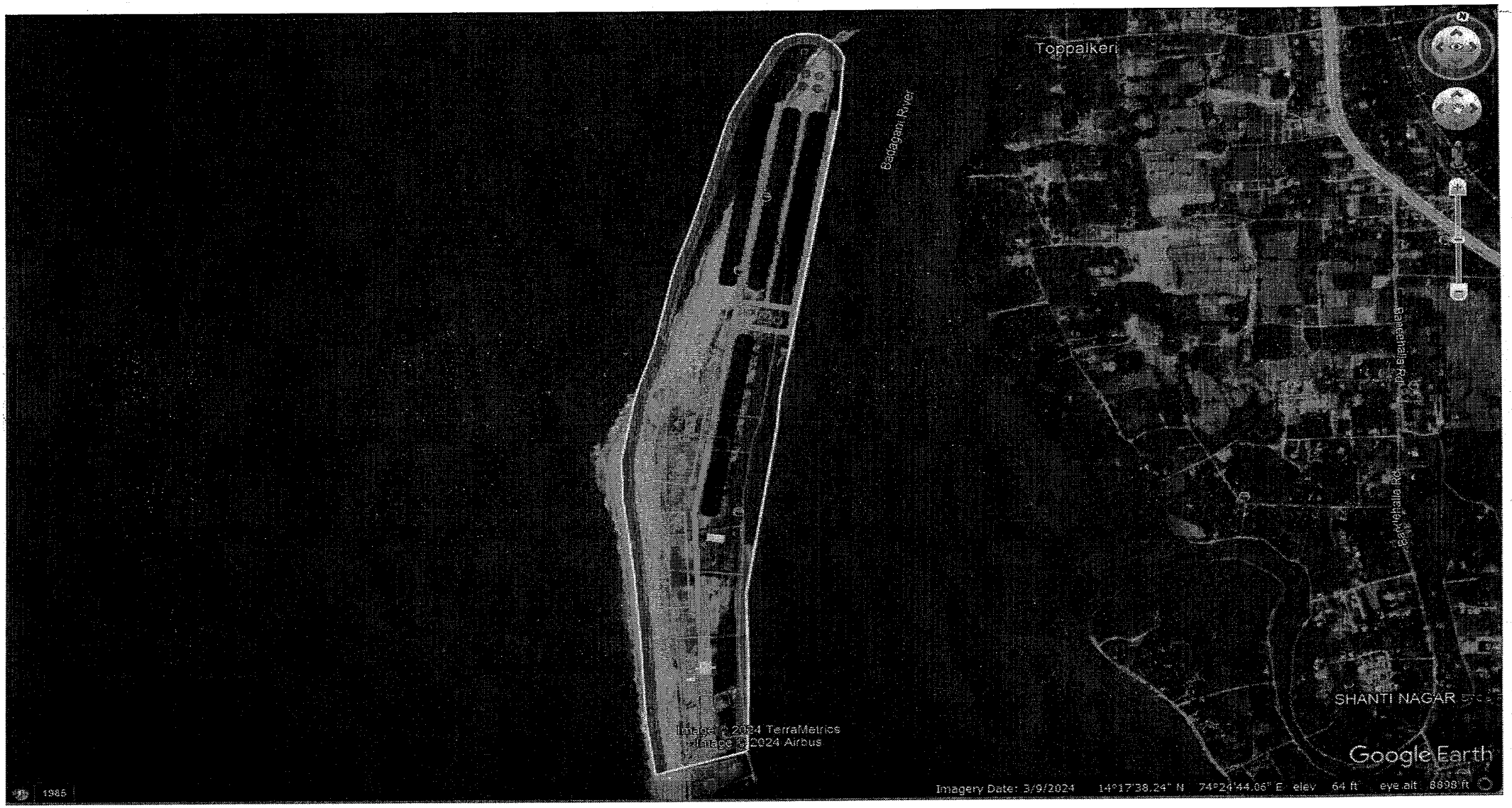
Signed for and on behalf of NABL

N. Venkateswaran
Chief Executive Officer

Layout Plan and KML Polygon for Applied Area of 44Ha

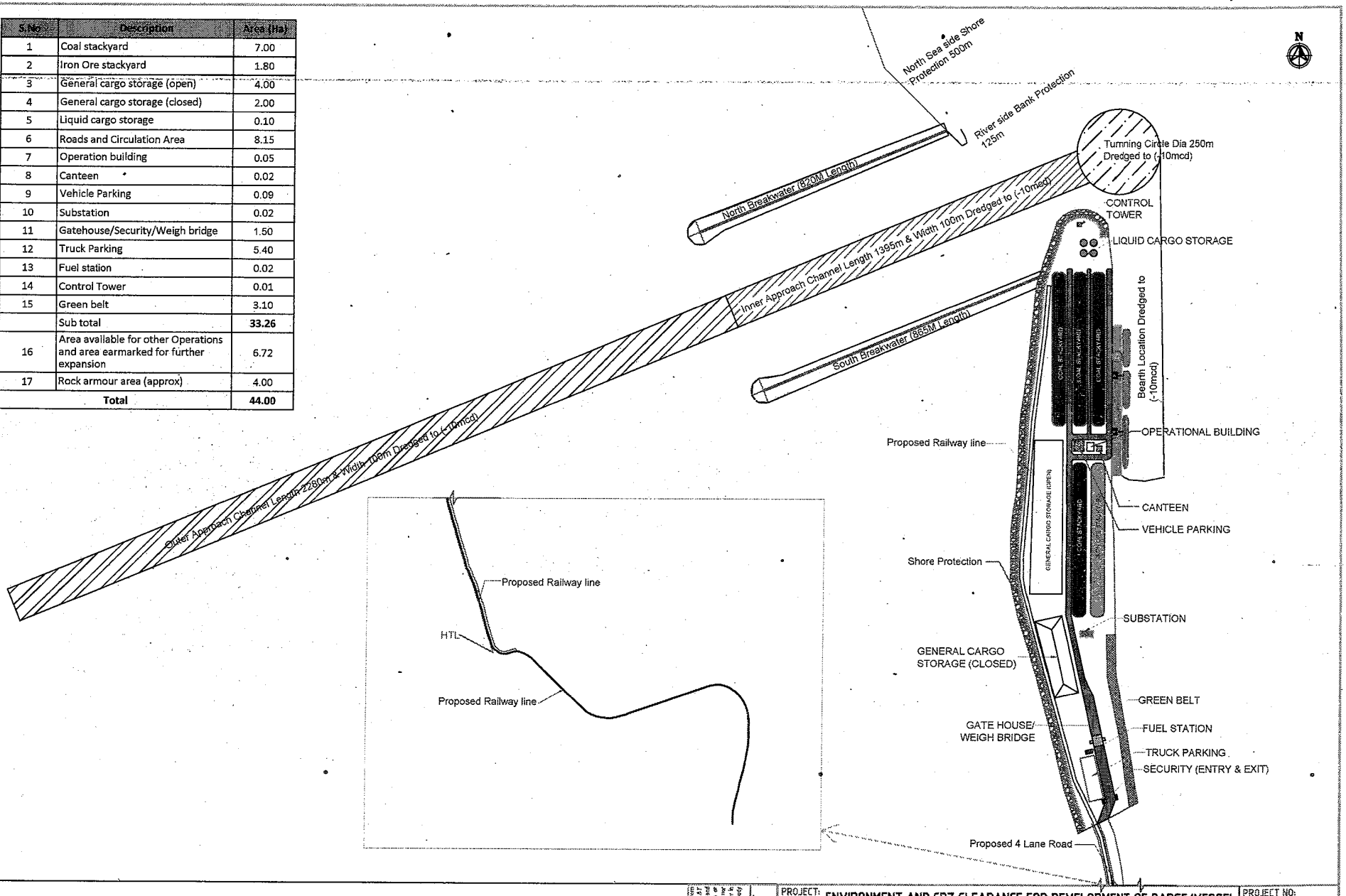
S.No	Description	Area (Ha)
1	Coal stackyard	7.00
2	Iron Ore stackyard	1.80
3	General cargo storage (open)	4.00
4	General cargo storage (closed)	2.00
5	Liquid cargo storage	0.10
6	Roads and Circulation Area	8.15
7	Operation building	0.05
8	Canteen	0.02
9	Vehicle Parking	0.09
10	Substation	0.02
11	Gatehouse/Security/Weigh bridge	1.50
12	Truck Parking	5.40
13	Fuel station	0.02
14	Control Tower	0.01
15	Green belt	3.10
	Sub total	**33.26**
16	Area available for other Operations and area earmarked for further expansion	6.72
17	Rock armour area (approx)	4.00
	Total	**44.00**





Layout Plan for 44 Ha

S.No	Description	Area (Ha)
1	Coal stackyard	7.00
2	Iron Ore stackyard	1.80
3	General cargo storage (open)	4.00
4	General cargo storage (closed)	2.00
5	Liquid cargo storage	0.10
6	Roads and Circulation Area	8.15
7	Operation building	0.05
8	Canteen	0.02
9	Vehicle Parking	0.09
10	Substation	0.02
11	Gatehouse/Security/Weigh bridge	1.50
12	Truck Parking	5.40
13	Fuel station	0.02
14	Control Tower	0.01
15	Green belt	3.10
	Sub total	**33.26**
16	Area available for other Operations and area earmarked for further expansion	6.72
17	Rock armour area (approx)	4.00
Total		**44.00**



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AUTO PATH: L:\PORTS\2024\C1241301 - EC-CRZ CLEARANCE HONNAVAR PORT\WORKING\DRAWINGS\DRAFT STAGE\DTS\LAYOUT PLAN FOR 4.4MA.DWG

TBA

This drawing is the property of Assystem India Limited (formerly known as L&T Infrastructure Engineering Ltd.) and may not be used by any person or body not authorised by us. It may not be copied or otherwise made use of either in full or in part by such person or body without our prior permission in writing.

PATH: REFER BOTTOM LEFT CORNER OF THE DRAWING

PROJECT: ENVIRONMENT AND CRZ CLEARANCE FOR DEVELOPMENT OF BARGE/VESSEL LOADING FACILITY FOR 4.9 MTPA AT HONNAVAR, UTTARA KANNDA

PROJECT NO: C1241301

TITLE: LAYOUT OF PROPOSED FACILITY

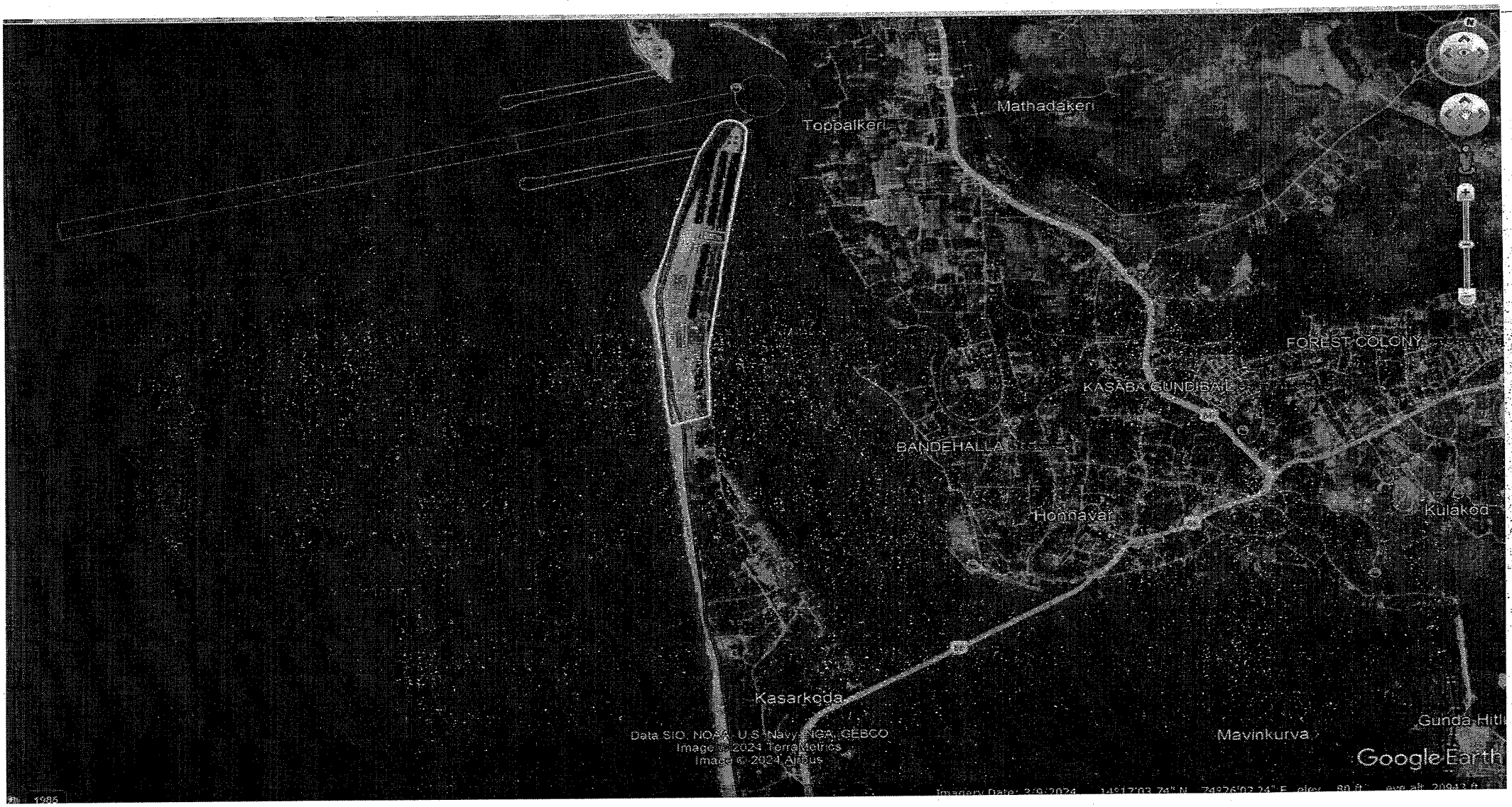
DATE: 27.08.2024

MADE: JMH

ASSYSTEM INDIA LIMITED

FIGURE NO: FD0201

REV: 0



Layout Plan for Honnavar Port

Dredging Material Disposal Coordinates and CRZ Clearance for same

Dredging material disposal coordinates and whether CRZ clearance has been obtained for same.

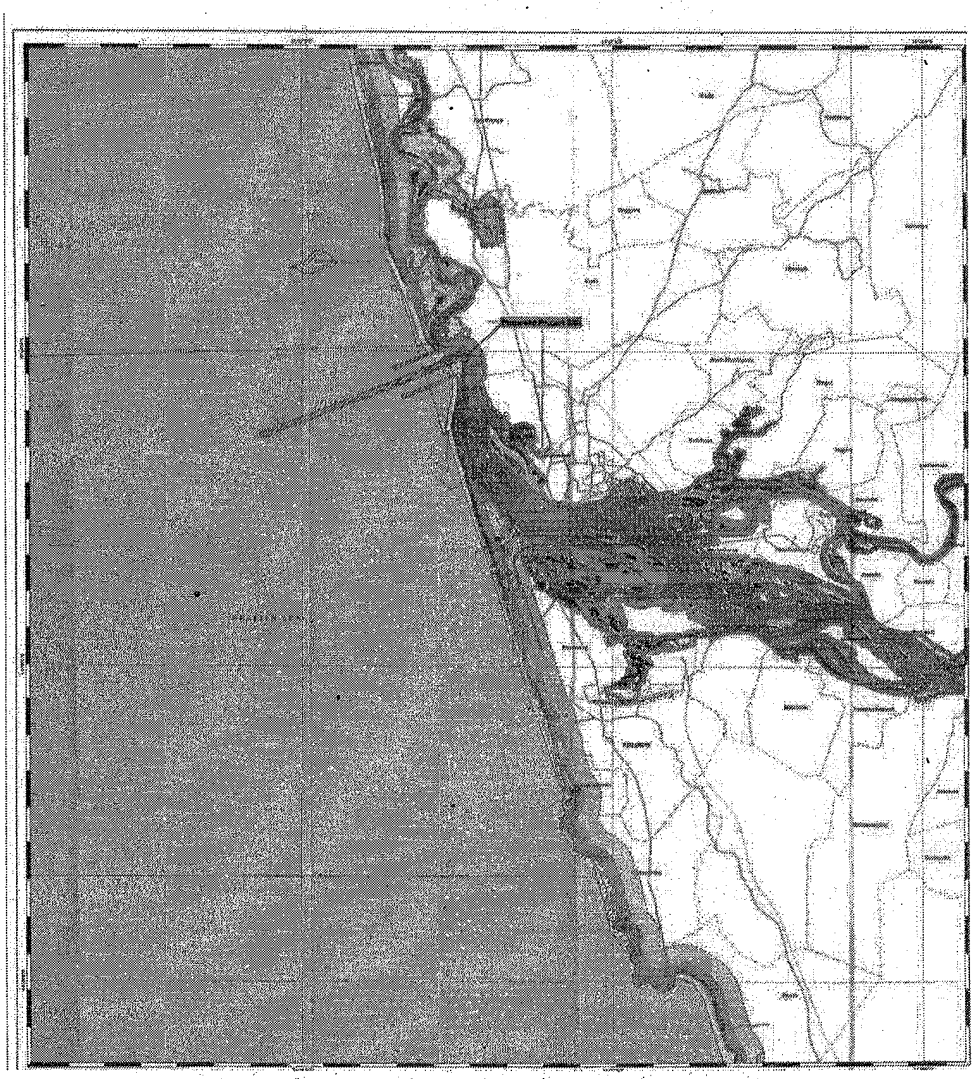
Dredge Disposal Study

Mathematical model study has been carried out to assess the fate of dredged spoil during dredging and dumping and its impact on the project area and near-shore regions. The dredging quantity during the proposed development is estimated to be 3.9 million m^3. Around 1.0 million cum of dredging quantity will be used for reclaiming purpose and the remaining quantity will be disposed in sea. MIKE 21 hydrodynamic model (with mud transport) has been used to simulate the suspended sediment concentration (SSC) and bed level changes when the dredged material is discharged into the sea.

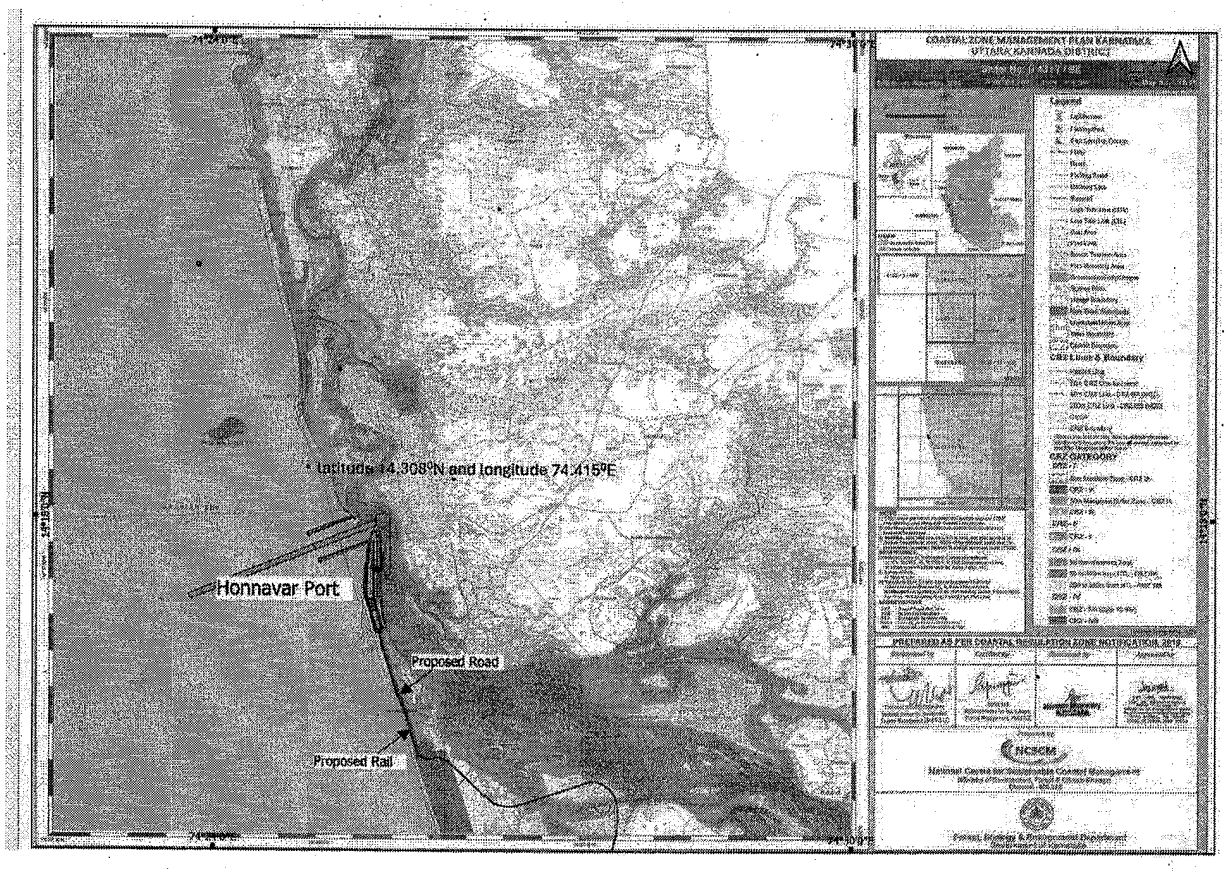
After examining several locations along the northern coast, the most suitable site for dredge disposal is recommended at a distance of about 2 km to the north of port entrance channel located at **latitude 14.308°N** and **longitude 74.415°E**. as shown in **Figure 1**.



Figure 1: Location of the proposed disposal site (Image courtesy: Google Earth)



CRZ 7 Km Map



Approved CZMP Map

During periods of strong near shore currents (during peak wet season), it is suggested to dispose the sediment offshore at greater depths (>30 m). Based on the studies it is concluded that the dredge disposal at the recommended site will not cause any natural imbalance to the nearby shoreline and will not affect the coastal eco-system in any way.

Earlier EC Clearance

EC & CRZ Clearance for Honnavar Port was accorded through vide No. SEIAA: 22: IND: 2011 dated 21st Sep 2012 by SEIAA, Karnataka. Further, EC & CRZ clearance validity extension for three years was obtained vide File No. SEIAA: 22: IND: 2011 dated July 01, 2019 and further EC & CRZ clearance validity extension for further one year was obtained through vide File No. SEIAA: 22: IND: 2011 dated September 20, 2023. Total land requirement for the proposed facility is 44 Ha. EC & CRZ clearance accorded for the port activities including dredging and disposal.

There is no change in the earlier proposal for which EC & CRZ clearance was accorded by SEIAA, Karnataka and regular compliance is being submitted. HPPL has obtained fresh Terms of Reference (ToR) from SEIAA, Karnataka through vide File No: SEIAA 02 IND 2024 dated August 12, 2024 and accordingly EIA study has been carried out.

Present Proposal

Present EC application is to obtain the valid EC for completion of initiated construction work, which was delayed due to various court cases and all the court verdicts are in favour of HPPL and now HPPL is intended to complete the initiated construction work. In the present proposal there is no change from the original proposal for which EC/CRZ was obtained from SEIAA and no

changes in pollution load and the CCR from RO, MoEF&CC dated 29.05.2024 obtained which mentions that about five percent of the project has been undertaken.

CRZ recommendations were obtained for the present proposal including dredging and disposal vide File No. KA/CRZ/UK/05/2024 dated October 25, 2024. As per the File No. IA 3 -12/1/2022-IA.III OM dated 29th November, 2022, any Project requiring CRZ Clearance and also Environmental Clearance as per EIA notification 2006, any project located in CRZ area that requires EC under Category B clearance for combined EC & CRZ shall be obtained from SEAC/SEIAA. Undertaking taking was given to KSCZMA vide letter No. HPPL/KC/2023-24 /75 dated 21.10.2024.

Hence, application has been submitted for combined EC & CRZ clearance.

HONNAVAR PORT (P) LTD.

No. HPPL/KC/2023-24/0076 Date: 25/10/2024

To

The Member Secretary
KSCZMA
MS Building
BENGALURU – 560001

Sir,

Sub: Reply to ADS raised in the Parivesh Portal on 25/10/2025 in respect of CRZ Proposal for Development of Barge/Vessel Loading Facility to handle 4.9 MTPA of cargo at Coastal sand spit, Kasarkod Tonka Village, Honnavar Taluka, Uttara Kannada District by Honnavar Port Private Limited (HPPL) (Online Proposal No. IA/KA/CRZ/496266/2024/IA/KA/CRZ/UK/05/2024) – reg

Ref: 1. Online Proposal No. IA / KA / CRZ / 496266 / 2024 / IA / KA/CRZ/UK/05/2024
2. ADS raised in the portal on 25/10/2024

In continuation with the KSCZMA meeting held on 21/10/2024 an ADS is raised today and we hereby oblige that we will abide by the recommendations/conditions stipulated by KSCZMA. In reply to ADS raised we hereby give the below undertakings:

Sl. No.	ADS Raised	Undertaking
1	There should be no violation of any of the provisions of CRZ Notification, 2019	Provisions of CRZ Notification, 2019 will not be violated.
2	Measures should be taken to collect and scientifically dispose of the solid wastes generated during the construction phase of the project as well as during the operation phase of the project.	The solid waste will be disposed of scientifically during the construction phase of the project as well as during the operation phase of the project.
3	No dumping of construction wastes in to the water bodies.	The construction waste will not be dumped in to the water bodies.
4	No mangrove/vegetation/organism should be damaged during construction.	Mangrove/vegetation/organism will not be damaged during construction.
5	There shall not be any dumping of solid wastes in to the water bodies.	Solid waste will not be dumped in to the water bodies.
6	During construction and operational stage no sewage shall be let into nearby water body.	Sewage will not be let into nearby water body during construction and operation stage.

Port Office : Kasarkod Tonka, Honnavar Taluk, Uttar Kannada District, Karnataka - 581 342.
Regd. Office : #103, Lalehzar Apartments, 45/1-2, Palace Road, Bangalore - 560 001, Karnataka, India.
Ph: +91-80-2235 3670, 4149 4960 Fax : +91-80-2235 3671 Email : info@honnavarport.com

HONNAVAR PORT (P) LTD.

7	All provisions of CRZ Notification, 2019 shall be followed.	All provisions of CRZ Notification, 2019 will be followed.
8	There should be no violation of any of the provision of CRZ Notification, 2019.	It will be ensured that there will be no violation of any of the provisions of CRZ Notification, 2019.
9	Shoreline Management Plan approved for Karnataka may strictly be followed.	The Shoreline Management Plan approved for Karnataka will be strictly followed.

Therefore, it is kindly requested to recommend the project proposal to SEIAA for grant of EC.

Thanking You.

Yours faithfully,
For HONNAVAR PORT PRIVATE LIMITED

Executive Director/Authorised Signatory
Honnavar Port Pvt. Ltd.

Sri Chamakeshava
69
Proposed Railway line
Proposed Railway line

HONNAVAR PORT (P) LTD.

No. HPPL/KC/2023-24/82 Date: 13/11/2024

To

The Chairman
State Expert Appraisal Committee (SEAC), Karnataka
MS Building
BENGALURU – 560001

Sir,

Sub: Request for issue of Environmental and CRZ clearance for Development of Barge/Vessel Loading Facility to handle 4.9 MTPA of cargo at Coastal sand spit, Kasarkod Tonka Village, Honnavar Taluka, Uttara Kannada District by Honnavar Port Private Limited (HPPL) (Online Proposal No. SIA/KA/Infra-1/496848/2024, File # SEIAA 02 IND 2024) - reg

Ref: 321st SEAC meeting, Agenda ID EC/Agenda/SEAC/431958/11/2024, S. No. 1

In continuation with the SEAC meeting held today, November 13, 2024 to appraise the Development of Honnavar port for award of Environmental and CRZ Clearance, we hereby give the below undertakings:

1) All the mitigation measures as proposed in the Environmental Impact Assessment (EIA) shall be taken up as part of the Environmental Management Plan and be appropriately implemented during project construction and operation stages. These shall be in line with prevailing best management practices being followed at other operational ports.
2) Turtle nesting is not present within the proposed project development area of 44 Ha. The matter of turtle nesting in the project area has been debated in the writ petition (# 4039 of 2021) filed in the Hon'ble High Court of Karnataka, Bengaluru. As per the direction of the Hon'ble court, NCSCM, Chennai has prepared site specific report regarding turtle nesting in the project area of 44 Ha and reported no turtle nesting in the project area. The Hon'ble Court of Karnataka has disposed the writ petition in favor of GoK/HPPL. This has also been debated in the Hon'ble NGT, Southern Zone Chennai OA # 76 of 2022. The Hon'ble NGT has also disposed the OA in favor of GoK/HPPL.
   In addition, the CZMP maps prepared as per CRZ Notification, 2019 by NCSCM, Chennai, there is no turtle nesting area marked in the project area. Sporadic turtle nesting is observed south of the port in the proposed four lane road connectivity to port project boundary from NH-66. In this regards, PCCF (Wildlife) and Chief Wildlife Warden, Karnataka has approved wildlife mitigation measures for protecting of the turtle nesting areas. For the same, HPPL will deposit an amount of Rs. 8.00 Lakhs (Rs. 4.00 Lakhs has already been deposited) on annual basis to Forest Department for undertaking the necessary mitigation measures. PCCF letter is herewith being enclosed.
3) Shoreline protection measures such as construction of shore protection wall shall be provided. Measures as suggested in the EIA Report (Section 2.7.14) shall be appropriately implemented as per the requirement.

Port Office : Kasarkod Tonka, Honnavar Taluk, Uttar Kannada District, Karnataka - 581 342.
Regd. Office : #103, Lalehzar Apartments, 45/1-2, Palace Road, Bangalore - 560 001, Karnataka, India.
Ph : +91-80-2235 3670, 4149 4960 Fax : +91-80-2235 3671 Email : info@honnavarport.com

HONNAVAR PORT (P) LTD.

4) We are also enclosing the NOC issued by the Kasarkod Gram Panchayat for allocation of water and power supply.
5) As part of the proposed project CSR, activities such as health services (conducting periodic health camps, procurement of essential medical equipment's, etc.), providing protected water supply, educational facilities (strengthening of primary and high schools with teaching aids, mobile laboratory and computer education, setting up of libraries, etc.), creating job opportunities, skill development will be taken up.

We hereby request SEAC to consider the above undertaking and kindly grant the Environmental and CRZ Clearance for development of the port.

Yours faithfully,

Executive Director
Honnavar Port Pvt. Ltd.

Encl: As above

Copy submitted for kind information to The Member Secretary, State Expert Appraisal Committee (SEAC), Karnataka, MS Building, BENGALURU – 560001.

Port Office : Kasarkod Tonka, Honnavar Taluk, Uttar Kannada District, Karnataka - 581 342
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ENVIRONMENTAL DATA GENERATION REPORT

Client

M/s. HONNAVAR PORT (P). LTD.
Kasarkod Tonka,
Honnavar Taluka, Uttar Kannada District,
Karnataka-581342.

CONDUCTED BY

VISON LABS
ENVIRONMENTAL CONSULTANTS & ANALYTICAL SERVICES

Recognised by MoEF&CC, ISO 9001:2015, OHSAS 45001:2018
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Above Union Bank of India, Opp: R.T.A Office,
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R E P O R T

FOR

M/s. HONNAVAR PORT (P) LTD.
Kasarkod Tonka,
Honnavar Taluka, Uttar Kannada District,
Karnataka-581342.

For and behalf of Vison Labs

Approved By	: T Laxmikanth Reddy
Signed	:
Position	: Chief Executive
Date	: From July-2019 to December-2019

This report has been prepared by Vison Labs with all reasonable skill, care and diligence within the terms of the contract with the client, incorporating our General Terms and Conditions of Business and taking account of the resources devoted to it by agreement with the client.

We disclaim any responsibility to the client and others in respect of any matters outside the scope of the above.

This report is confidential to the client and we accept no responsibility of whatsoever nature to third parties to whom this report, or any part thereof, is made known, any such party relies on the report at their own risk.

SCOPE OF WORK

Monitoring of Ambient Air Quality, Water quality, Soil quality, Ambient Noise Quality measurement, Marine Water, Plankton & Benthic Communities and Sediment Quality are part of the scope of work given to M/s Vison Labs. The environmental Monitoring has been carried out at the following locations:

A] Ambient Air Quality Locations:

Location Code	Ambient Air Location Details
AQ-1	Project Site
AQ-2	Kasarkod Village
AQ-3	Honnavar Village
AQ-4	Kulkod Village
AQ-5	Ramatheerth Village

C] Ambient Noise Quality Locations:

Location Code	Noise Level Location Details
N-1	Project Site
N-2	Kasarkod Village
N-3	Honnavar Village
N-4	Kulkod Village
N-5	Ramatheerth Village

D] Ground Water Quality Locations:

Location Code	Ground Water Location Details
GW-1	Honnavar Village
GW-2	Kasorkod Village

E] Surface water Quality Location:

Location Code	Surface Water Locations Details
SW-1	Sharavati River
SW-2	Badgani River

F] Soil Quality Locations:

Location Code	Soil Locations Details
S-1	Project Site
S-2	Honnavar Village
S-3	Kasarkod Village

G]Marine Water Quality/Plankton/Sediment/Benthic Communities

Location Code	Marine/Sediment/Benthic Communities Location Details
M-1	Dredge Spoil Disposal Area
M-2	Northern Break Water
M-3	Southern Break Water
M-4	Inner Navigation Channel
M-5	Sharavari River, Near Berthing Area
M-6	Sharavati/Badgani River Mouth (Near Confluence Point)

MONITORING AND ANALYSIS METHODOLOGY

The consultant had Pre-identified the monitoring stations for Air, Water and Noise. Time bound program for carrying out fieldwork was prepared and was followed as far as possible. The IS methods are followed to decide the monitoring stations, analysis of different samples and also alternative methods are used, where the cross verification is required.

Ambient Air Quality Monitoring:

Respirable Dust Samplers (RDS) with gaseous attachment have been used for PM10/PM2.5 Sampling. RDS with Gaseous attachment assembly is used for the collection of gaseous pollutants such as SO_2, NO_2, HC and CO.

Ambient Air monitoring instruments

Instrument	Make	Model No.	Range and Sensitivity	
			PM10/PM2.5	Gases
Respirable Dust Sampler (RDS)	M/s. ECO Tech	AAS-271	PM_{10} 2.3 m^3/hour $PM_{2.5}$ 1.0 m^3/hour ±0.02 m^3/hour	0 – 3 LPM ± 0.2 LPM

Testing Method to be followed for Ambient Air Quality

Particular		Testing Method to be Followed
Ambient Air Monitoring Parameter		
A.	PM_{10}	IS-5182 (part – IV) 2006, RA-2017
B.	$PM_{2.5}$	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
C.	SO_2 (Sulfur Dioxide)	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
D.	NO_2 (Nitrogen Dioxide)	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
E.	CO (Carbon Monoxide)	IS: 5182 P 10– 1999 NDIR Method
F.	Hydro Carbons	IS 5182: Part-17

Noise Level Measurement

Instant sound level meter is used for the collection of data related to noise at an interval of one hour per reading. Noise level for 24 hours was conducted location.

Noise (Sound) Measuring Instrument

Instrument	Make	Model No.	Detection Limit
Integrated Sound Level Measurement Instrument Standard Accessories	HTC	SL-1352	Lower level: 35-80dB(A) Higher level: 80-130dB(A)

Testing Method to be followed

S.No.	Particular		Testing Method to be Followed
1	Noise Level Measurement		
	A	Noise Level in dB (A) for continuous 24 hours at 1 hour interval	Comply With IEC61672-1 Class2 Standard

Water Quality Survey

Water samples were collected in Pre-sterilized sampling container. Chemical and Metals analysis was carried out as per standard Methods for water Analysis, Published by BIS, AWWA, APHA, etc.

Soil Quality Survey

Soil samples were collected in sealed sampling Polyethylene covers. Chemical and Metals analysis was carried out as per standard Methods for Soil Analysis, Published by BIS etc.

Quality Assurance

VISON LABS is accredited by Ministry Of Environment & forests, GOVT. OF INDIA and follows quality systems as per ISO 9001:2015. The QA/QC procedures are laid prior to sample collection and laboratory analysis. It includes the standard procedures of sample collection, preservation, transportation and laboratory analysis with all documented procedures and continuous monitoring of Quality Control Division.

Results of Survey Data

The Survey results of Ambient Air Quality, Ambient Noise Monitoring and Water Sampling analysis are presented below

Ambient Air Quality Monitoring

The Ambient Air Quality has been monitored at five locations. The table showing Ambient Air Quality is present in **Table -1 to Table 5** respectively.

TABLE-1

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Near Project House
Date of Monitoring : 11.07.2019
Ambient Temperature °C : 27 (Average)
Wind Direction : SE
Weather Condition : Clear
Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	45	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	23	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	5.9	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	15.2	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-2

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Kasarkod Village
Date of Monitoring : 11.07.2019
Ambient Temperature °C : 27 (Average)
Wind Direction : SE
Weather Condition : Clear
Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	50	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	26	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	6.4	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	17.3	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-3

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Honnavar Village
Date of Monitoring : 11.07.2019
Ambient Temperature °C : 27 (Average)
Wind Direction : SE
Weather Condition : Clear
Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	48	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	25	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	7.1	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	18.3	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-4

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Kulkod Village
Date of Monitoring : 12.07.2019
Ambient Temperature °C : 27 (Average)
Wind Direction : SE
Weather Condition : Clear
Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	42	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	22	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	5.8	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	15.4	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb.	<0.1	--	IS 5182: Part-17

Environmental Data Generation Report for Paradip Port Trust, Odisha

TABLE-5

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Ramtheerth Village

Date of Monitoring : 12.07.2019

Ambient Temperature °C : 27 (Average)

Wind Direction : SE

Weather Condition : Clear

Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	37	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	19	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	4.6	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	13.7	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-6

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Near Project Site

Date of Monitoring : 29.07.2019

Ambient Temperature °C : 26 (Average)

Wind Direction : SE

Weather Condition : Clear

Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	52	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	27	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	5.7	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	15.6	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-7

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Kasarkod Village

Date of Monitoring : 29.07.2019

Ambient Temperature °C : 26 (Average)

Wind Direction : SE

Weather Condition : Clear

Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	56	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	29	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	6.9	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	19.3	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-8

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Honnavar Village

Date of Monitoring : 29.07.2019

Ambient Temperature °C : 26 (Average)

Wind Direction : SE

Weather Condition : Clear

Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	55	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	28	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	6.4	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	16.8	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-9

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Kulkod Village
Date of Monitoring : 30.07.2019
Ambient Temperature °C : 26 (Average)
Wind Direction : SE
Weather Condition : Clear
Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	46	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	24	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	6.0	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	17.2	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-10

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Ramtheerth Village
Date of Monitoring : 30.07.2019
Ambient Temperature °C : 26 (Average)
Wind Direction : SE
Weather Condition : Clear
Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	41	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	20	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	5.0	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	14.8	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

AMBIENT NOISE LEVELS IN THE STUDY AREA

The statistical analysis is done for measured noise levels at ten locations in the study area. The parameters are analyzed for L_{day} and L_{night}, The statistical analysis results are given in **TABLE-11**

TABLE-11

Ambient Noise Quality Locations

Location Code	Location Name	Date Of Monitoring
N-1	Project Site	11.07.2019
N-2	Kasarkod Village	11.07.2019
N-3	Honnavar Village	11.07.2019
N-4	Kulkod Village	12.07.2019
N-5	Ramatheerth Village	12.07.2019

TABLE-11

Ambient Noise Quality Locations

Location Code	Location Name	Date Of Monitoring
N-1	Project Site	29.07.2019
N-2	Kasarkod Village	29.07.2019
N-3	Honnavar Village	29.07.2019
N-4	Kulkod Village	30.07.2019
N-5	Ramatheerth Village	30.07.2019

TABLE-11

AMBIENT NOISE LEVELS IN THE STUDY AREA

All the values are expressed in dB (A)

Time	N-1	N-2	N-3	N-4	N-5	N-1	N-2	N-3	N-4	N-5
HOURS										
06:00 – 07:00	46.2	43.8	44.6	44.3	44.8	47.3	45.4	44.9	46.1	43.0
07:00 – 08:00	49.5	46.1	47.9	47.8	46.1	50.1	48.8	47.9	49.5	45.2
08:00 – 09:00	52.4	49.7	50.3	49.6	50.3	49.5	50.1	50.2	51.4	46.1
09:00 – 10:00	50.3	51.5	53.7	51.4	48.6	52.7	49.6	49.8	52.3	49.5
10:00 – 11:00	52.8	53.2	55.1	50.2	51.2	54.3	52.1	51.3	49.8	51.4
11:00 – 12:00	56.1	50.5	52.8	49.3	52.8	55.7	53.5	52.5	51.2	49.7
12:00 – 13:00	53.4	52.5	53.1	52.6	48.3	52.1	52.4	50.4	53.5	47.5
13:00 – 14:00	57.5	50.4	50.7	50.9	46.5	55.4	50.4	53.1	50.7	50.3
14:00 – 15:00	60.1	49.7	51.8	51.3	49.1	56.1	52.8	51.7	53.6	52.7
15:00 – 16:00	62.4	51.3	54.6	49.5	52.3	53.8	53.6	52.2	50.4	51.3
16:00 – 17:00	58.6	52.7	52.8	52.3	50.5	52.1	54.7	54.5	54.6	49.7
17:00 – 18:00	55.7	54.1	51.4	50.1	52.4	54.4	52.5	50.3	52.1	52.7
18:00 – 19:00	54.4	52.6	49.5	49.7	49.7	51.6	51.4	48.7	50.6	49.6
19:00 – 20:00	52.8	50.8	47.3	47.3	46.5	49.5	48.9	46.5	51.1	47.4
20:00 – 21:00	50.1	49.2	44.5	45.4	44.9	47.2	47.3	45.2	48.3	44.3
21:00 – 22:00	48.3	47.4	42.1	42.8	42.8	45.4	45.5	43.8	45.6	42.8
22:00 – 23:00	45.7	45.1	40.5	40.6	40.5	42.8	42.8	41.4	43.7	40.3
23:00 – 24:00	43.6	43.8	39.3	38.9	38.7	40.3	40.4	40.8	41.4	38.6
24:00 – 01:00	40.8	40.4	37.5	37.3	36.1	39.7	38.6	38.5	39.2	37.4
01:00 – 02:00	39.2	38.3	34.7	35.9	34.8	37.4	36.9	36.4	36.7	33.7
02:00 – 03:00	36.7	35.2	33.2	34.4	33.4	35.9	34.7	34.2	37.5	35.3
03:00 – 04:00	38.9	33.8	35.9	36.2	35.1	37.4	35.2	33.9	38.1	37.6
04:00 – 05:00	40.2	36.2	38.6	39.5	37.2	40.3	38.1	36.2	39.6	38.9
05:00 – 06:00	43.6	39.5	41.2	41.3	39.6	42.8	41.3	39.1	42.8	39.4
L Day	**55.9**	**50.9**	**51.4**	**49.7**	**49.4**	**52.7**	**51.3**	**50.4**	**51.2**	**49.3**
L Night	**42.0**	**40.6**	**38.3**	**38.6**	**37.6**	**40.2**	**39.3**	**38.3**	**40.5**	**38.1**

TABLE-12

Ground Water Quality

Two Ground water samples was collected and analyzed. The analytical results are given in **TABLE-12**

Location Code	Bore Well Location	Date of Sampling
GW-1	Honnavar Village	12.07.2019
GW-2	Kasarkod Village	12.07.2019

TEST RESULTS

S.No.	Parameters	Units	Test Method	Results		Drinking Water Limits As per IS: 10500; 2012	
				GW-1	GW-2	Desirable Limits	Permissible limits in absence of alternative Source
1.	pH @25^{0}C	--	IS:3025 part 11 1983, RA-2017	6.56	6.92	6.50 – 8.50	No relaxation
2.	Conductivity@25^{0}C	µmhos/cm	IS: 3025 Part 14 1984 RA-2013	384	404	--	--
3.	Temperature	^{0}C	IS: 3025 Part 1 1984 RA-2014	25.1	24.9	--	--
4.	Total Dissolved Solids	mg/L	IS: 3025 Part 16 1984, RA-2017	258	290	500	2000
5.	Total Suspended Solids	mg/L	IS 3025 Part 17 1984, RA-2017	<1.0	<1.0	--	--
6.	Turbidity	NTC	IS: 3025 Part 10 1984, RA-2017	<1.0	<1.0	1	5
7.	Total Hardness as $CaCO_3$	mg/L	IS: 3025 Part 21 2009, RA-2014	120	150	200	600
8.	Calcium as Ca	mg/L	IS: 3025 Part 40 1991, RA-2014	28.0	32.0	75	200
9.	Magnesium as Mg	mg/L	IS: 3025 Part 46 1994, RA-2014	12.0	16.8	30	100
10.	Chloride as Cl	mg/L	IS: 3025 Part 32 1988, RA-2014	35.0	20.0	250	1000
11.	Sulphate as SO_4	mg/L	IS: 3025 Part 24 1986, RA-2014	42.0	24.3	200	400
12.	Sodium as Na	mg/L	IS: 3025 Part 45 1993, RA-2014	29.6	21.0	---	---
13.	Potassium as K	mg/L	IS: 3025 Part 45 1993, RA-2014	2.1	2.0	---	---
14.	Nitrate as NO_3	mg/L	IS: 3025 Part 34 1988, RA-2014	5.0	4.7	45	No Relaxation
15.	Iron as Fe	mg/L	IS: 3025 Part 53 2003, RA-2014	0.08	0.10	0.3	No Relaxation
16.	Lead as Pb	mg/L	IS 3025 Part 47 1994, RA2014	<0.001	<0.001	0.01	No Relaxation
17.	Dissolved Oxygen	mg/L	IS 3025 Part 38 2009	<1.0	<1.0	--	--
18.	Biological Oxygen Demand(3 Days For27^{0}C)	mg/L	IS 3025 Part 44 1993, RA-2014	<3.0	<3.0	--	--
19.	Chemical Oxygen Demand	mg/L	IS 3025 Part 58 2006, RA-2017	<4.0	<4.0	--	--
20	Oil & Grease	mg/L	IS 3025 Part 39 :1991, RA-2014	<1.0	<1.0	--	--
21.	Coli form Bacteria	CFU /100ml	IS: 15185: 2016	Not Detected	Not Detected	Must not be Detected	
22.	E. Coli	CFU /100ml	IS: 15185: 2016	Not Detected	Not Detected	Must not be Detected	

Surface Water Quality

Two Surface water samples was collected and analyzed. The analytical results are given in **TABLE-13**

TABLE-13

Surface water Quality Location

Location Code	Location Name	Sample Collection Dates
SW1	Sharavati River	12.07.2019
SW2	Badgani River	12.07.2019

TEST RESULTS

S.No.	Parameters	Units	Test Method	Results		Limits as Per As per IS: 2296 Class C
				SW-1	SW-2	
1.	pH @25^{0}C	--	IS:3025 part 11 1983, RA-2017	8.49	7.70	6.5-8.5
2.	Conductivity@25^{0}C	µmhos/cm	IS: 3025 Part 14 1984 RA-2013	2424	32206	--
3.	Temperature	^{0}C	IS: 3025 Part 1 1984 RA-2014	25.1	25.3	--
4.	Total Dissolved Solids	mg/L	IS: 3025 Part 16 1984, RA-2017	1462	20540	1500 max
5.	Total Suspended Solids	mg/L	IS 3025 Part 17 1984, RA-2017	12	18	--
6.	Turbidity	NTC	IS: 3025 Part 10 1984, RA-2017	3.10	4.20	--
7.	Total Hardness as $CaCO_3$	mg/L	IS: 3025 Part 21 2009, RA-2014	270	4100	--
8.	Calcium as Ca	mg/L	IS: 3025 Part 40 1991, RA-2014	64.0	344.0	--
9.	Magnesium as Mg	mg/L	IS: 3025 Part 46 1994, RA-2014	26.4	778.0	--
10.	Chloride as Cl	mg/L	IS: 3025 Part 32 1988, RA-2014	575	11109	600
11.	Sulphate as SO_4	mg/L	IS: 3025 Part 24 1986, RA-2014	304	273	400
12.	Nitrate as NO_3	mg/L	IS: 3025 Part 34 1988, RA-2014	27.7	44.7	50
13.	Iron as Fe	mg/L	IS: 3025 Part 53 2003, RA-2014	0.24	0.28	50
14.	Lead as Pb	mg/L	IS 3025 Part 47 1994, RA2014	<0.001	<0.001	0.1
15.	Dissolved Oxygen	mg/L	IS 3025 Part 38 2009	4.2	4.5	4-6
16.	Biological Oxygen Demand (3 Days For27°C)	mg/L	IS 3025 Part 44 1993, RA-2014	<3.0	03	<3.0
17.	Chemical Oxygen Demand	mg/L	IS 3025 Part 58 2006, RA-2017	10	16	--
18.	Oil & Grease	mg/L	IS 3025 Part 39 :1991, RA-2014	<1.0	<1.0	0.1
19.	Coli form Bacteria	CFU /100ml	IS: 15185: 2016	210	440	Should not exceed 5000

Soil Quality Analysis

Three Soil samples was collected and analyzed. The analytical results are given in below Table-14

Table-14

Soil Quality Location:

Location Code	Soil Sampling Location	Sampling dates
S-1	Near Project Site	12.07.2019
S-2	Honnavar Village	12.07.2019
S-3	Musadia VillageKasarkod Village	12.07.2019

TEST RESULTS

Sr. No.	Parameters	Units	Test Method	Results		
				S-1	S-2	S-3
01.	pH (10% Slurry) at 25 °C	-	IS 2720 Part-26 1987, RA-2011	8.12	7.36	7.32
02.	Conductivity at 25°C	dS/m (deci-Siemens/meter)	IS 14767:2000, RA-2010	425	154	165
03.	Moisture	%	FAO Method (Page 23) Air dry Oven Method):2007	26.5	24.5	23.5
04.	Texture	--	Soil & Solid Waste Analysis Mr.P.K Behera	Sandy	Clay	Clay
05.	Bulk density	Gram/cc	EPA 3050B:1996 Rev.2	1.41	1.26	1.29
06.	Sodium Absorption Ratio	Mcq/kg	IS 11624:1986, RA-2001	1.16	0.22	0.18
07.	Calcium as Ca	mg/kg	FAO Method (Page 44):2007	3.45	1.35	2.21
08.	Magnesium as Mg	mg/kg	FAO Method (Page 44):2007	0.86	0.97	0.87
09.	Oil & Grease	mg/kg	EPA Method 1664	<1.0	<1.0	<1.0
10.	Nitrogen as N	mg/kg	IS 14684: 1999 (RA - 2014)	125	386	392
11.	Potassium as K	mg/kg	Methods of Analysis of Soil FAO -2007,Page 77	12.6	225.6	215
12.	Phosphorus as P	mg/kg	FAO Method (Page.No-75) 2007(Olsen's method)	10.8	55.2	52
13.	Zinc as Zn	mg/kg	EPA 3050B:1996 Rev.2	0.92	4.68	5.2
14.	Lead as Pb	mg/kg	EPA 3050B:1996 Rev.2	<0.002	<0.002	<0.002

TABLE-15
Marine Water Quality

Six Marine water samples was collected and analyzed. The analytical results are given in **TABLE-15**

Location Code	Bore Well Location	Date of Sampling
M-1	Dredge Spoil Disposal Area	13.07.2019
M-2	Northern Break Water	13.07.2019
M-3	Southern Break Water	13.07.2019
M-4	Inner Navigation Channel	13.07.2019
M-5	Sharavari River, Near Berthing Area	13.07.2019
M-6	Sharavati/Badgani River Mouth (Near Confluence Point)	13.07.2019

TEST RESULTS

S.No.	Parameters	Units	Test Method	Results					
				M-1	M-2	M-3	M-4	M-5	M-6
1.	pH @25^{0}C	--	IS:3025 part 11 1983, RA-2017	8.37	7.54	8.39	8.42	7.69	7.98
2.	Conductivity@25^{0}C	µmhos/cm	IS: 3025 Part 14 1984 RA-2013	37946	40016	39464	34662	3864	4746
3.	Temperature	°C	IS: 3025 Part 1 1984 RA-2014	25.1	25.8	24.9	25.3	24.7	25.3
4.	Total Dissolved Solids	mg/L	IS: 3025 Part 16 1984, RA-2017	24190	25194	25032	22140	2458	3012
5.	Total Suspended Solids	mg/L	IS 3025 Part 17 1984, RA-2017	40	38	44	32	13	14
6.	Turbidity	NTC	IS: 3025 Part 10 1984, RA-2017	22.4	29.6	32.1	24.4	4.20	5.30
7.	Total Hardness as $CaCO_3$	mg/L	IS: 3025 Part 21 2009, RA-2014	6000	6000	5960	5350	390	420
8.	Calcium as Ca	mg/L	IS: 3025 Part 40 1991, RA-2014	380.0	352.0	340.0	320.0	32.0	36.0
9.	Magnesium as Mg	mg/L	IS: 3025 Part 46 1994, RA-2014	1212.0	1228.8	1226.4	1092.0	74.4	79.2
10.	Chloride as Cl	mg/L	IS: 3025 Part 32 1988, RA-2014	13105	13730	13655	12005	1140	1200
11.	Sulphate as SO_4	mg/L	IS: 3025 Part 24 1986, RA-2014	264.1	416.1	278	223	221	562
12.	Nitrate as NO_3	mg/L	IS: 3025 Part 34 1988, RA-2014	49.7	47.2	45.3	44.1	22.0	28.9
13.	Iron as Fe	mg/L	IS: 3025 Part 53 2003, RA-2014	0.34	0.28	0.34	0.36	0.21	0.24
14.	Lead as Pb	mg/L	IS 3025 Part 47 1994, RA2014	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
15.	Dissolved Oxygen	mg/L	IS 3025 Part 38 2009	4.90	5.2	5.0	4.8	4.6	4.4
16.	Biological Oxygen Demand (3 Days For27°C)	mg/L	IS 3025 Part 44 1993, RA-2014	08	09	08	10	08	10
17.	Chemical Oxygen Demand	mg/L	IS 3025 Part 58 2006, RA-2017	32	32	30	40	30	48
18.	Oil & Grease	mg/L	IS 3025 Part 39 :1991, RA-2014	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
19.	Coli form Bacteria	CFU /100ml	IS: 15185: 2016	84	74	72	114	132	144

TABLE-16
Marine Biology

Six Plankton samples was collected and analyzed. The analytical results are given in **TABLE-16 to 21**

Location Code	Bore Well Location	Date of Sampling
M-1	Dredge Spoil Disposal Area	13.07.2019
M-2	Northern Break Water	13.07.2019
M-3	Southern Break Water	13.07.2019
M-4	Inner Navigation Channel	13.07.2019
M-5	Sharavari River, Near Berthing Area	13.07.2019
M-6	Sharavati/Badgani River Mouth (Near Confluence Point)	13.07.2019

TABLE-16
TEST RESULTS

Location Name: Dredge Spoil Disposal Area

Phytoplankton

S.No	Description	Result
1	Numerical abundance of species	1,72,125 nos/100m^3 to 9,56,325 nos/100m^3
2	Bio-mass net weight	4.9 mg/100m^3 to 25.6 mg/100m^3
3	Chlorophyll content	between 0.03 mg/m^3 to 4.14 mg/m^3
4	Phaeophytin content	0.2 mg/m^3 to 4.2 mg/m^3
5	Predominant species observed	Biddulphia mobiliensis, Chaetoceros curvisetus, Licmophora abbreviata, Skeletonema costatum, Prorocentrum micans and Oscillatoria sp, Coscinodiscus, Bacteriostrus, Chaetoceros (Chain), Pleurosigma, Staroneis, Leptocylindrus, Nitzschia, Naviculla, Thalassiosiro,
6	Productivity	between 56.52 mg C/m^3 to 1524.3 mg C/m^3
7	No of Species	32 - 56

Zooplankton

S.No	Description	Result
1	Numerical abundance of species	1,42,927 no.s/100m^3 to 2,36,425 nos/100m^3.
2	Bio-mass net weight	16.72 ml/100m^3 to 16.52 ml/100m^3
3	Fauna diversity	Above 09
4	Predominant species observed	Copedods (Six Larval forms as nauplii) Cyclopoids, Harpacticoid, Copepods, Doliolumsp., Salpasp., Hnthomedusole sp., Appendicularia, Gastropods, Cladocerans, Decapod Larvae, Undinula sp., Polychaete larvae, Lucifer sp,
5	No of Species	32 – 45

TABLE-17
TEST RESULTS

Location Name: Northern Break Water

1 Phytoplankton

S.No	Description	Result
1	Numerical abundance of species	1,48,226 nos/100m^3 to 8,92,128 nos/100m^3
2	Bio-mass net weight	4.5 mg/100m^3 to 23.7 mg/100m^3
3	Chlorophyll content	between 0.02 mg/m^3 to 4.48 mg/m^3
4	Phaeophytin content	0.2 mg/m^3 to 3.9 mg/m^3
5	Predominant species observed	Biddulphia mobiliensis, Chaetoceros curvisetus, Licmophora abbreviata, Skeletonema costatum, Prorocentrum micans and Oscillatoria sp, Coscinodiscus, Bacteriostrus, Chaetoceros (Chain), Pleurosigma, Staroneis, Leptocylindrus, Nitzschia, Naviculla, Thalassiosiro,
6	Productivity	between 52.78 mg C/m^3 to 1496.7 mg C/m^3
7	No of Species	32 - 44

Zooplankton

S.No	Description	Result
1	Numerical abundance of species	1,29,762 no.s/100m^3 to 2,08,910 nos/100m^3.
2	Bio-mass net weight	14.82 ml/100m^3 to 17.06 ml/100m^3
3	Fauna diversity	Above 09
4	Predominant species observed	Copedods (Six Larval forms as nauplii) Cyclopoids, Harpacticoid, Copepods, Doliolumsp., Salpasp., Hnthomedusole sp., Appendicularia, Gastropods, Cladocerans, Decapod Larvae, Undinula sp., Polychaete larvae, Lucifer sp,
5	No of Species	34 – 44

TABLE-18
TEST RESULTS

Lacation Name: Southern Break Water

1 Phytoplankton

S.No	Description	Result
1	Numerical abundance of species	1,53,758 nos/100m^3 to 9,24,187 nos/100m^3
2	Bio-mass net weight	4.3 mg/100m^3 to 18.4 mg/100m^3
3	Chlorophyll content	between 0.02 mg/m^3 to 4.90 mg/m^3
4	Phaeophytin content	0.2 mg/m^3 to 4.4 mg/m^3
5	Predominant species observed	Biddulphia mobiliensis, Chaetoceros curvisetus, Licmophora abbreviata, Skeletonema costatum, Prorocentrum micans and Oscillatoria sp, Coscinodiscus, Bacteriostrus, Chaetoceros (Chain), Pleurosigma, Staroneis, Leptocylindrus, Nitzschia, Naviculla, Thalassiosiro,
6	Productivity	between 53.76 mg C/m^3 to 1827.4 mg C/m^3
7	No of Species	32 - 48

Zooplankton

S.No	Description	Result
1	Numerical abundance of species	1, 42,812 no.s/100m^3 to 2, 24,724 nos/100m^3.
2	Bio-mass net weight	15.36 ml/100m^3 to 16.94 ml/100m^3
3	Fauna diversity	Above 09
4	Predominant species observed	Copedods (Six Larval forms as nauplii) Cyclopoids, Harpacticoid, Copepods, Doliolumsp., Salpasp., Hnthomedusole sp., Appendicularia, Gastropods, Cladocerans, Decapod Larvae, Undinula sp., Polychaete larvae, Lucifer sp,
5	No of Species	32 – 46

TABLE-19

TEST RESULTS

Location name: Inner Navigation Channel

1 Phytoplankton

S.No	Description	Result
1	Numerical abundance of species	1,21,236 nos/100m^3 to 6,15,624 nos/100m^3
2	Bio-mass net weight	4.1 mg/100m^3 to 13.24 mg/100m^3
3	Chlorophyll content	between 0.02 mg/m^3 to 3.20 mg/m^3
4	Phaeophytin content	0.2 mg/m^3 to 4.0 mg/m^3
5	Predominant species observed	Biddulphia mobiliensis, Chaetoceros curvisetus, Licmophora abbreviata, Skeletonema costatum, Prorocentrum micans and Oscillatoria sp, Coscinodiscus, Bacteriostrus, Chaetoceros (Chain), Pleurosigma, Staroneis, Leptocylindrus, Nitzschia, Naviculla, Thalassiosiro,
6	Productivity	between 42.10 mg C/m^3 to 1264.1 mg C/m^3
7	No of Species	30 - 38

Zooplankton

S.No	Description	Result
1	Numerical abundance of species	1, 02,326 no.s/100m^3 to 1, 90,126 nos/100m^3.
2	Bio-mass net weight	12.28 ml/100m^3 to 14.26 ml/100m^3
3	Fauna diversity	Above 09
4	Predominant species observed	Copedods (Six Larval forms as nauplii) Cyclopoids, Harpacticoid, Copepods, Doliolumsp., Salpasp., Hnthomedusole sp., Appendicularia, Gastropods, Cladocerans, Decapod Larvae, Undinula sp., Polychaete larvae, Lucifer sp,
5	No of Species	32 – 40

TABLE-20

TEST RESULTS

Location Name: Saravathi River Near Berthing Area

1 Phytoplankton

S.No	Description	Result
1	Numerical abundance of species	1,03,842 nos/100m^3 to 5,26,410 nos/100m^3
2	Bio-mass net weight	3.6 mg/100m^3 to 10.78 mg/100m^3
3	Chlorophyll content	between 0.02 mg/m^3 to 2.64 mg/m^3
4	Phaeophytin content	0.2 mg/m^3 to 3.4 mg/m^3
5	Predominant species observed	Biddulphia mobiliensis, Chaetoceros curvisetus, Licmophora abbreviata, Skeletonema costatum, Prorocentrum micans and Oscillatoria sp, Coscinodiscus, Bacteriostrus, Chaetoceros (Chain), Pleurosigma, Staroneis, Leptocylindrus, Nitzschia, Naviculla, Thalassiosiro,
6	Productivity	between 24.68 mg C/m^3 to 1040.6 mg C/m^3
7	No of Species	32 - 40

Zooplankton

S.No	Description	Result
1	Numerical abundance of species	1, 00,648 no.s/100m^3 to 1, 75,524 nos/100m^3.
2	Bio-mass net weight	10.15 ml/100m^3 to 13.08 ml/100m^3
3	Fauna diversity	Above 09
4	Predominant species observed	Copedods (Six Larval forms as nauplii) Cyclopoids, Harpacticoid, Copepods, Doliolumsp., Salpasp., Hnthomedusole sp., Appendicularia, Gastropods, Cladocerans, Decapod Larvae, Undinula sp., Polychaete larvae, Lucifer sp,
5	No of Species	34 – 38

TABLE-21

TEST RESULTS

Location Name: Sharavati / Badgani River Mouth Near Confluence Point

1 Phytoplankton

S.No	Description	Result
1	Numerical abundance of species	1,10,367 nos/100m^3 to 5,82,864 nos/100m^3
2	Bio-mass net weight	4.0 mg/100m^3 to 11.94 mg/100m^3
3	Chlorophyll content	between 0.02 mg/m^3 to 3.88 mg/m^3
4	Phaeophytin content	0.2 mg/m^3 to 4.2 mg/m^3
5	Predominant species observed	Biddulphia mobiliensis, Chaetoceros curvisetus, Licmophora abbreviata, Skeletonema costatum, Prorocentrum micans and Oscillatoria sp, Coscinodiscus, Bacteriostrus, Chaetoceros (Chain), Pleurosigma, Staroneis, Leptocylindrus, Nitzschia, Naviculla, Thalassiosiro,
6	Productivity	between 29.64 mg C/m^3 to 1172.8 mg C/m^3
7	No of Species	32 - 44

Zooplankton

S.No	Description	Result
1	Numerical abundance of species	1, 12,475 no.s/100m^3 to 2, 20,361 nos/100m^3.
2	Bio-mass net weight	12.34 ml/100m^3 to 15.82 ml/100m^3
3	Fauna diversity	Above 09
4	Predominant species observed	Copedods (Six Larval forms as nauplii) Cyclopoids, Harpacticoid, Copepods, Doliolumsp., Salpasp., Hnthomedusole sp., Appendicularia, Gastropods, Cladocerans, Decapod Larvae, Undinula sp., Polychaete larvae, Lucifer sp,
5	No of Species	36 – 42

TABLE-22

Sediment and Benthic Communities

Six Sediment & Benthic samples was collected and analyzed. The analytical results are given in **TABLE-22 to 27**

Location Code	Bore Well Location	Date of Sampling
M-1	Dredge Spoil Disposal Area	13.07.2019
M-2	Northern Break Water	13.07.2019
M-3	Southern Break Water	13.07.2019
M-4	Inner Navigation Channel	13.07.2019
M-5	Sharavari River, Near Berthing Area	13.07.2019
M-6	Sharavati/Badgani River Mouth (Near Confluence Point)	13.07.2019

TABLE-22
TEST RESULTS

Location Name: Dredge Spoil Disposal Area (14° 30'8 N, 74°41'5 E)

S. No.	Parameters	Units	Test Results
1.	Total Organic Carbon	%	0.36
2.	Total Organic Matter	%	0.62
3.	Inorganic Phosphates	mg/g	0.09
4.	Phosphates as $PO_4^{3-}P$	mg/g	0.11
5.	Sulphate as SO_4	mg/g	3.92
6.	Nitrite as NO_2	mg/g	<0.02
7.	Nitrate as NO_3	mg/g	4.68
8.	Calcium as Ca	mg/g	16.54
9.	Magnesium as Mg	mg/g	6.16
10.	Sodium as Na	mg/g	32.57
11.	Potassium as K	mg/g	1.35
	Benthic Communities		
12.	Micro Flora	Report is enclosed	
13.	Micro Fauna		

BENTHIC COMMUNITIES

1. Location: Dredge Spoil Disposal Area (14° 30'8 N, 74°41'5 E)
Sampling Date: 13.07.2019

Phytoplankton

The micro-benthic Phytoplankton species observed per kg sand collected at the water depth i.e., below the 4 mts of water of marine is as follows. The one kg sand sample collected was occupied space of about (12 X 6 cm) 72 cm^2 of area of the bottom of the sea coast. The prime parameters analyzed are:

S No	Description	Result
1.	Numerical abundance of species	32 to 512 no/m^2
2.	Bio-mass net weight	1.0685 g/m^2
3.	Chlorophyll content	0.16 mg/m^3 to 4.72 mg/m^3
4.	Phaephytin content	0.19 mg/m^3 to 3.68 mg/m^3.
5.	Predominant species observed	Pteromonas, Lobomonas, Dichotomosiphon, Cryptomonas, Botryococcus, Carteria, Asterionella, Oscillatoria, Gomphonema, Chlorococcum.
6.	No of Species	28 - 42

Zooplankton

The micro marine Zooplanktonic species observed per kg sand collected at the bottom of the sea water below 4 mts of the water level spread over in the area of about (12cm X 6 cm) 72 cm^2. The prime parameters analysed are:

S No	Description	Result
1.	Predominant species observed	Crustaceans resparsent- Copepoda larval forms as Nauplii and the members Harpacticoid, Copepoda are abundant and other species are Cyclopoida, Calanoid, Copepods
2.	No of Species	10-18

TABLE-23
TEST RESULTS

Location Name: Northern Break Water

S. No.	Parameters	Units	Test Results
1.	Total Organic Carbon	%	0.64
2.	Total Organic Matter	%	1.10
3.	Inorganic Phosphates	mg/g	0.06
4.	Phosphates as $PO_4^{3-}P$	mg/g	0.09
5.	Sulphate as SO_4	mg/g	3.72
6.	Nitrite as NO_2	mg/g	<0.02
7.	Nitrate as NO_3	mg/g	5.18
8.	Calcium as Ca	mg/g	16.97
9.	Magnesium as Mg	mg/g	9.25
10.	Sodium as Na	mg/g	32.14
11.	Potassium as K	mg/g	0.29
	Benthic Communities		
12.	Micro Flora	Report is enclosed	
13.	Micro Fauna		

BENTHIC COMMUNITIES

1. Location: Northern Break Water
Sampling Date: 13.07.2019

Phytoplankton

The micro-benthic Phytoplankton species observed per kg sand collected at the water depth i.e., below the 4 mts of water of marine is as follows. The one kg sand sample collected was occupied space of about (12 X 6 cm) 72 cm^2 of area of the bottom of the sea coast. The prime parameters analyzed are:

S No	Description	Result
1.	Numerical abundance of species	29 to 512 no/m^2
2.	Bio-mass net weight	1.069 g/m^2
3	Chlorophyll content	0.16 mg/m^3 to 4.06 mg/m^3
4.	Phaephytin content	0.21 mg/m^3 to 3.97 mg/m^3.
5.	Predominant species observed	Pteromonas, Lobomonas, Dichotomosiphon, Cryptomonas, Botryococcus, Carteria, Asterionella, Oscillatoria, Gomphonema, Chlorococcum.
6.	No of Species	28-36

Zooplankton

The micro marine Zooplankton species observed per kg sand collected at the bottom of the sea water below 4 mts of the water level spread over in the area of about (12cm X 6 cm) 72 cm^2. The prime parameters analyzed are:

S No	Description	Result
1.	Predominant species observed	Crustaceans resparsent- Copepoda larval forms as Nauplii and the members Harpacticoid, Copepoda are abundant and other species are Cyclopoida, Calanoid, Copepods
2.	No of Species	11-29

TABLE-24
TEST RESULTS

Location Name: Southern Break Water

S. No.	Parameters	Units	Test Results
1.	Total Organic Carbon	%	0.42
2.	Total Organic Matter	%	0.72
3.	Inorganic Phosphates	mg/g	0.05
4.	Phosphates as $PO_4^{3-}P$	mg/g	0.07
5.	Sulphate as SO_4	mg/g	2.97
6.	Nitrite as NO_2	mg/g	<0.02
7.	Nitrate as NO_3	mg/g	3.61
8.	Calcium as Ca	mg/g	11.86
9.	Magnesium as Mg	mg/g	7.29
10.	Sodium as Na	mg/g	28.39
11.	Potassium as K	mg/g	0.41
	Benthic Communities		
12.	Micro Flora	Report is enclosed	
13.	Micro Fauna		

BENTHIC COMMUNITIES

1. Location: Southern Break Water
Sampling Date: 13.07.2019

Phytoplankton

The micro-benthic Phytoplankton species observed per kg sand collected at the water depth i.e., below the 4 mts of water of marine is as follows. The one kg sand sample collected was occupied space of about (12 X 6 cm) 72 cm^2 of area of the bottom of the sea coast. The prime parameters analyzed are:

S No	Description	Result
1.	Numerical abundance of species	28 to 496 no/m^2
2.	Bio-mass net weight	1.065 g/m^2
3.	Chlorophyll content	0.45 mg/m^3 to 4.67 mg/m^3
4.	Phaephytin content	0.23mg/m^3 to 3.42 mg/m^3.
5.	Predominant species observed	Pteromonas, Lobomonas, Dichotomosiphon, Cryptomonas, Botryococcus, Carteria, Asterionella, Oscillatoria, Gomphonema, Chlorococcum.
6.	No of Species	25-36

Zooplankton

The micro marine Zooplanktonic species observed per kg sand collected at the bottom of the sea water below 4 mts of the water level spread over in the area of about (12cm X 6 cm) 72 cm^2. The prime parameters analysed are:

S No	Description	Result
1.	Predominant species observed	Crustaceans resparsent- Copepoda larval forms as Nauplii and the members Harpacticoid, Copepoda are abundant and other species are Cyclopoida, Calanoid, Copepods
2.	No of Species	13-19

TABLE-25
TEST RESULTS

Location Name: Inner Navigation Channel

S. No.	Parameters	Units	Test Results
1.	Total Organic Carbon	%	0.61
2.	Total Organic Matter	%	1.05
3.	Inorganic Phosphates	mg/g	0.08
4.	Phosphates as $PO_4^{3-}P$	mg/g	0.13
5.	Sulphate as SO_4	mg/g	3.17
6.	Nitrite as NO_2	mg/g	<0.02
7.	Nitrate as NO_3	mg/g	4.75
8.	Calcium as Ca	mg/g	16.97
9.	Magnesium as Mg	mg/g	9.36
10.	Sodium as Na	mg/g	29.87
11.	Potassium as K	mg/g	0.45
	Benthic Communities		
12.	Micro Flora	Report is enclosed	
13.	Micro Fauna		

BENTHIC COMMUNITIES

1. Location: Inner Navigation Channel
Sampling Date: 13.07.2019

Phytoplankton

The micro-benthic Phytoplankton species observed per kg sand collected at the water depth i.e., below the 4 mts of water of marine is as follows. The one kg sand sample collected was occupied space of about (12 X 6 cm) 72 cm^2 of area of the bottom of the sea coast. The prime parameters analyzed are:

S No	Description	Result
1.	Numerical abundance of species	29 to 535 no/m^2
2.	Bio-mass net weight	1.092 g/m^2
3.	Chlorophyll content	0.25 mg/m^3 and 4.06 mg/m^3
4.	Phaephytin content	0.19 mg/m^3 to 3.36mg/m^3.
5.	Predominant species observed	Pteromonas, Lobomonas, Dichotomosiphon, Cryptomonas, Botryococcus, Carteria, Asterionella, Oscillatoria, Gomphonema, Chlorococcum.
6.	No of Species	19-28

Zooplankton

The micro marine Zooplanktonic species observed per kg sand collected at the bottom of the sea water below 4 mts of the water level spread over in the area of about (12cm X 6 cm) 72 cm^2. The prime parameters analysed are:

S No	Description	Result
1.	Predominant species observed	Crustaceans resparsent- Copepoda larval forms as Nauplii and the members Harpacticoid, Copepoda are abundant and other species are Cyclopoida, Calanoid, Copepods
2.	No of Species	13-23

TABLE-26
TEST RESULTS

Location: Saravathi River Near Berthing Area

S. No.	Parameters	Units	Test Results
1.	Total Organic Carbon	%	0.71
2.	Total Organic Matter	%	1.22
3.	Inorganic Phosphates	mg/g	0.09
4.	Phosphates as $PO_4^{3-}P$	mg/g	0.13
5.	Sulphate as SO_4	mg/g	2.89
6.	Nitrite as NO_2	mg/g	<0.02
7.	Nitrate as NO_3	mg/g	4.56
8.	Calcium as Ca	mg/g	21.72
9.	Magnesium as Mg	mg/g	9.67
10.	Sodium as Na	mg/g	28.78
11.	Potassium as K	mg/g	0.45
	Benthic Communities		
12.	Micro Flora	Report is enclosed	
13.	Micro Fauna		

BENTHIC COMMUNITIES

1. Location: Saravathi River Near Berthing Area
Sampling Date: 13.07.2019

Phytoplankton

The micro-benthic Phytoplankton species observed per kg sand collected at the water depth i.e., below the 4 mts of water of marine is as follows. The one kg sand sample collected was occupied space of about (12 X 6 cm) 72 cm^2 of area of the bottom of the sea coast. The prime parameters analyzed are:

S No	Description	Result
1.	Numerical abundance of species	26 to 439 no/m^2
2.	Bio-mass net weight	1.057 g/m^2
3.	Chlorophyll content	0.15 mg/m^3 to 4.23 mg/m^3
4.	Phaephytin content	0.21 mg/m^3 to 3.36mg/m^3.
5.	Predominant species observed	Pteromonas, Lobomonas, Dichotomosiphon, Cryptomonas, Botryococcus, Carteria, Asterionella, Oscillatoria, Gomphonema, Chlorococcum.
6.	No of Species	24-30

Zooplankton

The micro marine Zooplanktonic species observed per kg sand collected at the bottom of the sea water below 4 mts of the water level spread over in the area of about (12cm X 6 cm) 72 cm^2. The prime parameters analysed are:

S No	Description	Result
1.	Predominant species observed	Crustaceans resparsent- Copepoda larval forms as Nauplii and the members Harpacticoid, Copepoda are abundant and other species are Cyclopoida, Calanoid, Copepods
2.	No of Species	09-14

TABLE-27
TEST RESULTS
Location: Saravathi/Badgani River Mouth Near Confluence Point

S. No.	Parameters	Units	Test Results
1.	Total Organic Carbon	%	0.67
2.	Total Organic Matter	%	1.15
3.	Inorganic Phosphates	mg/g	0.07
4.	Phosphates as $PO_4^{3-}P$	mg/g	0.11
5.	Sulphate as SO_4	mg/g	2.67
6.	Nitrite as NO_2	mg/g	<0.02
7.	Nitrate as NO_3	mg/g	4.28
8.	Calcium as Ca	mg/g	11.57
9.	Magnesium as Mg	mg/g	9.16
10.	Sodium as Na	mg/g	21.78
11.	Potassium as K	mg/g	0.41
	Benthic Communities		
12.	Micro Flora	Report is enclosed	
13.	Micro Fauna		

BENTHIC COMMUNITIES

1. **Location: Saravathi/Badgani River Mouth Near Confluence Point**
   Sampling Date: 13.07.2019

Phytoplankton

The micro-benthic Phytoplankton species observed per kg sand collected at the water depth i.e., below the 4 mts of water of marine is as follows. The one kg sand sample collected was occupied space of about (12 X 6 cm) 72 cm^2 of area of the bottom of the sea coast. The prime parameters analyzed are:

S No	Description	Result
1.	Numerical abundance of species	24 to 427 no/m^2
2.	Bio-mass net weight	1.051 g/m^2
3.	Chlorophyll content	0.15 mg/m^3 to 4.27 mg/m^3
4.	Phaephytin content	0.19 mg/m^3 to 4.18 mg/m^3.
5.	Predominant species observed	Pteromonas, Lobomonas, Dichotomosiphon, Cryptomonas, Botryococcus, Carteria, Asterionella, Oscillatoria, Gomphonema, Chlorococcum.
6.	No of Species	26-35

Zooplankton

The micro marine Zooplanktonic species observed per kg sand collected at the bottom of the sea water below 4 mts of the water level spread over in the area of about (12cm X 6 cm) 72 cm^2. The prime parameters analysed are:

S No	Description	Result
1.	Predominant species observed	Crustaceans resparsent- Copepoda larval forms as Nauplii and the members Harpacticoid, Copepoda are abundant and other species are Cyclopoida, Calanoid, Copepods
2.	No of Species	11-26

AUGUST-2019

Ambient Air Quality Monitoring

The Ambient Air Quality has been monitored at five locations. The table showing Ambient Air Quality is present in **Table -28 to Table 37** respectively.

TABLE-28

Ambient Air Quality Locations

Location Code	Location Name	Date Of Monitoring	Date Of Monitoring
AQ-1	Project Site	05.08.2019	22.08.2019
AQ-2	Kasarkod Village	05.08.2019	22.08.2019
AQ-3	Honnavar Village	05.08.2019	22.08.2019
AQ-4	Kulkod Village	06.08.2019	23:08.2019
AQ-5	Ramatheerth Village	06.08.2019	23.08.2019

TABLE-28

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Project Site

Date of Monitoring : 05.08.2019

Ambient Temperature °C : 27 (Average)

Wind Direction : SE

Weather Condition : Clear

Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	56	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	29	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	6.1	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	14.7	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-29

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Kasarkod Village

Date of Monitoring : 05.08.2019

Ambient Temperature °C : 27 (Average)

Wind Direction : SE

Weather Condition : Clear

Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	47	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	23	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	5.8	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	15.6	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-30

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Honnavar Village
Date of Monitoring : 05.08.2019
Ambient Temperature °C : 27 (Average)
Wind Direction : SE
Weather Condition : Clear
Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	51	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	25	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	6.5	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	21.4	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-31

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Kulkod Village
Date of Monitoring : 06.08.2019
Ambient Temperature °C : 27 (Average)
Wind Direction : SE
Weather Condition : Clear
Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	49	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	25	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	6.3	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	18.4	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-32

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Ramtheerth Village
Date of Monitoring : 06.08.2019
Ambient Temperature °C : 27 (Average)
Wind Direction : SE
Weather Condition : Clear
Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	35	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	19	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	4.4	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	12.2	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-33

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Project Site
Date of Monitoring : 22.08.2019
Ambient Temperature °C : 26 (Average)
Wind Direction : SW
Weather Condition : Clear
Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	48	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	25	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	4.9	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	13.7	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-34

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Kasarkod Village
Date of Monitoring : 22.08.2019
Ambient Temperature °C : 26 (Average)
Wind Direction : SW
Weather Condition : Clear
Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	54	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	26	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	7.1	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	16.5	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-35

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Honnavar Village
Date of Monitoring : 22.08.2019
Ambient Temperature °C : 26 (Average)
Wind Direction : SW
Weather Condition : Clear
Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	49	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	24	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	7.3	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	19.1	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-36

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Kulkod Village
Date of Monitoring : 23.08.2019
Ambient Temperature °C : 26 (Average)
Wind Direction : SW
Weather Condition : Clear
Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	42	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	20	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	5.5	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	14.6	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-37

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Ramtheerth Village
Date of Monitoring : 23.08.2019
Ambient Temperature °C : 26 (Average)
Wind Direction : SW
Weather Condition : Clear
Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	36	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	17	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	4.2	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	13.6	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-38
Ambient Noise Quality Locations

Location Code	Location Name	Date Of Monitoring	Date Of Monitoring
AQ-1	Project Site	05.08.2019	22.08.2019
AQ-2	Kasarkod Village	05.08.2019	22.08.2019
AQ-3	Honnavar Village	05.08.2019	22.08.2019
AQ-4	Kulkod Village	06.08.2019	23.08.2019
AQ-5	Ramatheerth Village	06.08.2019	23.08.2019

TABLE-38
AMBIENT NOISE LEVELS IN THE STUDY AREA

All the values are expressed in dB (A)

Time	N-1	N-2	N-3	N-4	N-5	N-1	N-2	N-3	N-4	N-5
HOURS										
06:00 – 07:00	45.4	44.8	43.1	44.5	42.3	47.2	44.5	46.1	43.2	42.7
07:00 – 08:00	48.3	49.3	45.8	46.9	44.7	49.6	49.2	49.3	46.5	45.1
08:00 – 09:00	51.7	51.4	49.2	49.7	47.3	51.4	51.6	51.4	48.7	48.3
09:00 – 10:00	53.1	49.7	51.4	52.3	49.1	53.6	53.4	52.1	50.4	51.2
10:00 – 11:00	56.4	52.1	53.1	50.2	50.4	57.4	50.0	53.6	52.1	49.5
11:00 – 12:00	52.7	53.6	51.6	53.4	49.6	54.2	49.8	50.4	49.5	51.2
12:00 – 13:00	50.9	50.2	49.7	50.1	51.7	53.1	51.2	49.7	50.2	48.7
13:00 – 14:00	53.2	49.8	50.5	49.2	53.1	51.5	53.7	52.1	52.7	50.9
14:00 – 15:00	55.1	52.4	52.9	52.6	50.4	50.3	51.5	54.4	50.1	53.1
15:00 – 16:00	58.6	50.3	51.0	51.5	48.6	53.6	48.6	50.6	49.5	50.4
16:00 – 17:00	54.2	53.1	53.7	50.7	46.9	50.8	50.5	52.8	47.3	51.3
17:00 – 18:00	52.5	52.4	51.5	52.9	49.5	53.6	54.2	53.1	51.2	48.7
18:00 – 19:00	51.6	50.2	49.5	49.4	47.3	52.1	52.1	50.6	50.6	47.2
19:00 – 20:00	50.8	49.5	50.3	46.7	46.7	50.5	50.8	47.9	48.7	45.9
20:00 – 21:00	48.6	47.3	47.8	44.3	43.5	48.2	48.3	46.1	46.5	43.5
21:00 – 22:00	47.4	45.1	45.2	41.6	41.8	46.3	46.7	44.2	44.9	41.4
22:00 – 23:00	45.9	43.8	43.1	39.3	42.6	44.7	43.5	42.7	42.1	39.5
23:00 – 24:00	42.7	40.5	39.5	37.1	39.5	41.2	41.4	40.1	40.7	37.3
24:00 – 01:00	40.3	38.9	36.4	35.2	37.4	38.9	39.6	37.6	38.3	35.2
01:00 – 02:00	38.5	36.1	33.9	33.4	34.8	36.4	37.2	35.3	36.1	32.9
02:00 – 03:00	36.9	34.7	35.2	35.6	32.6	38.3	35.9	36.7	34.7	34.1
03:00 – 04:00	38.9	35.8	37.4	34.4	35.1	39.6	36.8	37.9	35.4	36.7
04:00 – 05:00	40.4	37.6	38.9	37.2	37.6	41.4	38.5	39.2	37.6	38.2
05:00 – 06:00	42.6	40.2	40.7	39.5	40.2	43.2	40.1	41.4	39.2	40.5
L Day	**53.1**	**50.6**	**50.5**	**50.1**	**48.7**	**52.3**	**50.9**	**51.0**	**49.4**	**49.1**
L Night	**41.7**	**39.4**	**39.1**	**37.0**	**38.5**	**41.7**	**39.8**	**39.5**	**38.7**	**37.5**

TABLE-39

Ground Water Quality

Two Ground water samples was collected and analyzed. The analytical results are given in **TABLE-39**

Location Code	Bore Well Location	Date of Sampling
GW-1	Honnavar Village	05.08.2019
GW-2	Kasarkod Village	05.08.2019

TEST RESULTS

S.No.	Parameters	Units	Test Method	Results		Drinking Water Limits As per IS: 10500; 2012	
				GW-1	GW-2	Desirable Limits	Permissible limits in absence of alternative Source
1.	pH @25^{0}C	--	IS:3025 part 11 1983, RA-2017	6.62	6.78	6.50 – 8.50	No relaxation
2.	Conductivity@25^{0}C	µmhos/cm	IS: 3025 Part 14 1984 RA-2013	424	440	--	--
3.	Temperature	^{0}C	IS: 3025 Part 1 1984 RA-2014	25.6	25.2	--	--
4.	Total Dissolved Solids	mg/L	IS: 3025 Part 16 1984, RA-2017	266	279	500	2000
5.	Total Suspended Solids	mg/L	IS 3025 Part 17 1984, RA-2017	<1.0	<1.0	--	--
6.	Turbidity	NTC	IS: 3025 Part 10 1984, RA-2017	<1.0	<1.0	1	5
7.	Total Hardness as $CaCO_3$	mg/L	IS: 3025 Part 21 2009, RA-2014	130	140	200	600
8.	Calcium as Ca	mg/L	IS: 3025 Part 40 1991, RA-2014	28.0	32.0	75	200
9.	Magnesium as Mg	mg/L	IS: 3025 Part 46 1994, RA-2014	14.4	14.4	30	100
10.	Chloride as Cl	mg/L	IS: 3025 Part 32 1988, RA-2014	35.0	40.0	250	1000
11.	Sulphate as SO_4	mg/L	IS: 3025 Part 24 1986, RA-2014	50.6	43.0	200	400
12.	Sodium as Na	mg/L	IS: 3025 Part 45 1993, RA-2014	34.2	33.1	---	---
13.	Potassium as K	mg/L	IS: 3025 Part 45 1993, RA-2014	2.1	2.3	---	---
14.	Nitrate as NO_3	mg/L	IS: 3025 Part 34 1988, RA-2014	5.6	5.0	45	No Relaxation
15.	Iron as Fe	mg/L	IS: 3025 Part 53 2003, RA-2014	0.10	0.08	0.3	No Relaxation
16.	Lead as Pb	mg/L	IS 3025 Part 47 1994, RA2014	<0.001	<0.001	0.01	No Relaxation
17.	Dissolved Oxygen	mg/L	IS 3025 Part 38 2009	<1.0	<1.0	--	--
18.	Biological Oxygen Demand(3 Days For27°C)	mg/L	IS 3025 Part 44 1993, RA-2014	<3.0	<3.0	--	--
19.	Chemical Oxygen Demand	mg/L	IS 3025 Part 58 2006, RA-2017	<4.0	<4.0	--	--
20	Oil & Grease	mg/L	IS 3025 Part 39 :1991, RA-2014	<1.0	<1.0	--	--
21.	Coli form Bacteria	CFU /100ml	IS: 15185: 2016	Not Detected	Not Detected	Must not be Detected	
22.	E. Coli	CFU /100ml	IS: 15185: 2016	Not Detected	Not Detected	Must not be Detected	

Surface Water Quality

Two Surface water samples was collected and analyzed. The analytical results are given in **TABLE-40**

TABLE-40

Surface water Quality Location

Location Code	Location Name	Sample Collection Dates
SW1	Sharavati River	05.08.2019
SW2	Badgani River	05.08.2019

TEST RESULTS

S.No.	Parameters	Units	Test Method	Results		Limits as Per As per IS: 2296 Class C
				SW-1	SW-2	
1.	pH @25^{0}C	--	IS:3025 part 11 1983, RA-2017	8.35	7.95	6.5-8.5
2.	Conductivity@25^{0}C	µmhos/cm	IS: 3025 Part 14 1984 RA-2013	2384	33314	--
3.	Temperature	^{0}C	IS: 3025 Part 1 1984 RA-2014	25.3	24.9	--
4.	Total Dissolved Solids	mg/L	IS: 3025 Part 16 1984, RA-2017	1440	20672	1500 max
5.	Total Suspended Solids	mg/L	IS 3025 Part 17 1984, RA-2017	18	32	--
6.	Turbidity	NTC	IS: 3025 Part 10 1984, RA-2017	5.30	18.9	--
7.	Total Hardness as $CaCO_3$	mg/L	IS: 3025 Part 21 2009, RA-2014	290	4210	--
8.	Calcium as Ca	mg/L	IS: 3025 Part 40 1991, RA-2014	76.0	360.0	--
9.	Magnesium as Mg	mg/L	IS: 3025 Part 46 1994, RA-2014	24.0	794.4	--
10.	Chloride as Cl	mg/L	IS: 3025 Part 32 1988, RA-2014	510	11304	600
11.	Sulphate as SO_4	mg/L	IS: 3025 Part 24 1986, RA-2014	281	527.3	400
12.	Nitrate as NO_3	mg/L	IS: 3025 Part 34 1988, RA-2014	25.2	40.3	50
13.	Iron as Fe	mg/L	IS: 3025 Part 53 2003, RA-2014	0.20	0.24	50
14.	Lead as Pb	mg/L	IS 3025 Part 47 1994, RA2014	<0.001	<0.001	0.1
15.	Dissolved Oxygen	mg/L	IS 3025 Part 38 2009	4.6	4.8	4-6
16.	Biological Oxygen Demand (3 Days For27°C)	mg/L	IS 3025 Part 44 1993, RA-2014	<3.0	08	<3.0
17.	Chemical Oxygen Demand	mg/L	IS 3025 Part 58 2006, RA-2017	10	30	--
18.	Oil & Grease	mg/L	IS 3025 Part 39 :1991, RA-2014	<1.0	<1.0	0.1
19.	Coli form Bacteria	CFU /100ml	IS: 15185: 2016	164	212	Should not exceed 5000

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TABLE-41

Ambient Air Quality Monitoring

The Ambient Air Quality has been monitored at five locations. The table showing Ambient Air Quality is present in **Table -41 to Table 50** respectively.

Ambient Air Quality Locations

Location Code	Location Name	Date Of Monitoring	Date Of Monitoring
AQ-1	Project Site	04.09.2019	23.09.2019
AQ-2	Kasarkod Village	04.09.2019	23.09.2019
AQ-3	Honnavar Village	04.09.2019	23.09.2019
AQ-4	Kulkod Village	05.09.2019	24.09.2019
AQ-5	Ramatheerth Village	05.09.2019	24.09.2019

TABLE-41

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Project Site

Date of Monitoring : 04.09.2019

Ambient Temperature °C : 27 (Average)

Wind Direction : SE

Weather Condition : Clear

Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	52	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	27	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	5.4	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	18.3	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-42

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Kasarkod Village
Date of Monitoring : 04.09.2019
Ambient Temperature °C : 27 (Average)
Wind Direction : SE
Weather Condition : Clear
Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	55	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	28	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	7.2	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	20.4	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-43

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Honnavar Village
Date of Monitoring : 04.09.2019
Ambient Temperature °C : 27 (Average)
Wind Direction : SE
Weather Condition : Clear
Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	46	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	24	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	5.2	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	16.5	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-44

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Kulkod Village

Date of Monitoring : 05.09.2019

Ambient Temperature °C : 27 (Average)

Wind Direction : SE

Weather Condition : Clear

Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	40	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	19	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	5.5	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	14.6	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-45

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Ramtheerth Village

Date of Monitoring : 05.09.2019

Ambient Temperature °C : 27 (Average)

Wind Direction : SE

Weather Condition : Clear

Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	33	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	18	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	4.9	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	15.0	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-46

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Project Site
Date of Monitoring : 23.09.2019
Ambient Temperature °C : 26 (Average)
Wind Direction : SE
Weather Condition : Clear
Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	49	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	25	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	6.4	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	16.8	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-47

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Kasarkod Village
Date of Monitoring : 23.09.2019
Ambient Temperature °C : 26 (Average)
Wind Direction : SE
Weather Condition : Clear
Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	53	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	27	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	6.9	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	20.4	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-48

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Honnavar Village

Date of Monitoring : 23.09.2019

Ambient Temperature °C : 26 (Average)

Wind Direction : SE

Weather Condition : Clear

Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	57	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	28	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	7.9	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	22.4	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-49

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Kulkod Village

Date of Monitoring : 24.09.2019

Ambient Temperature °C : 26 (Average)

Wind Direction : SE

Weather Condition : Clear

Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	45	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	23	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	4.9	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	15.1	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-50

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Ramtheerth Village

Date of Monitoring : 24.09.2019

Ambient Temperature °C : 26 (Average)

Wind Direction : SE

Weather Condition : Clear

Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	40	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	21	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	4.7	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	15.1	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-51
Ambient Noise Quality Locations

Location Code	Location Name	Date Of Monitoring	Date Of Monitoring
N-1	Project Site	04.09.2019	23.09.2019
N-2	Kasarkod Village	04.09.2019	23.09.2019
N-3	Honnavar Village	04.09.2019	23.09.2019
N-4	Kulkod Village	05.09.2019	24.09.2019
N-5	Ramatheerth Village	05.09.2019	24.09.2019

TABLE-51
AMBIENT NOISE LEVELS IN THE STUDY AREA

All the values are expressed in dB (A)

Time	N-1	N-2	N-3	N-4	N-5	N-1	N-2	N-3	N-4	N-5
HOURS										
06:00 – 07:00	43.9	45.3	46.2	42.4	40.9	45.8	46.4	46.8	44.1	43.4
07:00 – 08:00	46.7	48.2	48.9	44.5	42.6	48.2	48.1	49.2	47.2	45.2
08:00 – 09:00	50.2	49.3	51.7	48.2	45.5	51.7	50.3	50.6	49.7	47.9
09:00 – 10:00	52.7	51.4	52.4	50.4	49.1	50.3	52.7	52.4	52.1	50.1
10:00 – 11:00	49.5	53.7	54.6	47.9	47.3	54.7	53.1	50.3	50.6	48.6
11:00 – 12:00	51.4	50.2	55.1	51.3	51.4	52.6	50.5	49.7	48.7	50.6
12:00 – 13:00	53.6	48.9	52.7	49.5	52.5	55.1	49.7	51.8	51.6	52.4
13:00 – 14:00	52.1	52.7	55.7	53.6	49.7	52.7	52.1	54.2	53.8	51.3
14:00 – 15:00	56.4	50.4	53.1	52.8	47.6	53.4	54.7	52.4	50.4	48.6
15:00 – 16:00	53.7	53.6	52.2	49.3	49.1	51.9	52.4	51.6	52.9	50.1
16:00 – 17:00	52.9	57.3	54.4	50.6	51.6	53.7	50.7	50.7	49.7	52.7
17:00 – 18:00	54.4	54.8	52.6	51.8	52.1	54.2	49.6	53.1	50.3	50.3
18:00 – 19:00	53.7	51.5	50.2	48.5	49.5	51.5	53.1	52.4	48.8	49.7
19:00 – 20:00	50.9	50.7	48.4	46.1	47.2	49.8	51.7	49.8	46.4	48.6
20:00 – 21:00	52.7	48.1	49.1	44.7	45.4	47.2	49.2	47.4	44.2	47.1
21:00 – 22:00	49.5	46.4	46.7	42.0	44.6	44.5	46.7	45.2	41.8	44.5
22:00 – 23:00	47.1	42.8	44.2	40.8	42.1	42.7	44.3	42.4	39.7	41.7
23:00 – 24:00	45.8	40.4	42.7	38.5	38.9	39.8	42.1	40.3	37.6	39.2
24:00 – 01:00	43.2	37.5	40.1	36.1	35.7	37.2	40.5	38.5	35.2	36.4
01:00 – 02:00	40.5	35.9	37.6	35.3	34.1	35.7	38.3	36.9	37.5	33.7
02:00 – 03:00	38.3	36.4	35.9	33.8	33.6	37.6	36.1	37.2	39.1	32.9
03:00 – 04:00	36.4	38.2	36.4	32.5	34.8	38.2	34.9	35.1	36.6	34.7
04:00 – 05:00	39.6	40.4	38.1	36.8	37.4	40.4	37.3	38.5	38.1	37.5
05:00 – 06:00	41.8	42.1	40.6	38.5	39.6	42.7	39.5	40.7	40.4	39.4
L Day	**52.2**	**51.8**	**52.3**	**49.5**	**48.9**	**51.9**	**51.2**	**51.0**	**49.9**	**49.4**
L Night	**42.9**	**39.9**	**40.4**	**37.3**	**38.0**	**39.9**	**40.1**	**39.3**	**38.3**	**37.9**

TABLE-52

Ground Water Quality

Two Ground water samples was collected and analyzed. The analytical results are given in **TABLE-52**

Location Code	Bore Well Location	Date of Sampling
GW-1	Honnavar Village	04.09.2019
GW-2	Kasarkod Village	04.09.2019

TEST RESULTS

S.No.	Parameters	Units	Test Method	Results		Drinking Water Limits As per IS: 10500; 2012	
				GW-1	GW-2	Desirable Limits	Permissible limits in absence of alternative Source
1.	pH @25^{0}C	--	IS:3025 part 11 1983, RA-2017	6.78	6.63	6.50 – 8.50	No relaxation
2.	Conductivity@25^{0}C	µmhos/cm	IS: 3025 Part 14 1984 RA-2013	402	478	--	--
3.	Temperature	^{0}C	IS: 3025 Part 1 1984 RA-2014	25.1	25.5	--	--
4.	Total Dissolved Solids	mg/L	IS: 3025 Part 16 1984, RA-2017	262	304	500	2000
5.	Total Suspended Solids	mg/L	IS 3025 Part 17 1984, RA-2017	<1.0	<1.0	--	--
6.	Turbidity	NTC	IS: 3025 Part 10 1984, RA-2017	<1.0	<1.0	1	5
7.	Total Hardness as $CaCO_3$	mg/L	IS: 3025 Part 21 2009, RA-2014	120	140	200	600
8.	Calcium as Ca	mg/L	IS: 3025 Part 40 1991, RA-2014	28.0	32.0	75	200
9.	Magnesium as Mg	mg/L	IS: 3025 Part 46 1994, RA-2014	12.0	14.4	30	100
10.	Chloride as Cl	mg/L	IS: 3025 Part 32 1988, RA-2014	40.0	55.0	250	1000
11.	Sulphate as SO_4	mg/L	IS: 3025 Part 24 1986, RA-2014	43.3	49.0	200	400
12.	Sodium as Na	mg/L	IS: 3025 Part 45 1993, RA-2014	34.0	41.8	---	---
13.	Potassium as K	mg/L	IS: 3025 Part 45 1993, RA-2014	1.9	2.3	---	---
14.	Nitrate as NO_3	mg/L	IS: 3025 Part 34 1988, RA-2014	5.3	5.9	45	No Relaxation
15.	Iron as Fe	mg/L	IS: 3025 Part 53 2003, RA-2014	0.08	0.10	0.3	No Relaxation
16.	Lead as Pb	mg/L	IS 3025 Part 47 1994, RA2014	<0.001	<0.001	0.01	No Relaxation
17.	Dissolved Oxygen	mg/L	IS 3025 Part 38 2009	<1.0	<1.0	--	--
18.	Biological Oxygen Demand(3 Days For27^{0}C)	mg/L	IS 3025 Part 44 1993, RA-2014	<3.0	<3.0	--	--
19.	Chemical Oxygen Demand	mg/L	IS 3025 Part 58 2006, RA-2017	<4.0	<4.0	--	--
20	Oil & Grease	mg/L	IS 3025 Part 39 :1991, RA-2014	<1.0	<1.0	--	--
21.	Coli form Bacteria	CFU /100ml	IS: 15185: 2016	Not Detected	Not Detected	Must not be Detected	
22.	E. Coli	CFU /100ml	IS: 15185: 2016	Not Detected	Not Detected	Must not be Detected	

Surface Water Quality

Two Surface water samples was collected and analyzed. The analytical results are given in **TABLE-53**

TABLE-54

Surface water Quality Location

Location Code	Location Name	Sample Collection Dates
SW1	Sharavati River	04.09.2019
SW2	Badgani River	04.09.2019

TEST RESULTS

S.No.	Parameters	Units	Test Method	Results		Limits as Per As per IS: 2296 Class C
				SW-1	SW-2	
1.	pH @25^{0}C	--	IS:3025 part 11 1983, RA-2017	8.21	8.05	6.5-8.5
2.	Conductivity@25^{0}C	µmhos/cm	IS: 3025 Part 14 1984 RA-2013	2290	31208	--
3.	Temperature	°C	IS: 3025 Part 1 1984 RA-2014	25.7	25.2	--
4.	Total Dissolved Solids	mg/L	IS: 3025 Part 16 1984, RA-2017	1372	19246	1500 max
5.	Total Suspended Solids	mg/L	IS 3025 Part 17 1984, RA-2017	12	24	--
6.	Turbidity	NTC	IS: 3025 Part 10 1984, RA-2017	3.20	10.6	--
7.	Total Hardness as $CaCO_3$	mg/L	IS: 3025 Part 21 2009, RA-2014	340	4500	--
8.	Calcium as Ca	mg/L	IS: 3025 Part 40 1991, RA-2014	84.0	364.0	--
9.	Magnesium as Mg	mg/L	IS: 3025 Part 46 1994, RA-2014	31.2	861.6	--
10.	Chloride as Cl	mg/L	IS: 3025 Part 32 1988, RA-2014	540	10704	600
11.	Sulphate as SO_4	mg/L	IS: 3025 Part 24 1986, RA-2014	190.2	294.4	400
12.	Nitrate as NO_3	mg/L	IS: 3025 Part 34 1988, RA-2014	22.1	37.8	50
13.	Iron as Fe	mg/L	IS: 3025 Part 53 2003, RA-2014	0.18	0.20	50
14.	Lead as Pb	mg/L	IS 3025 Part 47 1994, RA2014	<0.001	<0.001	0.1
15.	Dissolved Oxygen	mg/L	IS 3025 Part 38 2009	4.4	4.2	4-6
16.	Biological Oxygen Demand (3 Days For27°C)	mg/L	IS 3025 Part 44 1993, RA-2014	<3.0	10	<3.0
17.	Chemical Oxygen Demand	mg/L	IS 3025 Part 58 2006, RA-2017	08	40	--
18.	Oil & Grease	mg/L	IS 3025 Part 39 :1991, RA-2014	<1.0	<1.0	0.1
19.	Coli form Bacteria	CFU /100ml	IS: 15185: 2016	110	234	Should not exceed 5000

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Ambient Air Quality Monitoring

The Ambient Air Quality has been monitored at five locations. The table showing Ambient Air Quality is present in **Table -55 to Table 64** respectively.

Ambient Air Quality Locations

Location Code	Location Name	Date Of Monitoring	Date Of Monitoring
AQ-1	Project Site	03.10.2019	22.10.2019
AQ-2	Kasarkod Village	03.10.2019	22.10.2019
AQ-3	Honnavar Village	03.10.2019	22.10.2019
AQ-4	Kulkod Village	04.10.2019	23.10.2019
AQ-5	Ramatheerth Village	04.10.2019	23.10.2019

TABLE-55

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Project Site

Date of Monitoring : 03.10.2019

Ambient Temperature °C : 28 (Average)

Wind Direction : SW

Weather Condition : Clear

Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	58	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	30	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	5.9	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	17.3	<80	Jacob and Hochheiser modified (Na- Arsenite) method IS 5182 P VI-2001 RA-2017
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-56

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Kasarkod Village

Date of Monitoring : 03.10.2019

Ambient Temperature °C : 28 (Average)

Wind Direction : SW

Weather Condition : Clear

Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	61	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	32	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	7.9	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	19.1	<80	Jacob and Hochheiser modified (Na- Arsenite) method IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-57

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Honnavar Village
Date of Monitoring : 03.10.2019
Ambient Temperature °C : 28 (Average)
Wind Direction : SW
Weather Condition : Clear
Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	52	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	28	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	5.6	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	17.2	<80	Jacob and Hochheiser modified (Na- Arsenite) method IS 5182 P VI-2001 RA-2017
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-58

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Kulkod Village
Date of Monitoring : 04.10.2019
Ambient Temperature °C : 28 (Average)
Wind Direction : SW
Weather Condition : Clear
Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	38	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	19	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	5.8	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	15.7	<80	Jacob and Hochheiser modified (Na- Arsenite) method IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-59

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Ramtheerth Village

Date of Monitoring : 04.10.2019

Ambient Temperature °C : 28 (Average)

Wind Direction : SW

Weather Condition : Clear

Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	38	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	20	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	5.3	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	17.2	<80	Jacob and Hochheiser modified (Na- Arsenite) method IS 5182 P VI-2001 RA-2017
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-60

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Project Site

Date of Monitoring : 22.10.2019

Ambient Temperature °C : 27 (Average)

Wind Direction : SW

Weather Condition : Clear

Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	46	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	22	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	6.0	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	14.8	<80	Jacob and Hochheiser modified (Na- Arsenite) method IS 5182 P VI-2001 RA-2017
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-61

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Kasarkod Village

Date of Monitoring : 22.10.2019

Ambient Temperature °C : 27 (Average)

Wind Direction : SW

Weather Condition : Clear

Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	50	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	26	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	6.4	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	18.7	<80	Jacob and Hochheiser modified (Na- Arsenite) method IS 5182 P VI-2001 RA-2017
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-62

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Honnavar Village

Date of Monitoring : 22.10.2019

Ambient Temperature °C : 27 (Average)

Wind Direction : SW

Weather Condition : Clear

Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	60	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	32	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	7.5	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	20.3	<80	Jacob and Hochheiser modified (Na- Arsenite) method IS 5182 P VI-2001 RA-2017
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-63

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Kulkod Village

Date of Monitoring : 23.10.2019

Ambient Temperature °C : 27 (Average)

Wind Direction : SE

Weather Condition : Clear

Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	48	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	29	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	5.1	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	14.9	<80	Jacob and Hochheiser modified (Na- Arsenite) method IS 5182 P VI-2001 RA-2017
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-64

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Ramtheerth Village

Date of Monitoring : 23.10.2019

Ambient Temperature °C : 27 (Average)

Wind Direction : SW

Weather Condition : Clear

Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	43	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	23	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	4.9	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	16.7	<80	Jacob and Hochheiser modified (Na- Arsenite) method IS 5182 P VI-2001 RA-2017
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-65
Ambient Noise Quality Locations

Location Code	Location Name	Date Of Monitoring	Date Of Monitoring
N-1	Project Site	03.10.2019	22.10.2019
N-2	Kasarkod Village	03.10.2019	22.10.2019
N-3	Honnavar Village	03.10.2019	22.10.2019
N-4	Kulkod Village	04.10.2019	23.10.2019
N-5	Ramatheerth Village	04.10.2019	23.10.2019

TABLE-65
AMBIENT NOISE LEVELS IN THE STUDY AREA

All the values are expressed in dB (A)

Time	N-1	N-2	N-3	N-4	N-5	N-1	N-2	N-3	N-4	N-5
HOURS										
06:00 – 07:00	56.9	43.9	43.3	39.4	38.9	58.2	43.2	44.5	41.0	41.2
07:00 – 08:00	60.5	46.7	45.9	41.4	40.5	61.2	44.7	46.7	43.9	42.9
08:00 – 09:00	65.0	47.8	48.5	44.8	43.2	65.7	46.8	48.1	46.2	45.5
09:00 – 10:00	68.3	49.8	49.1	46.9	46.6	63.9	49.0	49.8	48.5	47.6
10:00 – 11:00	64.1	52.1	51.2	44.5	44.9	69.5	49.4	47.8	47.1	46.2
11:00 – 12:00	66.5	48.6	51.7	47.7	48.8	66.8	47.0	47.2	45.3	48.1
12:00 – 13:00	69.5	47.4	49.5	46.0	49.9	70.0	46.2	49.2	48.0	49.8
13:00 – 14:00	67.4	51.1	52.3	49.8	47.2	66.9	48.5	51.5	50.0	48.7
14:00 – 15:00	73.0	48.8	49.9	49.1	45.2	67.8	50.9	49.8	46.9	46.2
15:00 – 16:00	69.6	52.0	48.9	45.8	46.6	65.9	48.7	49.0	49.2	47.6
16:00 – 17:00	68.6	55.5	51.1	47.1	49.0	68.2	47.2	48.2	46.2	50.1
17:00 – 18:00	70.5	53.1	49.4	48.2	49.5	68.8	46.1	50.4	46.8	47.8
18:00 – 19:00	69.6	49.9	47.1	45.1	47.0	65.4	49.4	49.8	45.4	47.2
19:00 – 20:00	65.9	49.1	45.4	42.9	44.8	63.2	48.1	47.3	43.2	46.2
20:00 – 21:00	68.3	46.6	46.1	41.6	43.1	59.9	45.8	45.0	41.1	44.7
21:00 – 22:00	64.1	44.9	43.8	39.1	42.4	56.5	43.4	42.9	38.9	42.3
22:00 – 23:00	61.0	41.5	41.5	37.9	40.0	54.2	41.2	40.3	36.9	39.6
23:00 – 24:00	59.3	39.1	40.1	35.8	37.0	50.5	39.2	38.3	35.0	37.2
24:00 – 01:00	56.0	36.4	37.6	33.6	33.9	47.2	37.7	36.6	32.7	34.6
01:00 – 02:00	52.5	34.8	35.3	32.8	32.4	45.3	35.6	35.1	34.9	32.0
02:00 – 03:00	49.7	35.2	33.7	31.4	31.9	47.8	33.6	35.3	36.4	31.3
03:00 – 04:00	47.1	37.1	34.1	30.2	33.1	48.5	32.5	33.3	34.0	33.0
04:00 – 05:00	51.3	39.1	35.8	34.2	35.5	51.3	34.7	36.6	35.4	35.6
05:00 – 06:00	54.1	40.8	38.1	35.8	37.6	54.2	36.7	38.7	37.6	37.4
L Day	**68.1**	**50.2**	**49.1**	**46.0**	**46.5**	**66.3**	**47.6**	**48.5**	**46.4**	**47.0**
L Night	**56.1**	**38.6**	**37.8**	**34.6**	**36.0**	**50.9**	**37.3**	**37.3**	**35.6**	**35.9**

TABLE-66

Ground Water Quality

Two Ground water samples was collected and analyzed. The analytical results are given in **TABLE-66**

Location Code	Bore Well Location	Date of Sampling
GW-1	Honnavar Village	03.10.2019
GW-2	Kasarkod Village	03.10.2019

TEST RESULTS

S.No.	Parameters	Units	Test Method	Results		Drinking Water Limits As per IS: 10500; 2012	
				GW-1	GW-2	Desirable Limits	Permissible limits in absence of alternative Source
1.	pH @25^{0}C	--	IS:3025 part 11 1983, RA-2017	6.92	6.98	6.50 – 8.50	No relaxation
2.	Conductivity@25^{0}C	µmhos/cm	IS: 3025 Part 14 1984 RA-2013	394	468	--	--
3.	Temperature	°C	IS: 3025 Part 1 1984 RA-2014	24.3	23.9	--	--
4.	Total Dissolved Solids	mg/L	IS: 3025 Part 16 1984, RA-2017	257	298	500	2000
5.	Total Suspended Solids	mg/L	IS 3025 Part 17 1984, RA-2017	<1.0	<1.0	--	--
6.	Turbidity	NTC	IS: 3025 Part 10 1984, RA-2017	<1.0	<1.0	1	5
7.	Total Hardness as $CaCO_3$	mg/L	IS: 3025 Part 21 2009, RA-2014	118	136	200	600
8.	Calcium as Ca	mg/L	IS: 3025 Part 40 1991, RA-2014	27.4	31.4	75	200
9.	Magnesium as Mg	mg/L	IS: 3025 Part 46 1994, RA-2014	11.8	14.1	30	100
10.	Chloride as Cl	mg/L	IS: 3025 Part 32 1988, RA-2014	39.2	53.9	250	1000
11.	Sulphate as SO_4	mg/L	IS: 3025 Part 24 1986, RA-2014	42.4	48.0	200	400
12.	Sodium as Na	mg/L	IS: 3025 Part 45 1993, RA-2014	33.3	41.0	---	---
13.	Potassium as K	mg/L	IS: 3025 Part 45 1993, RA-2014	1.8	2.2	---	---
14.	Nitrate as NO_3	mg/L	IS: 3025 Part 34 1988, RA-2014	5.2	5.8	45	No Relaxation
15.	Iron as Fe	mg/L	IS: 3025 Part 53 2003, RA-2014	0.10	0.12	0.3	No Relaxation
16.	Lead as Pb	mg/L	IS 3025 Part 47 1994, RA2014	<0.001	<0.001	0.01	No Relaxation
17.	Dissolved Oxygen	mg/L	IS 3025 Part 38 2009	<1.0	<1.0	--	--
18.	Biological Oxygen Demand(3 Days For27°C)	mg/L	IS 3025 Part 44 1993, RA-2014	<3.0	<3.0	--	--
19.	Chemical Oxygen Demand	mg/L	IS 3025 Part 58 2006, RA-2017	<4.0	<4.0	--	--
20	Oil & Grease	mg/L	IS 3025 Part 39 :1991, RA-2014	<1.0	<1.0	--	--
21.	Coli form Bacteria	CFU /100ml	IS: 15185: 2016	Not Detected	Not Detected	Must not be Detected	
22.	E. Coli	CFU /100ml	IS: 15185: 2016	Not Detected	Not Detected	Must not be Detected	

Surface Water Quality

Two Surface water samples was collected and analyzed. The analytical results are given in **TABLE-67**

TABLE-67

Surface water Quality Location

Location Code	Location Name	Sample Collection Dates
SW1	Sharavati River	03.10.2019
SW2	Badgani River	03.10.2019

TEST RESULTS

S.No.	Parameters	Units	Test Method	Results		Limits as Per As per IS: 2296 Class C
				SW-1	SW-2	
1.	pH @25^{0}C	--	IS:3025 part 11 1983, RA-2017	8.32	8.12	6.5-8.5
2.	Conductivity@25^{0}C	µmhos/cm	IS: 3025 Part 14 1984 RA-2013	2427	32456	--
3.	Temperature	^{0}C	IS: 3025 Part 1 1984 RA-2014	24.3	24.3	--
4.	Total Dissolved Solids	mg/L	IS: 3025 Part 16 1984, RA-2017	1454	19246	1500 max
5.	Total Suspended Solids	mg/L	IS 3025 Part 17 1984, RA-2017	28	36	--
6.	Turbidity	NTC	IS: 3025 Part 10 1984, RA-2017	12.3	16.8	--
7.	Total Hardness as $CaCO_3$	mg/L	IS: 3025 Part 21 2009, RA-2014	360	4680	--
8.	Calcium as Ca	mg/L	IS: 3025 Part 40 1991, RA-2014	89.0	378.6	--
9.	Magnesium as Mg	mg/L	IS: 3025 Part 46 1994, RA-2014	33.1	896.1	--
10.	Chloride as Cl	mg/L	IS: 3025 Part 32 1988, RA-2014	572.4	11132.2	600
11.	Sulphate as SO_4	mg/L	IS: 3025 Part 24 1986, RA-2014	201.6	306.2	400
12.	Nitrate as NO_3	mg/L	IS: 3025 Part 34 1988, RA-2014	23.4	39.3	50
13.	Iron as Fe	mg/L	IS: 3025 Part 53 2003, RA-2014	0.22	0.26	50
14.	Lead as Pb	mg/L	IS 3025 Part 47 1994, RA2014	<0.001	<0.001	0.1
15.	Dissolved Oxygen	mg/L	IS 3025 Part 38 2009	5.2	4.9	4-6
16.	Biological Oxygen Demand (3 Days For27°C)	mg/L	IS 3025 Part 44 1993, RA-2014	<3.0	06	<3.0
17.	Chemical Oxygen Demand	mg/L	IS 3025 Part 58 2006, RA-2017	06	22	--
18.	Oil & Grease	mg/L	IS 3025 Part 39 :1991, RA-2014	<1.0	<1.0	0.1
19.	Coli form Bacteria	CFU /100ml	IS: 15185: 2016	1200	658	Should not exceed 5000

TABLE-68
Marine Water Quality

Six Marine water samples was collected and analyzed. The analytical results are given in **TABLE-68**

Location Code	Bore Well Location	Date of Sampling
M-1	Dredge Spoil Disposal Area	04.10.2019
M-2	Northern Break Water	04.10.2019
M-3	Southern Break Water	04.10.2019
M-4	Inner Navigation Channel	04.10.2019
M-5	Sharavari River, Near Berthing Area	04.10.2019
M-6	Sharavati/Badgani River Mouth (Near Confluence Point)	04.10.2019

TEST RESULTS

S.No.	Parameters	Units	Test Method	Results					
				M-1	M-2	M-3	M-4	M-5	M-6
1.	pH @25^{0}C	--	IS:3025 part 11 1983, RA-2017	8.42	7.82	8.42	8.39	7.74	8.04
2.	Conductivity@25^{0}C	µmhos/cm	IS: 3025 Part 14 1984 RA-2013	39724	39844	40124	35264	3568	4602
3.	Temperature	^{0}C	IS: 3025 Part 1 1984 RA-2014	25.4	25.2	25.5	25.7	24.9	25.7
4.	Total Dissolved Solids	mg/L	IS: 3025 Part 16 1984, RA-2017	24760	24968	25164	22382	2192	2864
5.	Total Suspended Solids	mg/L	IS 3025 Part 17 1984, RA-2017	44	32	36	45	22	26
6.	Turbidity	NTC	IS: 3025 Part 10 1984, RA-2017	19.6	18.4	15.7	23.8	8.60	6.70
7.	Total Hardness as $CaCO_3$	mg/L	IS: 3025 Part 21 2009, RA-2014	6300	6180	6240	5610	370	440
8.	Calcium as Ca	mg/L	IS: 3025 Part 40 1991, RA-2014	360.0	364.0	372.0	328.0	40.0	48.0
9.	Magnesium as Mg	mg/L	IS: 3025 Part 46 1994, RA-2014	1296.0	1264.8	1274.4	1149.6	64.8	76.8
10.	Chloride as Cl	mg/L	IS: 3025 Part 32 1988, RA-2014	13605	13605	13805	12105	1005	1170
11.	Sulphate as SO_4	mg/L	IS: 3025 Part 24 1986, RA-2014	456	507	378.5	363	174.7	420.5
12.	Nitrate as NO_3	mg/L	IS: 3025 Part 34 1988, RA-2014	46.3	44.7	46	46.6	22.1	27.4
13.	Iron as Fe	mg/L	IS: 3025 Part 53 2003, RA-2014	0.28	0.33	0.29	0.28	0.19	0.30
14.	Lead as Pb	mg/L	IS 3025 Part 47 1994, RA2014	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
15.	Dissolved Oxygen	mg/L	IS 3025 Part 38 2009	5.10	4.9	5.1	4.60	4.3	4.7
16.	Biological Oxygen Demand (3 Days For27°C)	mg/L	IS 3025 Part 44 1993, RA-2014	09	08	06	08	05	08
17.	Chemical Oxygen Demand	mg/L	IS 3025 Part 58 2006, RA-2017	30	30	24	32	20	32
18.	Oil & Grease	mg/L	IS 3025 Part 39 :1991, RA-2014	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
19.	Coli form Bacteria	CFU /100ml	IS: 15185: 2016	126	102	110	90	77	122

TABLE-69
Marine Biology

Six Plankton samples was collected and analyzed. The analytical results are given in **TABLE-69 to 74**

Location Code	Bore Well Location	Date of Sampling
M-1	Dredge Spoil Disposal Area	04.10.2019
M-2	Northern Break Water	04.10.2019
M-3	Southern Break Water	04.10.2019
M-4	Inner Navigation Channel	04.10.2019
M-5	Sharavari River, Near Berthing Area	04.10.2019
M-6	Sharavati/Badgani River Mouth (Near Confluence Point)	04.10.2019

TABLE-69
TEST RESULTS

Location Nam: Dredge Spoil Disposal Area

Phytoplankton

S.No	Description	Result
1	Numerical abundance of species	1,89,334 nos/100m^3 to 9,87,229 nos/100m^3
2	Bio-mass net weight	4.4 mg/100m^3 to 21.4 mg/100m^3
3	Chlorophyll content	between 0.03 mg/m^3 to 5.20 mg/m^3
4	Phaeophytin content	0.2 mg/m^3 to 4.9 mg/m^3
5	Predominant species observed	Biddulphia mobiliensis, Chaetoceros curvisetus, Licmophora abbreviata, Skeletonema costatum, Prorocentrum micans and Oscillatoria sp, Coscinodiscus, Bacteriostrus, Chaetoceros (Chain), Pleurosigma, Staroneis, Leptocylindrus, Nitzschia, Naviculla, Thalassiosiro,
6	Productivity	between 54.87 mg C/m^3 to 1589.6 mg C/m^3
7	No of Species	34 - 54

Zooplankton

S.No	Description	Result
1	Numerical abundance of species	1,62,840 no.s/100m^3 to 2,67,128 nos/100m^3.
2	Bio-mass net weight	15.28 ml/100m^3 to 17.30 ml/100m^3
3	Fauna diversity	Above 09
4	Predominant species observed	Copedods (Six Larval forms as nauplii) Cyclopoids, Harpacticoid, Copepods, Doliolumsp., Salpasp., Hnthomedusole sp., Appendicularia, Gastropods, Cladocerans, Decapod Larvae, Undinula sp., Polychaete larvae, Lucifer sp,
5	No of Species	32 – 48

TABLE-70
TEST RESULTS

Location Name: Northern Break Water

Phytoplankton

S.No	Description	Result
1	Numerical abundance of species	1,64,726 nos/100m^3 to 9,54,320 nos/100m^3
2	Bio-mass net weight	4.4 mg/100m^3 to 24.6 mg/100m^3
3	Chlorophyll content	between 0.02 mg/m^3 to 5.10 mg/m^3
4	Phaeophytin content	0.2 mg/m^3 to 4.4 mg/m^3
5	Predominant species observed	Biddulphia mobiliensis, Chaetoceros curvisetus, Licmophora abbreviata, Skeletonema costatum, Prorocentrum micans and Oscillatoria sp, Coscinodiscus, Bacteriostrus, Chaetoceros (Chain), Pleurosigma, Staroneis, Leptocylindrus, Nitzschia, Naviculla, Thalassiosiro,
6	Productivity	between 50.92 mg C/m^3 to 1572.4 mg C/m^3
7	No of Species	34 - 42

Zooplankton

S.No	Description	Result
1	Numerical abundance of species	1,46,544 no.s/100m^3 to 2,37,642 nos/100m^3.
2	Bio-mass net weight	13.74 ml/100m^3 to 18.20 ml/100m^3
3	Fauna diversity	Above 09
4	Predominant species observed	Copedods (Six Larval forms as nauplii) Cyclopoids, Harpacticoid, Copepods, Doliolumsp., Salpasp., Hnthomedusole sp., Appendicularia, Gastropods, Cladocerans, Decapod Larvae, Undinula sp., Polychaete larvae, Lucifer sp,
5	No of Species	34 – 46

TABLE-71
TEST RESULTS

Location Name: Southern Break Water

1 Phytoplankton

S.No	Description	Result
1	Numerical abundance of species	1,78,646 nos/100m^3 to 10,05,228 nos/100m^3
2	Bio-mass net weight	4.4 mg/100m^3 to 16.7 mg/100m^3
3	Chlorophyll content	between 0.02 mg/m^3 to 4.74 mg/m^3
4	Phaeophytin content	0.2 mg/m^3 to 4.7 mg/m^3
5	Predominant species observed	Biddulphia mobiliensis, Chaetoceros curvisetus, Licmophora abbreviata, Skeletonema costatum, Prorocentrum micans and Oscillatoria sp, Coscinodiscus, Bacteriostrus, Chaetoceros (Chain), Pleurosigma, Staroneis, Leptocylindrus, Nitzschia, Naviculla, Thalassiosiro,
6	Productivity	between 55.10 mg C/m^3 to 1910.4 mg C/m^3
7	No of Species	34 - 48

Zooplankton

S.No	Description	Result
1	Numerical abundance of species	1, 64,826 no.s/100m^3 to 2, 84,156 nos/100m^3.
2	Bio-mass net weight	14.78 ml/100m^3 to 18.26 ml/100m^3
3	Fauna diversity	Above 09
4	Predominant species observed	Copedods (Six Larval forms as nauplii) Cyclopoids, Harpacticoid, Copepods, Doliolumsp., Salpasp., Hnthomedusole sp., Appendicularia, Gastropods, Cladocerans, Decapod Larvae, Undinula sp., Polychaete larvae, Lucifer sp,
5	No of Species	32 – 40

TABLE-72
TEST RESULTS

Location Name: Inner Navigation Channel

1 Phytoplankton

S.No	Description	Result
1	Numerical abundance of species	1,08,534 nos/100m^3 to 7,21,400 nos/100m^3
2	Bio-mass net weight	4.3 mg/100m^3 to 10.72 mg/100m^3
3	Chlorophyll content	between 0.02 mg/m^3 to 4.40 mg/m^3
4	Phaeophytin content	0.2 mg/m^3 to 3.8 mg/m^3
5	Predominant species observed	Biddulphia mobiliensis, Chaetoceros curvisetus, Licmophora abbreviata, Skeletonema costatum, Prorocentrum micans and Oscillatoria sp, Coscinodiscus, Bacteriostrus, Chaetoceros (Chain), Pleurosigma, Staroneis, Leptocylindrus, Nitzschia, Naviculla, Thalassiosiro,
6	Productivity	between 38.26 mg C/m^3 to 1456.4 mg C/m^3
7	No of Species	32 - 40

Zooplankton

S.No	Description	Result
1	Numerical abundance of species	1, 24,168 no.s/100m^3 to 2, 74,321 nos/100m^3.
2	Bio-mass net weight	13.10 ml/100m^3 to 16.32 ml/100m^3
3	Fauna diversity	Above 09
4	Predominant species observed	Copedods (Six Larval forms as nauplii), Cyclopoids, Harpacticoid, Copepods, Doliolumsp., Salpasp., Hnthomedusole sp., Appendicularia, Gastropods, Cladocerans, Decapod Larvae, Undinula sp., Polychaete larvae, Lucifer sp,
5	No of Species	36 – 44

TABLE-73
TEST RESULTS

Location Name: Sharavati River Near Berthing Area

1 Phytoplankton

S.No	Description	Result
1	Numerical abundance of species	1,14,920 nos/100m^3 to 4,86,328 nos/100m^3
2	Bio-mass net weight	3.8 mg/100m^3 to 13.26 mg/100m^3
3	Chlorophyll content	between 0.02 mg/m^3 to 3.10 mg/m^3
4	Phaeophytin content	0.2 mg/m^3 to 4.4 mg/m^3
5	Predominant species observed	Biddulphia mobiliensis, Chaetoceros curvisetus, Licmophora abbreviata, Skeletonema costatum, Prorocentrum micans and Oscillatoria sp, Coscinodiscus, Bacteriostrus, Chaetoceros (Chain), Pleurosigma, Staroneis, Leptocylindrus, Nitzschia, Naviculla, Thalassiosiro,
6	Productivity	between 18.60 mg C/m^3 to 1364.1 mg C/m^3
7	No of Species	34 - 42

Zooplankton

S.No	Description	Result
1	Numerical abundance of species	1, 15,324 no.s/100m^3 to 1, 95,326 nos/100m^3.
2	Bio-mass net weight	12.08 ml/100m^3 to 14.38 ml/100m^3
3	Fauna diversity	Above 09
4	Predominant species observed	Copedods (Six Larval forms as nauplii) Cyclopoids, Harpacticoid, Copepods, Doliolumsp., Salpasp., Hnthomedusole sp., Appendicularia, Gastropods, Cladocerans, Decapod Larvae, Undinula sp., Polychaete larvae, Lucifer sp,
5	No of Species	34 – 40

TABLE-74
TEST RESULTS

Location Name: Sharavati / Badgani River Mouth Near Confluence Point

1 Phytoplankton

S.No	Description	Result
1	Numerical abundance of species	1,23,564 nos/100m^3 to 6,12,224 nos/100m^3
2	Bio-mass net weight	4.1 mg/100m^3 to 13.20 mg/100m^3
3	Chlorophyll content	between 0.02 mg/m^3 to 3.88 mg/m^3
4	Phaeophytin content	0.2 mg/m^3 to 4.4 mg/m^3
5	Predominant species observed	Biddulphia mobiliensis, Chaetoceros curvisetus, Licmophora abbreviata, Skeletonema costatum, Prorocentrum micans and Oscillatoria sp, Coscinodiscus, Bacteriostrus, Chaetoceros (Chain), Pleurosigma, Staroneis, Leptocylindrus, Nitzschia, Naviculla, Thalassiosiro,
6	Productivity	between 25.32 mg C/m^3 to 1364.5 mg C/m^3
7	No of Species	32 - 40

Zooplankton

S.No	Description	Result
1	Numerical abundance of species	1, 18,764 no.s/100m^3 to 2, 62,724 nos/100m^3.
2	Bio-mass net weight	11.76 ml/100m^3 to 14.90 ml/100m^3
3	Fauna diversity	Above 09
4	Predominant species observed	Copedods (Six Larval forms as nauplii) Cyclopoids, Harpacticoid, Copepods, Doliolumsp., Salpasp., Hnthomedusole sp., Appendicularia, Gastropods, Cladocerans, Decapod Larvae, Undinula sp., Polychaete larvae, Lucifer sp,
5	No of Species	34 – 44

TABLE-75
Sediment and Benthic Communities

Six Sediment & Benthic samples was collected and analyzed. The analytical results are given in **TABLE-75 to 80**

Location Code	Benthic and Sediment Locations	Date of Sampling
M-1	Dredge Spoil Disposal Area	04.10.2019
M-2	Northern Break Water	04.10.2019
M-3	Southern Break Water	04.10.2019
M-4	Inner Navigation Channel	04.10.2019
M-5	Sharavari River, Near Berthing Area	04.10.2019
M-6	Sharavati/Badgani River Mouth (Near Confluence Point)	04.10.2019

TABLE-75
TEST RESULTS

Location Name: Dredge Spoil Disposal Area (14° 30'8 N, 74°41'5 E)

S. No.	Parameters	Units	Test Results
1.	Total Organic Carbon	%	0.69
2.	Total Organic Matter	%	1.18
3.	Inorganic Phosphates	mg/g	0.10
4.	Phosphates as $PO_4^{3-}P$	mg/g	0.04
5.	Sulphate as SO_4	mg/g	2.76
6.	Nitrite as NO_2	mg/g	<0.02
7.	Nitrate as NO_3	mg/g	3.92
8.	Calcium as Ca	mg/g	13.20
9.	Magnesium as Mg	mg/g	5.36
10.	Sodium as Na	mg/g	24.1
11.	Potassium as K	mg/g	0.98
	Benthic Communities		
12.	Micro Flora	Report is enclosed	
13.	Micro Fauna		

BENTHIC COMMUNITIES

1. Location: Dredge Spoil Disposal Area (14° 30'8 N, 74°41'5 E)
Sampling Date: 04.10.2019

Phytoplankton

The micro-benthic Phytoplankton species observed per kg sand collected at the water depth i.e., below the 4 mts of water of marine is as follows. The one kg sand sample collected was occupied space of about (12 X 6 cm) 72 cm^2 of area of the bottom of the sea coast. The prime parameters analyzed are:

S No	Description	Result
1.	Numerical abundance of species	32 to 512 no/m^2
2.	Bio-mass net weight	1.0685 g/m^2
3.	Chlorophyll content	0.16 mg/m^3 to 4.36 mg/m^3
4.	Phaephytin content	0.18 mg/m^3 to 3.24 mg/m^3.
5.	Predominant species observed	Pteromonas, Lobomonas, Dichotomosiphon, Cryptomonas, Botryococcus, Carteria, Asterionella, Oscillatoria, Gomphonema, Chlorococcum.
6.	No of Species	30 - 38

Zooplankton

The micro marine Zooplanktonic species observed per kg sand collected at the bottom of the sea water below 4 mts of the water level spread over in the area of about (12cm X 6 cm) 72 cm^2. The prime parameters analysed are:

S No	Description	Result
1.	Predominant species observed	Crustaceans resparsent- Copepoda larval forms as Nauplii and the members Harpacticoid, Copepoda are abundant and other species are Cyclopoida, Calanoid, Copepods
2.	No of Species	08-16

TABLE-76
TEST RESULTS

Location Name: Northern Break Water

S. No.	Parameters	Units	Test Results
1.	Total Organic Carbon	%	0.58
2.	Total Organic Matter	%	0.99
3.	Inorganic Phosphates	mg/g	0.07
4.	Phosphates as $PO_4^{3-}P$	mg/g	0.09
5.	Sulphate as SO_4	mg/g	2.67
6.	Nitrite as NO_2	mg/g	<0.02
7.	Nitrate as NO_3	mg/g	3.27
8.	Calcium as Ca	mg/g	15.20
9.	Magnesium as Mg	mg/g	10.05
10.	Sodium as Na	mg/g	30.17
11.	Potassium as K	mg/g	0.48
	Benthic Communities		
12.	Micro Flora	Report is enclosed	
13.	Micro Fauna		

BENTHIC COMMUNITIES

1. Location: Northern Break Water
Sampling Date: 04.10.2019

Phytoplankton

The micro-benthic Phytoplankton species observed per kg sand collected at the water depth i.e., below the 4 mts of water of marine is as follows. The one kg sand sample collected was occupied space of about (12 X 6 cm) 72 cm^2 of area of the bottom of the sea coast. The prime parameters analyzed are:

S No	Description	Result
1.	Numerical abundance of species	26 to 495 no/m^2
2.	Bio-mass net weight	1.114 g/m^2
3.	Chlorophyll content	0.14 mg/m^3 to 3.82 mg/m^3
4.	Phaephytin content	0.18 mg/m^3 to 4.20 mg/m^3.
5.	Predominant species observed	Pteromonas, Lobomonas, Dichotomosiphon, Cryptomonas, Botryococcus, Carteria, Asterionella, Oscillatoria, Gomphonema, Chlorococcum.
6.	No of Species	30-34

Zooplankton

The micro marine Zooplankton species observed per kg sand collected at the bottom of the sea water below 4 mts of the water level spread over in the area of about (12cm X 6 cm) 72 cm^2. The prime parameters analyzed are:

S No	Description	Result
1.	Predominant species observed	Crustaceans resparsent- Copepoda larval forms as Nauplii and the members Harpacticoid, Copepoda are abundant and other species are Cyclopoida, Calanoid, Copepods
2.	No of Species	10-20

TABLE-77
TEST RESULTS

Location Name: Southern Break Water

S. No.	Parameters	Units	Test Results
1.	Total Organic Carbon	%	0.52
2.	Total Organic Matter	%	0.89
3.	Inorganic Phosphates	mg/g	0.07
4.	Phosphates as $PO_4^{3-}P$	mg/g	0.10
5.	Sulphate as SO_4	mg/g	3.42
6.	Nitrite as NO_2	mg/g	<0.02
7.	Nitrate as NO_3	mg/g	4.07
8.	Calcium as Ca	mg/g	13.67
9.	Magnesium as Mg	mg/g	9.10
10.	Sodium as Na	mg/g	30.42
11.	Potassium as K	mg/g	0.59
	Benthic Communities		
12.	Micro Flora	Report is enclosed	
13.	Micro Fauna		

BENTHIC COMMUNITIES

1. Location: Southern Break Water
Sampling Date: 04.10.2019

Phytoplankton

The micro-benthic Phytoplankton species observed per kg sand collected at the water depth i.e., below the 4 mts of water of marine is as follows. The one kg sand sample collected was occupied space of about (12 X 6 cm) 72 cm^2 of area of the bottom of the sea coast. The prime parameters analyzed are:

S No	Description	Result
1.	Numerical abundance of species	24 to 526 no/m^2
2.	Bio-mass net weight	1.302 g/m^2
3.	Chlorophyll content	0.26 mg/m^3 to 5.04 mg/m^3
4.	Phaephytin content	0.20mg/m^3 to 3.78 mg/m^3.
5.	Predominant species observed	Pteromonas, Lobomonas, Dichotomosiphon, Cryptomonas, Botryococcus, Carteria, Asterionella, Oscillatoria, Gomphonema, Chlorococcum.
6.	No of Species	22-30

Zooplankton

The micro marine Zooplanktonic species observed per kg sand collected at the bottom of the sea water below 4 mts of the water level spread over in the area of about (12cm X 6 cm) 72 cm^2. The prime parameters analysed are:

S No	Description	Result
1.	Predominant species observed	Crustaceans resparsent- Copepoda larval forms as Nauplii and the members Harpacticoid, Copepoda are abundant and other species are Cyclopoida, Calanoid, Copepods
2.	No of Species	08-26

TABLE-78
TEST RESULTS

Location Name: Inner Navigation Channel

S. No.	Parameters	Units	Test Results
1.	Total Organic Carbon	%	0.70
2.	Total Organic Matter	%	1.20
3.	Inorganic Phosphates	mg/g	0.06
4.	Phosphates as $PO_4^{3-}P$	mg/g	0.11
5.	Sulphate as SO_4	mg/g	3.58
6.	Nitrite as NO_2	mg/g	<0.02
7.	Nitrate as NO_3	mg/g	3.28
8.	Calcium as Ca	mg/g	13.90
9.	Magnesium as Mg	mg/g	8.20
10.	Sodium as Na	mg/g	24.60
11.	Potassium as K	mg/g	0.51
	Benthic Communities		
12.	Micro Flora	Report is enclosed	
13.	Micro Fauna		

BENTHIC COMMUNITIES

1. Location: Inner Navigation Channel
Sampling Date: 04.10.2019

Phytoplankton

The micro-benthic Phytoplankton species observed per kg sand collected at the water depth i.e., below the 4 mts of water of marine is as follows. The one kg sand sample collected was occupied space of about (12 X 6 cm) 72 cm^2 of area of the bottom of the sea coast. The prime parameters analyzed are:

S No	Description	Result
1.	Numerical abundance of species	25 to 472 no/m^2
2.	Bio-mass net weight	1.104 g/m^2
3.	Chlorophyll content	0.18 mg/m^3 and 5.30 mg/m^3
4.	Phaephytin content	0.24 mg/m^3 to 4.32 mg/m^3.
5.	Predominant species observed	Pteromonas, Lobomonas, Dichotomosiphon, Cryptomonas, Botryococcus, Carteria, Asterionella, Oscillatoria, Gomphonema, Chlorococcum.
6.	No of Species	14-32

Zooplankton

The micro marine Zooplanktonic species observed per kg sand collected at the bottom of the sea water below 4 mts of the water level spread over in the area of about (12cm X 6 cm) 72 cm^2. The prime parameters analysed are:

S No	Description	Result
1.	Predominant species observed	Crustaceans resparsent- Copepoda larval forms as Nauplii and the members Harpacticoid, Copepoda are abundant and other species are Cyclopoida, Calanoid, Copepods
2.	No of Species	12-30

TABLE-79
TEST RESULTS

Location Name: Saravathi River Near Berthing Area

S. No.	Parameters	Units	Test Results
1.	Total Organic Carbon	%	0.62
2.	Total Organic Matter	%	1.06
3.	Inorganic Phosphates	mg/g	0.10
4.	Phosphates as $PO_4^{3-}P$	mg/g	0.09
5.	Sulphate as SO_4	mg/g	3.60
6.	Nitrite as NO_2	mg/g	<0.02
7.	Nitrate as NO_3	mg/g	5.28
8.	Calcium as Ca	mg/g	26.54
9.	Magnesium as Mg	mg/g	10.3
10.	Sodium as Na	mg/g	32.18
11.	Potassium as K	mg/g	0.50
	Benthic Communities		
12.	Micro Flora	Report is enclosed	
13.	Micro Fauna		

BENTHIC COMMUNITIES

1. Location: Saravathi River Near Berthing Area
Sampling Date: 04.10.2019

Phytoplankton

The micro-benthic Phytoplankton species observed per kg sand collected at the water depth i.e., below the 4 mts of water of marine is as follows. The one kg sand sample collected was occupied space of about (12 X 6 cm) 72 cm^2 of area of the bottom of the sea coast. The prime parameters analyzed are:

S No	Description	Result
1.	Numerical abundance of species	22 to 510 no/m^2
2.	Bio-mass net weight	1.120 g/m^2
3.	Chlorophyll content	0.16 mg/m^3 to 3.95 mg/m^3
4.	Phaephytin content	0.24 mg/m^3 to 4.62mg/m^3.
5.	Predominant species observed	Pteromonas, Lobomonas, Dichotomosiphon, Cryptomonas, Botryococcus, Carteria, Asterionella, Oscillatoria, Gomphonema, Chlorococcum.
6.	No of Species	20-34

Zooplankton

The micro marine Zooplanktonic species observed per kg sand collected at the bottom of the sea water below 4 mts of the water level spread over in the area of about (12cm X 6 cm) 72 cm^2. The prime parameters analysed are:

S No	Description	Result
1.	Predominant species observed	Crustaceans resparsent- Copepoda larval forms as Nauplii and the members Harpacticoid, Copepoda are abundant and other species are Cyclopoida, Calanoid, Copepods
2.	No of Species	11-22

TABLE-80
TEST RESULTS

Location Name: Saravathi/Badgani River Mouth Near Confluence Point

S. No.	Parameters	Units	Test Results
1.	Total Organic Carbon	%	0.63
2.	Total Organic Matter	%	1.08
3.	Inorganic Phosphates	mg/g	0.05
4.	Phosphates as $PO_4^{3-}P$	mg/g	0.13
5.	Sulphate as SO_4	mg/g	3.39
6.	Nitrite as NO_2	mg/g	<0.02
7.	Nitrate as NO_3	mg/g	5.05
8.	Calcium as Ca	mg/g	12.72
9.	Magnesium as Mg	mg/g	8.20
10.	Sodium as Na	mg/g	27.54
11.	Potassium as K	mg/g	0.48
	Benthic Communities		
12.	Micro Flora	Report is enclosed	
13.	Micro Fauna		

BENTHIC COMMUNITIES

1. Location: Saravathi/Badgani River Mouth Near Confluence Point
Sampling Date: 04.10.2019
Phytoplankton

The micro-benthic Phytoplankton species observed per kg sand collected at the water depth i.e., below the 4 mts of water of marine is as follows. The one kg sand sample collected was occupied space of about (12 X 6 cm) 72 cm^2 of area of the bottom of the sea coast. The prime parameters analyzed are:

S No	Description	Result
1.	Numerical abundance of species	26 to 518 no/m^2
2.	Bio-mass net weight	1.085 g/m^2
3.	Chlorophyll content	0.18 mg/m^3 to 4.76 mg/m^3
4.	Phaephytin content	0.22 mg/m^3 to 4.28 mg/m^3.
5.	Predominant species observed	Pteromonas, Lobomonas, Dichotomosiphon, Cryptomonas, Botryococcus, Carteria, Asterionella, Oscillatoria, Gomphonema, Chlorococcum.
6.	No of Species	20-32

Zooplankton

The micro marine Zooplanktonic species observed per kg sand collected at the bottom of the sea water below 4 mts of the water level spread over in the area of about (12cm X 6 cm) 72 cm^2. The prime parameters analysed are:

S No	Description	Result
1.	Predominant species observed	Crustaceans resparsent- Copepoda larval forms as Nauplii and the members Harpacticoid, Copepoda are abundant and other species are Cyclopoida, Calanoid, Copepods
2.	No of Species	09-28

NOVEMBER-2019

Ambient Air Quality Monitoring

The Ambient Air Quality has been monitored at five locations. The table showing Ambient Air Quality is present in **Table -81 to Table 90** respectively.

Ambient Air Quality Locations

Location Code	Location Name	Date Of Monitoring	Date Of Monitoring
AQ-1	Project Site	04.11.2019	21.11.2019
AQ-2	Kasarkod Village	04.11.2019	21.11.2019
AQ-3	Honnavar Village	04.11.2019	21.11.2019
AQ-4	Kulkod Village	05.11.2019	22.11.2019
AQ-5	Ramatheerth Village	05.11.2019	22.11.2019

TABLE-81

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Project Site
Date of Monitoring : 04.11.2019
Ambient Temperature °C : 27 (Average)
Wind Direction : SE
Weather Condition : Clear
Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	65	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	38	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	6.3	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	19.1	<80	Jacob and Hochheiser modified (Na- Arsenite) method IS 5182 P VI-2001 RA-2017
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-82

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Kasarkod Village
Date of Monitoring : 04.11.2019
Ambient Temperature °C : 27 (Average)
Wind Direction : SE
Weather Condition : Clear
Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	68	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	39	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	7.6	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	23.5	<80	Jacob and Hochheiser modified (Na- Arsenite) method IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-83

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Honnavar Village

Date of Monitoring : 04.11.2019

Ambient Temperature °C : 27 (Average)

Wind Direction : SE

Weather Condition : Clear

Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	58	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	32	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	5.9	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	19.1	<80	Jacob and Hochheiser modified (Na- Arsenite) method IS 5182 P VI-2001 RA-2017
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-84

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Kulkod Village

Date of Monitoring : 05.11.2019

Ambient Temperature °C : 27 (Average)

Wind Direction : SE

Weather Condition : Clear

Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	46	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	24	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	6.2	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	18.9	<80	Jacob and Hochheiser modified (Na- Arsenite) method IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-85

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Ramtheerth Village

Date of Monitoring : 05.11.2019

Ambient Temperature °C : 27 (Average)

Wind Direction : SE

Weather Condition : Clear

Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	44	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	25	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	5.8	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	19.7	<80	Jacob and Hochheiser modified (Na- Arsenite) method IS 5182 P VI-2001 RA-2017
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-86

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Project Site

Date of Monitoring : 21.11.2019

Ambient Temperature °C : 26 (Average)

Wind Direction : SE

Weather Condition : Clear

Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	52	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	29	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	6.3	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	19.5	<80	Jacob and Hochheiser modified (Na- Arsenite) method IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-87

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Kasarkod Village
Date of Monitoring : 21.11.2019
Ambient Temperature °C : 26 (Average)
Wind Direction : SE
Weather Condition : Clear
Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	56	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	29	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	6.8	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	19.3	<80	Jacob and Hochheiser modified (Na- Arsenite) method IS 5182 P VI-2001 RA-2017
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-88

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Honnavar Village
Date of Monitoring : 21.11.2019
Ambient Temperature °C : 26 (Average)
Wind Direction : SE
Weather Condition : Clear
Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	66	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	37	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	7.2	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	22.5	<80	Jacob and Hochheiser modified (Na- Arsenite) method IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-89

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Kulkod Village

Date of Monitoring : 22.11.2019

Ambient Temperature °C : 26 (Average)

Wind Direction : SE

Weather Condition : Clear

Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	57	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	32	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	5.6	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	16.9	<80	Jacob and Hochheiser modified (Na- Arsenite) method IS 5182 P VI-2001 RA-2017
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-90

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Ramtheerth Village

Date of Monitoring : 22.11.2019

Ambient Temperature °C : 26 (Average)

Wind Direction : SE

Weather Condition : Clear

Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	49	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	27	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	5.3	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	17.4	<80	Jacob and Hochheiser modified (Na- Arsenite) method IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-91
Ambient Noise Quality Locations

Location Code	Location Name	Date Of Monitoring	Date Of Monitoring
N-1	Project Site	03.10.2019	22.10.2019
N-2	Kasarkod Village	03.10.2019	22.10.2019
N-3	Honnavar Village	03.10.2019	22.10.2019
N-4	Kulkod Village	04.10.2019	23.10.2019
N-5	Ramatheerth Village	04.10.2019	23.10.2019

TABLE-91
AMBIENT NOISE LEVELS IN THE STUDY AREA

All the values are expressed in dB (A)

Time	N-1	N-2	N-3	N-4	N-5	N-1	N-2	N-3	N-4	N-5
HOURS										
06:00 – 07:00	60.5	45.7	45.2	42.0	39.3	61.8	45.9	44.9	43.7	41.7
07:00 – 08:00	64.3	48.7	47.9	44.1	40.9	65.1	47.6	47.2	46.7	43.4
08:00 – 09:00	69.1	49.8	50.6	47.7	43.7	69.8	49.8	48.6	49.2	46.0
09:00 – 10:00	72.6	51.9	51.3	49.9	47.1	67.9	52.2	50.3	51.6	48.1
10:00 – 11:00	68.2	54.3	53.5	47.4	45.4	73.8	52.6	48.3	50.1	46.7
11:00 – 12:00	70.7	50.7	54.0	50.8	49.3	71.0	50.0	47.7	48.2	48.6
12:00 – 13:00	73.8	49.4	51.6	49.0	50.4	74.4	49.2	49.7	51.1	50.3
13:00 – 14:00	71.7	53.3	54.5	53.1	47.7	71.1	51.6	52.0	53.3	49.2
14:00 – 15:00	77.6	50.9	52.0	52.3	45.7	72.1	54.2	50.3	49.9	46.7
15:00 – 16:00	74.0	54.2	51.1	48.8	47.1	70.1	51.9	49.5	52.4	48.1
16:00 – 17:00	72.9	57.8	53.3	50.1	49.5	72.5	50.2	48.7	49.2	50.6
17:00 – 18:00	74.9	55.3	51.6	51.3	50.0	73.2	49.1	51.0	49.8	48.3
18:00 – 19:00	74.0	52.0	49.2	48.0	47.5	69.5	52.6	50.3	48.3	47.7
19:00 – 20:00	70.1	51.2	47.4	45.6	45.3	67.2	51.2	47.8	45.9	46.7
20:00 – 21:00	72.6	48.6	48.1	44.3	43.6	63.7	48.7	45.5	43.8	45.2
21:00 – 22:00	68.2	46.8	45.7	41.6	42.8	60.1	46.2	43.4	41.4	42.7
22:00 – 23:00	40.4	40.4	43.3	40.4	40.4	57.6	43.9	40.7	39.3	40.0
23:00 – 24:00	38.1	37.3	41.9	38.1	37.3	53.7	41.7	38.7	37.2	37.6
24:00 – 01:00	35.7	34.3	39.3	35.7	34.3	50.2	40.1	37.0	34.8	34.9
01:00 – 02:00	34.9	32.7	36.9	34.9	32.7	48.2	37.9	35.4	37.1	32.4
02:00 – 03:00	33.5	32.3	35.1	33.5	32.3	50.8	35.7	35.7	38.7	31.6
03:00 – 04:00	32.2	33.4	35.6	32.2	33.4	51.6	34.6	33.7	36.2	33.3
04:00 – 05:00	36.4	35.9	37.3	36.4	35.9	54.5	36.9	37.0	37.7	36.0
05:00 – 06:00	38.1	38	39.7	38.1	38.0	57.6	39.1	39.1	40.0	37.8
L Day	**72.4**	**52.4**	**51.2**	**49.0**	**47.0**	**70.5**	**50.7**	**49.0**	**49.4**	**47.5**
L Night	**36.9**	**36.4**	**39.5**	**36.9**	**36.4**	**54.2**	**39.7**	**37.7**	**37.9**	**36.3**

TABLE-92

Ground Water Quality

Two Ground water samples was collected and analyzed. The analytical results are given in **TABLE-92**

Location Code	Bore Well Location	Date of Sampling
GW-1	Honnavar Village	04.11.2019
GW-2	Kasarkod Village	04.11.2019

TEST RESULTS

S.No.	Parameters	Units	Test Method	Results		Drinking Water Limits As per IS: 10500; 2012	
				GW-1	GW-2	Desirable Limits	Permissible limits in absence of alternative Source
1.	pH @25°C	--	IS:3025 part 11 1983, RA-2017	7.06	6.98	6.50 – 8.50	No relaxation
2.	Conductivity@25°C	µmhos/cm	IS: 3025 Part 14 1984 RA-2013	418	496	--	--
3.	Temperature	°C	IS: 3025 Part 1 1984 RA-2014	24.0	22.0	--	--
4.	Total Dissolved Solids	mg/L	IS: 3025 Part 16 1984, RA-2017	272	315	500	2000
5.	Total Suspended Solids	mg/L	IS 3025 Part 17 1984, RA-2017	<1.0	<1.0	--	--
6.	Turbidity	NTC	IS: 3025 Part 10 1984, RA-2017	<1.0	<1.0	1	5
7.	Total Hardness as $CaCO_3$	mg/L	IS: 3025 Part 21 2009, RA-2014	125	144	200	600
8.	Calcium as Ca	mg/L	IS: 3025 Part 40 1991, RA-2014	29.0	33.3	75	200
9.	Magnesium as Mg	mg/L	IS: 3025 Part 46 1994, RA-2014	12.5	14.9	30	100
10.	Chloride as Cl	mg/L	IS: 3025 Part 32 1988, RA-2014	41.6	57.1	250	1000
11.	Sulphate as SO_4	mg/L	IS: 3025 Part 24 1986, RA-2014	44.9	50.9	200	400
12.	Sodium as Na	mg/L	IS: 3025 Part 45 1993, RA-2014	35.3	43.5	---	---
13.	Potassium as K	mg/L	IS: 3025 Part 45 1993, RA-2014	1.9	2.3	---	---
14.	Nitrate as NO_3	mg/L	IS: 3025 Part 34 1988, RA-2014	5.5	6.1	45	No Relaxation
15.	Iron as Fe	mg/L	IS: 3025 Part 53 2003, RA-2014	0.13	0.14	0.3	No Relaxation
16.	Lead as Pb	mg/L	IS 3025 Part 47 1994, RA2014	<0.001	<0.001	0.01	No Relaxation
17.	Dissolved Oxygen	mg/L	IS 3025 Part 38 2009	<1.0	<1.0	--	--
18.	Biological Oxygen Demand(3 Days For27°C)	mg/L	IS 3025 Part 44 1993, RA-2014	<3.0	<3.0	--	--
19.	Chemical Oxygen Demand	mg/L	IS 3025 Part 58 2006, RA-2017	<4.0	<4.0	--	--
20	Oil & Grease	mg/L	IS 3025 Part 39 :1991, RA-2014	<1.0	<1.0	--	--
21.	Coli form Bacteria	CFU /100ml	IS: 15185: 2016	Not Detected	Not Detected	Must not be Detected	
22.	E. Coli	CFU /100ml	IS: 15185: 2016	Not Detected	Not Detected	Must not be Detected	

Surface Water Quality

Two Surface water samples was collected and analyzed. The analytical results are given in **TABLE-93**

TABLE-93

Surface water Quality Location

Location Code	Location Name	Sample Collection Dates
SW1	Sharavati River	04.11.2019
SW2	Badgani River	04.11.2019

TEST RESULTS

S.No.	Parameters	Units	Test Method	Results		Limits as Per As per IS: 2296 Class C
				SW-1	SW-2	
1.	pH @25^{0}C	--	IS:3025 part 11 1983, RA-2017	8.32	8.09	6.5-8.5
2.	Conductivity@25^{0}C	µmhos/cm	IS: 3025 Part 14 1984 RA-2013	2718	36350	--
3.	Temperature	^{0}C	IS: 3025 Part 1 1984 RA-2014	21.3	23.5	--
4.	Total Dissolved Solids	mg/L	IS: 3025 Part 16 1984, RA-2017	1628	21555	1500 max
5.	Total Suspended Solids	mg/L	IS 3025 Part 17 1984, RA-2017	22	20	--
6.	Turbidity	NTC	IS: 3025 Part 10 1984, RA-2017	8.9	14.2	--
7.	Total Hardness as $CaCO_3$	mg/L	IS: 3025 Part 21 2009, RA-2014	402	5240	--
8.	Calcium as Ca	mg/L	IS: 3025 Part 40 1991, RA-2014	99.7	424.0	--
9.	Magnesium as Mg	mg/L	IS: 3025 Part 46 1994, RA-2014	37.1	1003.6	--
10.	Chloride as Cl	mg/L	IS: 3025 Part 32 1988, RA-2014	641.1	12468.1	600
11.	Sulphate as SO_4	mg/L	IS: 3025 Part 24 1986, RA-2014	225.8	342.9	400
12.	Nitrate as NO_3	mg/L	IS: 3025 Part 34 1988, RA-2014	28.3	44.0	50
13.	Iron as Fe	mg/L	IS: 3025 Part 53 2003, RA-2014	0.21	0.21	50
14.	Lead as Pb	mg/L	IS 3025 Part 47 1994, RA2014	<0.001	<0.001	0.1
15.	Dissolved Oxygen	mg/L	IS 3025 Part 38 2009	4.8	6.2	4-6
16.	Biological Oxygen Demand (3 Days For27°C)	mg/L	IS 3025 Part 44 1993, RA-2014	<3.0	04	<3.0
17.	Chemical Oxygen Demand	mg/L	IS 3025 Part 58 2006, RA-2017	05	26	--
18.	Oil & Grease	mg/L	IS 3025 Part 39 :1991, RA-2014	<1.0	<1.0	0.1
19.	Coli form Bacteria	CFU /100ml	IS: 15185: 2016	1800	370	Should not exceed 5000

DECEMBER-2019

Ambient Air Quality Monitoring

The Ambient Air Quality has been monitored at five locations. The table showing Ambient Air Quality is present in **Table -94 to Table 103** respectively.

Ambient Air Quality Locations

Location Code	Location Name	Date Of Monitoring	Date Of Monitoring
AQ-1	Project Site	05.12.2019	23.12.2019
AQ-2	Kasarkod Village	05.12.2019	23.12.2019
AQ-3	Honnavar Village	05.12.2019	23.12.2019
AQ-4	Kulkod Village	06.12.2019	24.12.2019
AQ-5	Ramatheerth Village	06.12.2019	24.12.2019

TABLE-94

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Project Site
Date of Monitoring : 05.12.2019
Ambient Temperature °C : 27 (Average)
Wind Direction : W
Weather Condition : Clear
Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	62	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	31	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	6.0	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	19.8	<80	Jacob and Hochheiser modified (Na- Arsenite) method IS 5182 P VI-2001 RA-2017
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-95

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Kasarkod Village
Date of Monitoring : 05.12.2019
Ambient Temperature °C : 27 (Average)
Wind Direction : W
Weather Condition : Clear
Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	65	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	33	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	7.2	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	22.7	<80	Jacob and Hochheiser modified (Na- Arsenite) method IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-96
DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Honnavar Village
Date of Monitoring : 05.12.2019
Ambient Temperature °C : 27 (Average)
Wind Direction : W
Weather Condition : Clear
Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	55	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	28	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	5.5	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	17.9	<80	Jacob and Hochheiser modified (Na- Arsenite) method IS 5182 P VI-2001 RA-2017
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-97
DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Kulkod Village
Date of Monitoring : 06.12.2019
Ambient Temperature °C : 27 (Average)
Wind Direction : W
Weather Condition : Clear
Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	50	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	27	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	6.5	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	19.0	<80	Jacob and Hochheiser modified (Na- Arsenite) method IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-98

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Ramtheerth Village

Date of Monitoring : 06.12.2019

Ambient Temperature °C : 27 (Average)

Wind Direction : W

Weather Condition : Clear

Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	46	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	27	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	5.9	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	18.0	<80	Jacob and Hochheiser modified (Na- Arsenite) method IS 5182 P VI-2001 RA-2017
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-99

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Project Site

Date of Monitoring : 23.12.2019

Ambient Temperature °C : 26 (Average)

Wind Direction : E

Weather Condition : Clear

Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	56	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	32	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	6.6	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	20.3	<80	Jacob and Hochheiser modified (Na- Arsenite) method IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-100

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Kasarkod Village

Date of Monitoring : 23.12.2019

Ambient Temperature °C : 26 (Average)

Wind Direction : E

Weather Condition : Clear

Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	59	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	32	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	6.6	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	21.4	<80	Jacob and Hochheiser modified (Na- Arsenite) method IS 5182 P VI-2001 RA-2017
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-101

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Honnavar Village

Date of Monitoring : 23.12.2019

Ambient Temperature °C : 26 (Average)

Wind Direction : E

Weather Condition : Clear

Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	70	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	39	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	7.5	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	23.6	<80	Jacob and Hochheiser modified (Na- Arsenite) method IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-102

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Kulkod Village

Date of Monitoring : 24.12.2019

Ambient Temperature °C : 26 (Average)

Wind Direction : E

Weather Condition : Clear

Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	60	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	35	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	5.9	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	17.2	<80	Jacob and Hochheiser modified (Na- Arsenite) method IS 5182 P VI-2001 RA-2017
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-103

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Ramtheerth Village

Date of Monitoring : 24.12.2019

Ambient Temperature °C : 26 (Average)

Wind Direction : E

Weather Condition : Clear

Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	54	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	32	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	5.6	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	17.8	<80	Jacob and Hochheiser modified (Na- Arsenite) method IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-104
Ambient Noise Quality Locations

Location Code	Location Name	Date Of Monitoring	Date Of Monitoring
N-1	Project Site	05.12.2019	23.12.2019
N-2	Kasarkod Village	05.12.2019	23.12.2019
N-3	Honnavar Village	05.12.2019	23.12.2019
N-4	Kulkod Village	06.12.2019	24.12.2019
N-5	Ramatheerth Village	06.12.2019	24.12.2019

TABLE-104
AMBIENT NOISE LEVELS IN THE STUDY AREA

All the values are expressed in dB (A)

Time	N-1	N-2	N-3	N-4	N-5	N-1	N-2	N-3	N-4	N-5
HOURS										
06:00 – 07:00	60.5	45.7	45.2	42.0	39.3	61.8	39.4	40.2	41.7	40.2
07:00 – 08:00	64.3	48.7	47.9	44.1	40.9	65.1	40.9	42.3	43.4	42.3
08:00 – 09:00	69.1	49.8	50.6	47.7	43.7	69.8	42.8	43.5	46.0	43.5
09:00 – 10:00	72.6	51.9	51.3	49.9	47.1	67.9	44.8	45.1	48.1	45.1
10:00 – 11:00	68.2	54.3	53.5	47.4	45.4	73.8	45.1	43.3	46.7	43.3
11:00 – 12:00	70.7	50.7	54.0	50.8	49.3	71.0	42.9	42.7	48.6	42.7
12:00 – 13:00	73.8	49.4	51.6	49.0	50.4	74.4	42.2	44.5	50.3	44.5
13:00 – 14:00	71.7	53.3	54.5	53.1	47.7	71.1	44.3	46.6	49.2	46.6
14:00 – 15:00	77.6	50.9	52.0	52.3	45.7	72.1	46.5	45.1	46.7	45.1
15:00 – 16:00	74.0	54.2	51.1	48.8	47.1	70.1	44.5	44.4	48.1	44.4
16:00 – 17:00	72.9	57.8	53.3	50.1	49.5	72.5	43.1	43.6	50.6	43.6
17:00 – 18:00	74.9	55.3	51.6	51.3	50.0	73.2	42.2	45.7	48.3	45.7
18:00 – 19:00	74.0	52.0	49.2	48.0	47.5	69.5	45.1	45.1	47.7	45.1
19:00 – 20:00	70.1	51.2	47.4	45.6	45.3	67.2	43.9	42.8	46.7	42.8
20:00 – 21:00	72.6	48.6	48.1	44.3	43.6	63.7	41.8	40.8	45.2	40.8
21:00 – 22:00	68.2	46.8	45.7	41.6	42.8	60.1	39.7	38.9	42.7	38.9
22:00 – 23:00	64.8	43.3	43.3	40.4	40.4	57.6	37.7	36.5	40.0	40.1
23:00 – 24:00	63.0	40.8	41.9	38.1	37.3	53.7	35.8	34.7	37.6	38.8
24:00 – 01:00	59.5	37.9	39.3	35.7	34.3	50.2	34.4	33.1	34.9	36.4
01:00 – 02:00	55.8	36.2	36.9	34.9	32.7	48.2	32.6	31.7	32.4	34.2
02:00 – 03:00	52.8	36.7	35.1	33.5	32.3	50.8	30.7	32.0	31.6	32.6
03:00 – 04:00	50.1	38.6	35.6	32.2	33.4	51.6	29.7	30.2	33.3	33.0
04:00 – 05:00	54.5	40.8	37.3	36.4	35.9	52.6	31.7	33.1	36.0	34.6
05:00 – 06:00	57.5	42.5	39.7	38.1	38.0	53.1	37.2	39.4	37.8	36.8
L Day	**72.4**	**52.4**	**51.2**	**49.0**	**47.0**	**70.5**	**43.5**	**43.8**	**47.5**	**43.8**
L Night	**59.7**	**40.3**	**39.5**	**36.9**	**36.4**	**54.2**	**34.0**	**33.7**	**36.3**	**36.6**

TABLE-105

Ground Water Quality

Two Ground water samples was collected and analyzed. The analytical results are given in **TABLE-105**

Location Code	Bore Well Location	Date of Sampling
GW-1	Honnavar Village	05.12.2019
GW-2	Kasarkod Village	05.12.2019

TEST RESULTS

S.No.	Parameters	Units	Test Method	Results		Drinking Water Limits As per IS: 10500; 2012	
				GW-1	GW-2	Desirable Limits	Permissible limits in absence of alternative Source
1.	pH @25^{0}C	--	IS:3025 part 11 1983, RA-2017	7.12	7.12	6.50 – 8.50	No relaxation
2.	Conductivity@25^{0}C	µmhos/cm	IS: 3025 Part 14 1984 RA-2013	424	506	--	--
3.	Temperature	°C	IS: 3025 Part 1 1984 RA-2014	23.2	22.6	--	--
4.	Total Dissolved Solids	mg/L	IS: 3025 Part 16 1984, RA-2017	270	320	500	2000
5.	Total Suspended Solids	mg/L	IS 3025 Part 17 1984, RA-2017	<1.0	<1.0	--	--
6.	Turbidity	NTC	IS: 3025 Part 10 1984, RA-2017	<1.0	<1.0	1	5
7.	Total Hardness as $CaCO_3$	mg/L	IS: 3025 Part 21 2009, RA-2014	126	146	200	600
8.	Calcium as Ca	mg/L	IS: 3025 Part 40 1991, RA-2014	29.0	33.9	75	200
9.	Magnesium as Mg	mg/L	IS: 3025 Part 46 1994, RA-2014	12.3	15.2	30	100
10.	Chloride as Cl	mg/L	IS: 3025 Part 32 1988, RA-2014	40.	58.2	250	1000
11.	Sulphate as SO_4	mg/L	IS: 3025 Part 24 1986, RA-2014	45.6	51.9	200	400
12.	Sodium as Na	mg/L	IS: 3025 Part 45 1993, RA-2014	36.9	44.3	---	---
13.	Potassium as K	mg/L	IS: 3025 Part 45 1993, RA-2014	1.9	2.5	---	---
14.	Nitrate as NO_3	mg/L	IS: 3025 Part 34 1988, RA-2014	5.9	6.6	45	No Relaxation
15.	Iron as Fe	mg/L	IS: 3025 Part 53 2003, RA-2014	0.15	0.18	0.3	No Relaxation
16.	Lead as Pb	mg/L	IS 3025 Part 47 1994, RA2014	<0.001	<0.001	0.01	No Relaxation
17.	Dissolved Oxygen	mg/L	IS 3025 Part 38 2009	<1.0	<1.0	--	--
18.	Biological Oxygen Demand(3 Days For27°C)	mg/L	IS 3025 Part 44 1993, RA-2014	<3.0	<3.0	--	--
19.	Chemical Oxygen Demand	mg/L	IS 3025 Part 58 2006, RA-2017	<4.0	<4.0	--	--
20	Oil & Grease	mg/L	IS 3025 Part 39 :1991, RA-2014	<1.0	<1.0	--	--
21.	Coli form Bacteria	CFU /100ml	IS: 15185: 2016	Not Detected	Not Detected	Must not be Detected	
22.	E. Coli	CFU /100ml	IS: 15185: 2016	Not Detected	Not Detected	Must not be Detected	

Surface Water Quality

Two Surface water samples was collected and analyzed. The analytical results are given in **TABLE-106**

TABLE-106

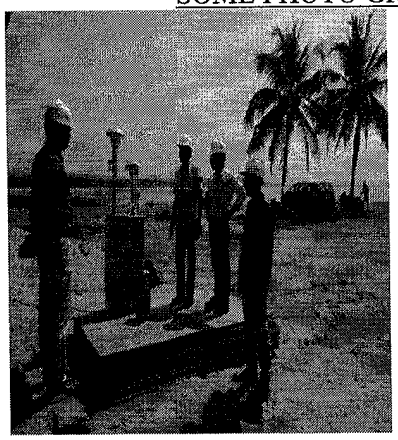
Surface water Quality Location

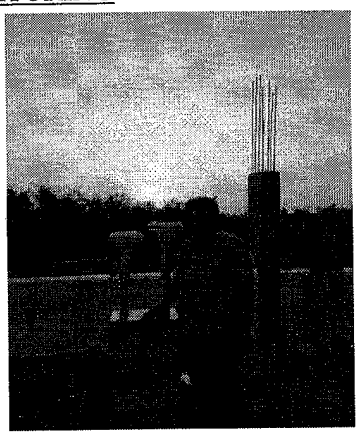
Location Code	Location Name	Sample Collection Dates
SW1	Sharavati River	05.12.2019
SW2	Badgani River	05.12.2019

TEST RESULTS

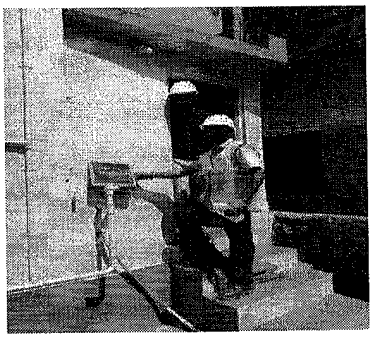
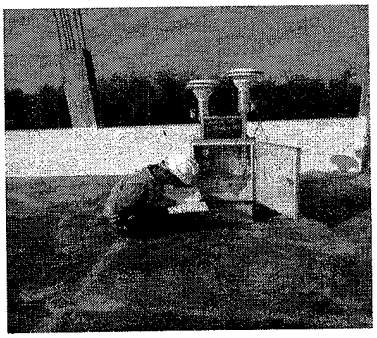
S.No.	Parameters	Units	Test Method	Results		Limits as Per As per IS: 2296 Class C
				SW-1	SW-2	
1.	pH @25^{0}C	--	IS:3025 part 11 1983, RA-2017	8.21	8.12	6.5-8.5
2.	Conductivity@25^{0}C	µmhos/cm	IS: 3025 Part 14 1984 RA-2013	2772	37077	--
3.	Temperature	^{0}C	IS: 3025 Part 1 1984 RA-2014	22.0	22.6	--
4.	Total Dissolved Solids	mg/L	IS: 3025 Part 16 1984, RA-2017	1660	21986	1500 max
5.	Total Suspended Solids	mg/L	IS 3025 Part 17 1984, RA-2017	26	26	--
6.	Turbidity	NTC	IS: 3025 Part 10 1984, RA-2017	12.3	18.9	--
7.	Total Hardness as $CaCO_3$	mg/L	IS: 3025 Part 21 2009, RA-2014	410	5345	--
8.	Calcium as Ca	mg/L	IS: 3025 Part 40 1991, RA-2014	101.7	432.5	--
9.	Magnesium as Mg	mg/L	IS: 3025 Part 46 1994, RA-2014	37.8	1024	--
10.	Chloride as Cl	mg/L	IS: 3025 Part 32 1988, RA-2014	653.9	12717	600
11.	Sulphate as SO_4	mg/L	IS: 3025 Part 24 1986, RA-2014	230.3	349.8	400
12.	Nitrate as NO_3	mg/L	IS: 3025 Part 34 1988, RA-2014	28.8	44.8	50
13.	Iron as Fe	mg/L	IS: 3025 Part 53 2003, RA-2014	0.20	0.25	50
14.	Lead as Pb	mg/L	IS 3025 Part 47 1994, RA2014	<0.001	<0.001	0.1
15.	Dissolved Oxygen	mg/L	IS 3025 Part 38 2009	5.2	5.6	4-6
16.	Biological Oxygen Demand (3 Days For27°C)	mg/L	IS 3025 Part 44 1993, RA-2014	<3.0	04	<3.0
17.	Chemical Oxygen Demand	mg/L	IS 3025 Part 58 2006, RA-2017	06	22	--
18.	Oil & Grease	mg/L	IS 3025 Part 39 :1991, RA-2014	<1.0	<1.0	0.1
19.	Coli form Bacteria	CFU /100ml	IS: 15185: 2016	1800	370	Should not exceed 5000

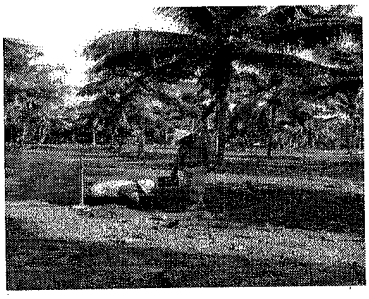
SOME PHOTO GRAPHS AT THE TIME OF MONITORING

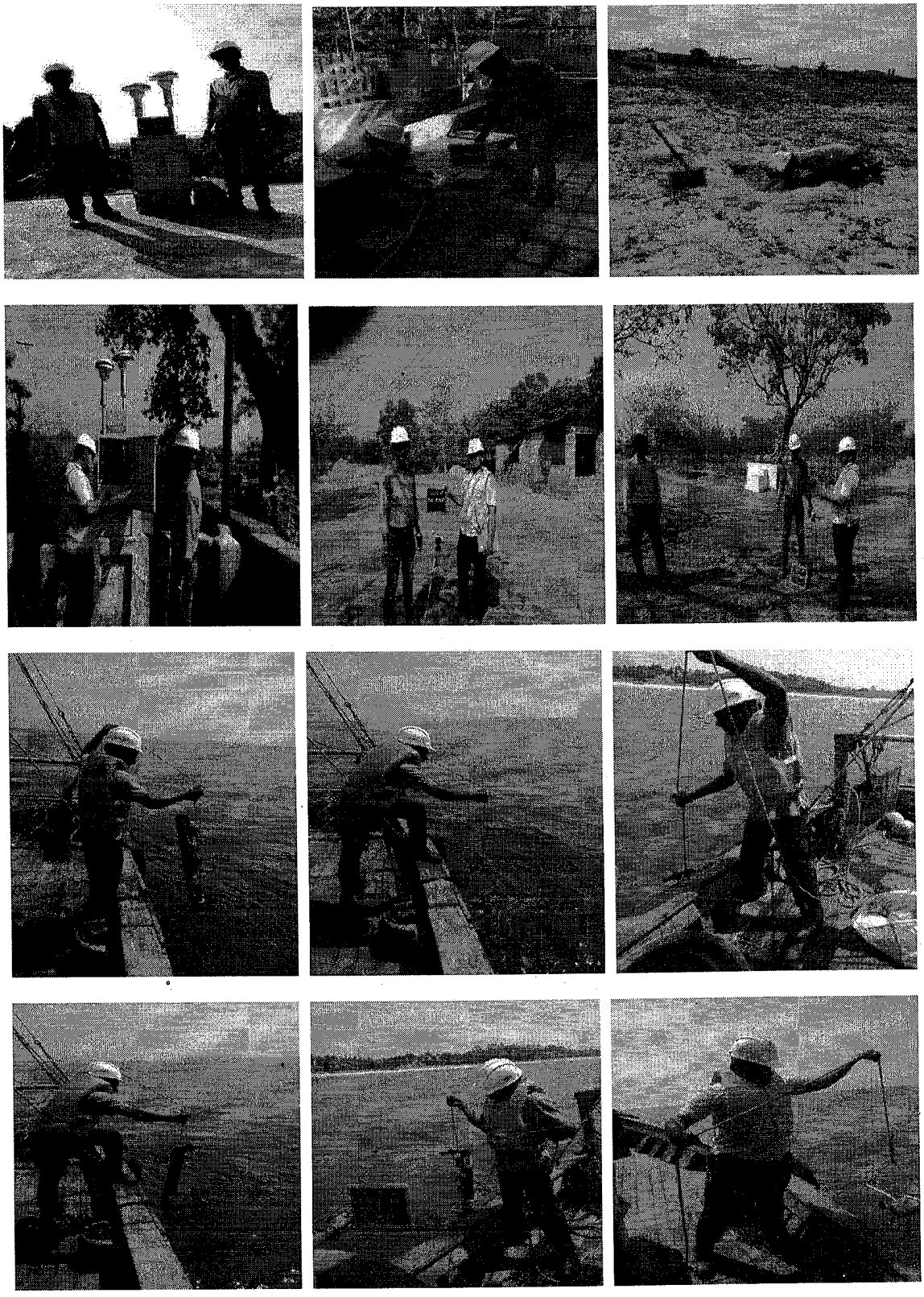


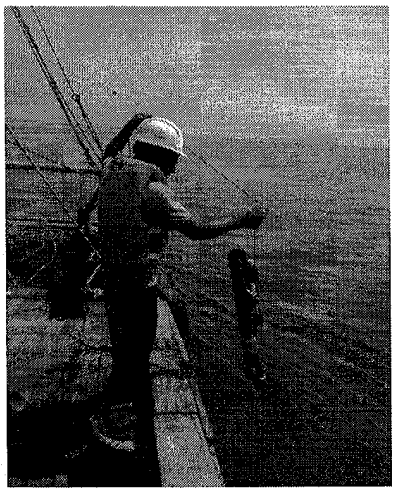
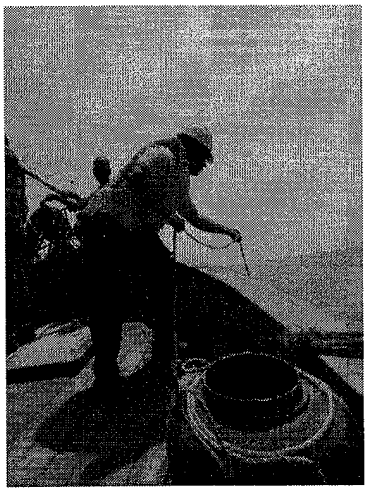
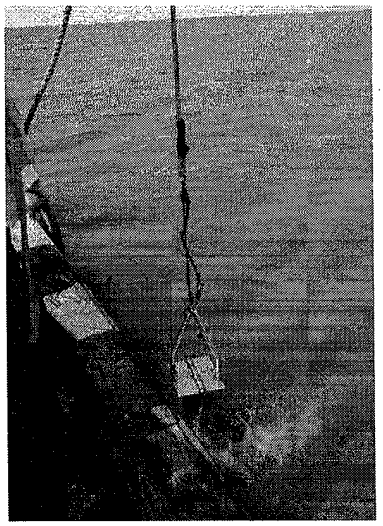


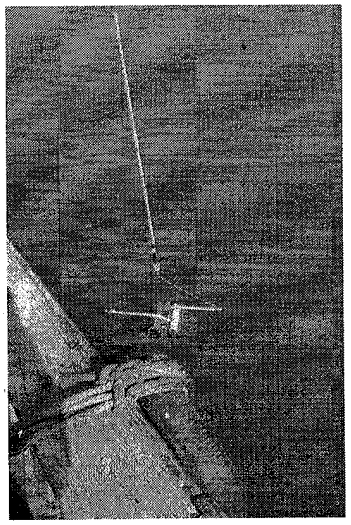
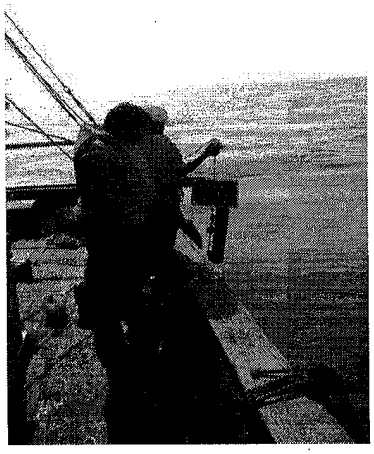
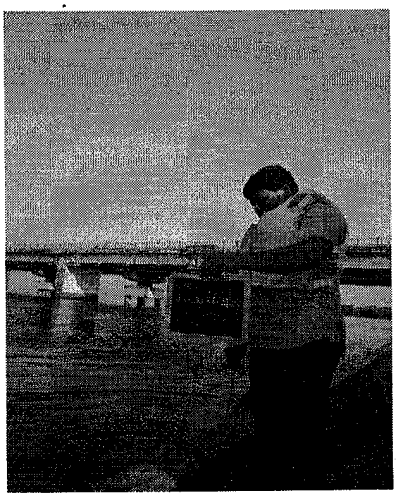
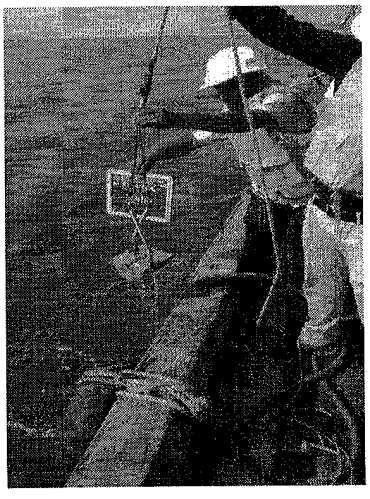




MOEF&CC CERTIFICATE

F. No. Q-15018/05/2019-CPW
Government of India
Ministry of Environment, Forest and Climate Change
(CP Division)

Agni-233, Indira Paryavaran Bhavan,
Jor Bagh Road,
New Delhi – 110 003.
Dated, the 8th January,2020

To

M/s Vison Labs
H. No. 16-11-23/37/A, Flat No. 205 & 206
2nd Floor, Andhra Bank Building
Opp. R.T.A. Office, Malakpet, Hyderabad-500036
Telangana

Subject: -Recognition of M/s Vison Labs, H. No. 16-11-23/37/A, Flat No. 205 & 206, 2nd Floor, Andhra Bank Building, Opp. R.T.A. Office, Malakpet, Hyderabad-500036, Telangana as Environmental Laboratory under the Environment (Protection) Act, 1986.

Sir,

I am directed to refer to your application dated: 01.02.2019 for recognition of your laboratory under Environment (Protection) Act, 1986. Based on the recommendations of the Expert Committee for Recognition of Environmental Laboratories in its 61th meeting held on 03.12.2019 and your acceptance of the revised terms and conditions at Annexure-III & IV of the Guidelines for recognition of Environmental Laboratories, this Ministry approves the renewal of recognition of M/s Vison Labs, H. No. 16-11-23/37/A, Flat No. 205 & 206, 2nd Floor, Andhra Bank Building, Opp. R.T.A. Office, Malakpet, Hyderabad-500036, Telangana , as shall be notified in the Gazette of India. **Considering the current validity of mandatory accreditations/certifications of the laboratory, this renewal shall be valid up to 20.07.2021.**

2. As sought in your aforementioned application M/s Vison Labs, Hyderabad may undertake the following tests:

I. **Physical Tests:** Conductivity, Colour, pH, Fixed & volatile solids, Total solids, Total dissolved solids, Total suspended solids, Turbidity, Temperature, Velocity & discharge measurement of industrial effluent stream, Flocculation test (Jar test), Odour, Salinity, Settleable solids and Sludge volume index (SVI).

II. **Inorganic (General & Non-metallic):** Acidity, Alkalinity, Ammonical nitrogen, Chloride, Chlorine residual, Dissolved oxygen, Fluoride, Total hardness, Total kjehldal nitrogen (TKN), Nitrite nitrogen, Nitrate nitrogen, Phosphate, Sulphate, Bromide, Carbon dioxide, Chlorine demand, Iodine, Sulphite, Silica, Cyanide and Sulphide.

III. **Inorganic (Trace metals):** Boron, Cadmium, Calcium, Chromium Total, Chromium Hexavalent, Copper, Iron, Lead, Magnesium, Mercury, Nickel, Potassium, Sodium, Sodium absorption ratio, Zinc, Arsenic, Aluminium, Beryllium, Barium, Lithium, Manganese, Selenium, Silver, Strontium, Tin, Antimony, Cobalt and Vanadium.

IV. **Organics (General) and Trace Organics:** Bio-chemical oxygen demand (BOD), Chemical oxygen demand (COD), Oil & grease, Phenol, Pesticide (each) ((Organo-chlorine, Organo nitrogen-phosphorous), Surfactants, Poly- chlorinated biphenyl (PCB's) each, Polynuclear aromatic hydrocarbon (PAH) each, Organic Carbon (in solid) and Carbon/Nitrogen ratio.

V. **Microbiological Tests:** Total Coliform, Faecal Coliform, Faecal streptococci, E. coli and Total Plate count.

VI. **Toxicological Tests:** Bioassay method for evaluation of toxicity using fish, Measurement of toxicity using Daphnia on other organism, Measurement of toxicity factor using zebra fish (dimensionless toxicity test).

VII. **Biological Tests:** Benthic organism identification and count, Planktonic identification count, Chlorophyll and P/R Ratio.

VIII. **Hazardous Waste:** Corrosivity, Ignibility (Flash point), Reactivity, Toxicity, Measurement of heavy metals/ pesticides in the waste/ leachate

IX. **Soil/ Sludge/ Sediment and Solid Waste:** Boron, Cation Exchange Capacity (CEC), Electrical Conductivity, Nitrogen available, Organic carbon/ matter (chemical method), pH, Phosphorous (available), Phosphate (ortho), Phosphate (total), Potassium, SAR in soil extract, Sodium, Soil moisture, TKN, Calorific value, Ammonia, Bicarbonate, Calcium, Calcium carbonate, Chloride, Colour, Exchangeable sodium

percentage (ESP), H. Acid, Heavy metal, Magnesium, Nitrate, Nitrite, PAH, Pesticide, Potash (availbale), Sulphate, Sulphur, TOC, Total water soluble salt and Water holding capacity.

X. **Ambient Air/ Fugitive Emissions:** Nitrogen dioxide (NO_2), Sulphur dioxide (SO_2), Total Suspended particulate matter, Respirable suspended particulate matter (PM_{10}), Respirable Fine particulate matter ($PM_{2.5}$), Ammonia, Carbon monoxide, Chloride, Fluoride, Non methane hydrocarbon, Lead, Methane, Ozone, Benzene Toluene Xylene (BTX), Polyeyclic aromatic hydrocarbon (PAH) Benzopyrine & other, Nickel, BaP and Arsenic as As.

XI. **Stack Gases/ Source Emission:** Particulate matter, Sulphur dioxide, Velocity & flow, Carbon dioxide, Carbon monoxide, Temperature, Oxides of nitrogen, Acid mist, Ammonia, Fluoride (Particulate), Fluoride (Gaseous), Hydrochloric acid, Total hydro carbon, Hydrogen Sulphide, Carbon disulphide and Mercaptain.

XII. **Noise Level:** Noise level measurement dB(A)), Ambient Noise & Source-specific Noise.

XIII. **Meteorological:** Ambient temperature, Wind direction, Wind speed, Relative Humidity Solar radiation and Rainfall.

2. Further, the following analysts have been approved for recognition as Government Analysts.

(i) Mr.T. Laxmikanth Reddy
(ii) Mr. K. Jitender Reddy
(iii) Mr. L. Chandra Sekhar Reddy

4. The laboratory shall compulsorily participate in the Analytical Quality Control (AQC) exercise conducted by the Central Pollution Control Board (CPCB) at least once a year to ascertain the capability of the laboratory and analyses carried out and shall submit quarterly progress reports to this Ministry.

5. Periodic surveillance of the recognized environmental laboratory will be undertaken by this Ministry/ CPCB to assess its proper functioning, systematic operation and reliability of data generated at the laboratory.

6. It is also mandatory for the laboratory to have requisite accreditations of the NABL/ ISO 9001 and OHSAS and its renewal as per accreditation rules. This recognition is subject to such accreditations and renewal, as applicable. **The laboratory may approach this Ministry for further extension of validity of recognition after renewal of the mandatory accreditations/ certification concerned.** Such application for extension of validity may be submitted to this Ministry in due advance, preferably before 6 months.

7. The laboratory should compulsorily follow the accepted Terms & Conditions. In case of serious non-compliance of any of the Terms and Conditions, the laboratory may be black-listed for a minimum period of two years and civil/ criminal proceedings, as applicable, may be initiated for performing functions on behalf of the Government in an unauthorized manner.

Yours faithfully,

(Dr. Susan George K.)
Scientist 'D'
Tel. No. 011-24695327
Email: susan.george@nic.in

Copy to:

1) Member Secretary, Central Pollution Control Board, Parivesh Bhawan, East Arjun Nagar, New Delhi – 110032.
2) Member Secretary, Telangana State Pollution Control Board, A-3, Industrial Estate, Sanath Nagar, Hyderabad
3) Additional Principal Conservator of Forests (C), Ministry of Environment, Forest and Climate Change, Regional Office (SEZ),1st and 2nd Floor, Handloom Export Promotion Council, 34, Cathedral Garden Road, Nungambakkam, Chennai-34.
4) Director, IT Division, MoEF&CC, New Delhi-110003: for uploading on MoEF&CC website

National Accreditation Board For Testing and Calibration Laboratories
Certificate of Accreditation

National Accreditation Board for Testing and Calibration Laboratories
(A Constituent Board of Quality Council of India)

CERTIFICATE OF ACCREDITATION

VISON LABS

has been assessed and accredited in accordance with the standard

ISO/IEC 17025:2005

"General Requirements for the Competence of Testing & Calibration Laboratories"

for its facilities at

16-11-23/37A, Flat No. 205, 2nd Floor, Musarambagh, Malakpet, Hyderabad, Telangana

in the field of

TESTING

Certificate Number TC-5064 *(In lieu of T-3216 & T-3334)*
Issue Date 26/11/2016 **Valid Until** 25/11/2018

This certificate remains valid for the Scope of Accreditation as specified in the annexure subject to continued satisfactory compliance to the above standard & the relevant requirements of NABL.

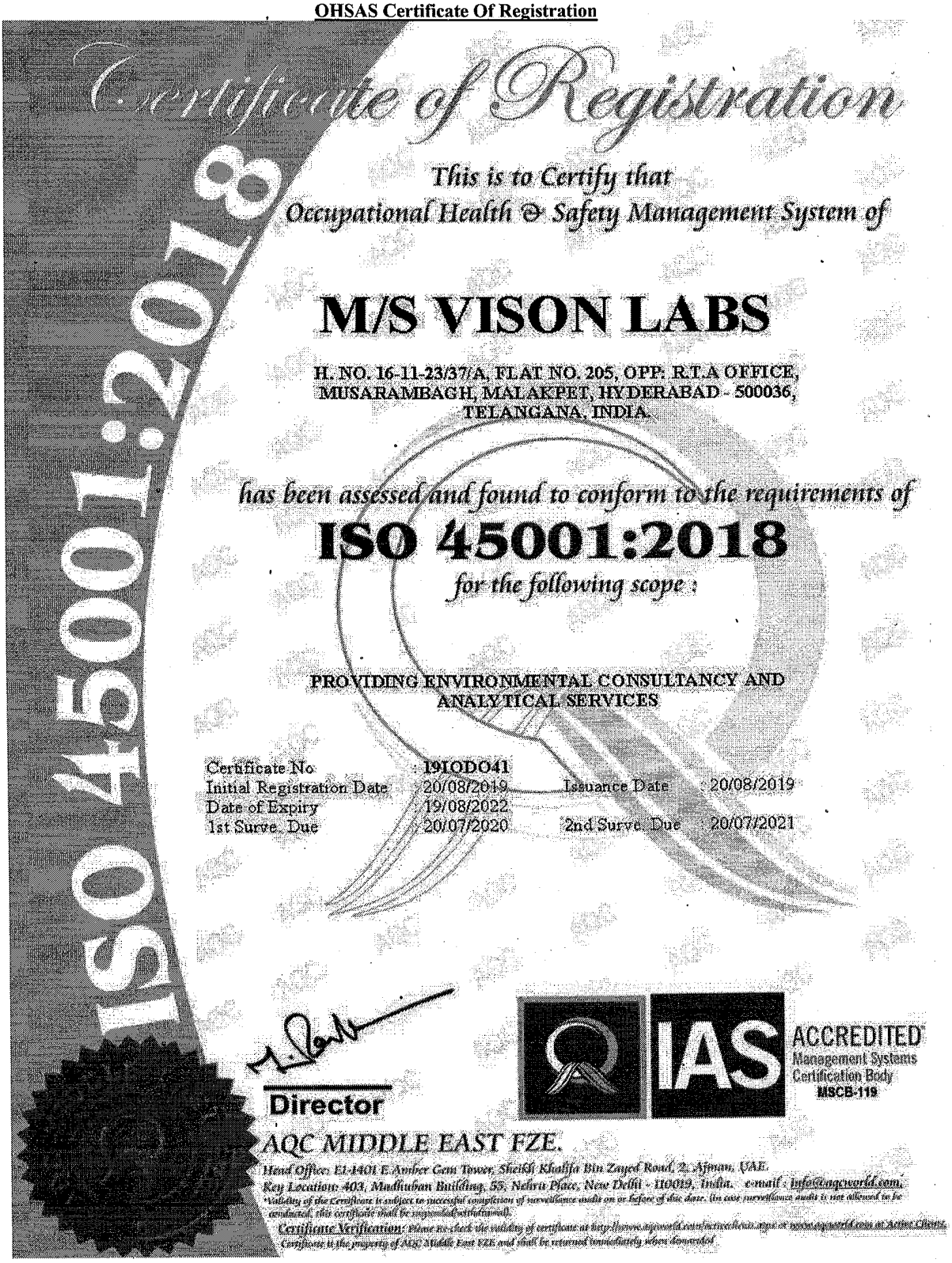
(To see the scope of accreditation of this laboratory, you may also visit NABL website www.nabl-india.org)

Signed for and on behalf of NABL

N. Venkateswaran
Program Director

Anil Relia
Chief Executive Officer

OHSAS Certificate Of Registration



ISO Certificate Of Registration

ISO 9001:2015

Certificate of Registration

This is to Certify that
Quality Management System of

M/S VISON LABS

H. NO. 16-11-23/37/A, FLAT NO. 205, OPP: R.T.A OFFICE,MUS ARAMBAGH, MALAKPET, HYDERABAD - 500036, TELANGANA, INDIA.

has been assessed and found to conform to the requirements of

ISO 9001:2015

for the following scope :

PROVIDING ENVIRONMENTAL CONSULTANCY AND ANALYTICAL SERVICES

Certificate No	: 19IQDK35		
Initial Registration Date	: 20/08/2019	Issuance Date	: 20/08/2019
Date of Expiry	: 19/08/2022		
1st Surve. Due	: 20/07/2020	2nd Surve. Due	: 20/07/2021

Director

IAS ACCREDITED Management Systems Certification Body MSCB-119

MEMBER OF MULTILATERAL RECOGNITION ARRANGEMENT IAF

AQC MIDDLE EAST FZE.

Head Office: EI-1401 E Amber Gem Tower, Sheikh Khalifa Bin Zayed Road, 2, Ajman, UAE. e-mail: info@aqcworld.com,
Key Locations: 403, Madhuban Building, 55, Nehru Place, New Delhi-110019, India.
"Validity of the Certificate is subject to successful completion of surveillance audit on or before of due date. (in case surveillance audit is not allowed to be conducted, this certificate shall be suspended/withdrawn)".
Certificate Verification: Please re-check the validity of certificate at http://www.aqcworld.com/activeclients.aspx or www.aqcworld.com at Active Clients.
Certificate is the property of AQC Middle East FZE and shall be returned immediately when demanded.

ENVIRONMENTAL DATA GENERATION REPORT

Client

M/s. HONNAVAR PORT (P). LTD.
Kasarkod Tonka,
Honnavar Taluka, Uttar Kannada District,
Karnataka-581342.

CONDUCTED BY

VISON LABS
ENVIRONMENTAL CONSULTANTS & ANALYTICAL SERVICES

Recognised by MoEF&CC, ISO 9001:2015, OHSAS 45001:2018
H.No.16-11-23/37/A, 2nd Floor,
Above Union Bank of India, Opp: R.T.A Office,
Musaarambagh, Malakpet, Hyderabad.
Tel Fax: 040 – 24544320, 24558363.
Website: visonlabs.com
Email info@visonlabs.com & vison.labs@gmail.com

R E P O R T

For The Months of

July-2020, August-2020 and September-2020

FOR
M/s. HONNAVAR PORT (P). LTD.
Kasarkod Tonka,
Honnavar Taluka, Uttar Kannada District,
Karnataka-581342.

For and behalf of Vison Labs

Approved By	: T Laxmikanth Reddy
Signed	:
Position	: Chief Executive
Date	: October-2020

This report has been prepared by Vison Labs with all reasonable skill, care and diligence within the terms of the contract with the client, incorporating our General Terms and Conditions of Business and taking account of the resources devoted to it by agreement with the client.

We disclaim any responsibility to the client and others in respect of any matters outside the scope of the above.

This report is confidential to the client and we accept no responsibility of whatsoever nature to third parties to whom this report, or any part thereof, is made known, any such party relies on the report at their own risk.

SCOPE OF WORK

Monitoring of Ambient Air Quality, Water quality, Soil quality, Ambient Noise Quality measurement, Marine Water, Plankton & Benthic Communities and Sediment Quality are part of the scope of work given to M/s Vison Labs. The environmental Monitoring has been carried out at the following locations:

A] Ambient Air Quality Locations:

Location Code	Ambient Air Quality Location Details
AQ-1	Project Site
AQ-2	Kasarkod Village
AQ-3	Honnavar Village
AQ-4	Kulkod Village
AQ-5	Ramatheerth Village

C] Ambient Noise Quality Locations:

Location Code	Noise Level Location Details
N-1	Project Site
N-2	Kasarkod Village
N-3	Honnavar Village
N-4	Kulkod Village
N-5	Ramatheerth Village

D] Ground Water Quality Locations:

Location Code	Ground Water Location Details
GW-1	Honnavar Village
GW-2	Kasorkod Village

E] Surface water Quality Location:

Location Code	Surface Water Locations Details
SW-1	Sharavati River
SW-2	Badgani River

F] Soil Quality Locations:

Location Code	Soil Locations Details
S-1	Project Site
S-2	Honnavar Village
S-3	Kasarkod Village

G]Marine Water Quality/Plankton/Sediment/Benthic Communities

Location Code	Marine/Sediment/Benthic Communities Location Details
M-1	Dredge Spoil Disposal Area
M-2	Northern Break Water
M-3	Southern Break Water
M-4	Inner Navigation Channel
M-5	Sharavari River, Near Berthing Area
M-6	Sharavati/Badgani River Mouth (Near Confluence Point)

MONITORING AND ANALYSIS METHODOLOGY

The consultant had Pre-identified the monitoring stations for Air, Water and Noise. Time bound program for carrying out fieldwork was prepared and was followed as far as possible. The IS methods are followed to decide the monitoring stations, analysis of different samples and also alternative methods are used, where the cross verification is required.

Ambient Air Quality Monitoring:

Respirable Dust Samplers (RDS) with gaseous attachment have been used for PM10/PM2.5 Sampling. RDS with Gaseous attachment assembly is used for the collection of gaseous pollutants such as SO_2, NO_2, HC and CO.

Ambient Air monitoring instruments

Instrument	Make	Model No.	Range and Sensitivity	
			PM10/PM2.5	Gases
Respirable Dust Sampler (RDS)	M/s. ECO Tech	AAS-271	PM_{10} 2.3 m^3/hour $PM_{2.5}$ 1.0 m^3/hour ±0.02 m^3/hour	0 – 3 LPM ± 0.2 LPM

Testing Method to be followed for Ambient Air Quality

Particular		Testing Method to be Followed
Ambient Air Monitoring Parameter		
A.	PM_{10}	IS-5182 (part – IV) 2006, RA-2017
B..	$PM_{2.5}$	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
C.	SO_2 (Sulfur Dioxide)	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
D.	NO_2 (Nitrogen Dioxide)	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
E.	CO (Carbon Monoxide)	IS: 5182 P 10– 1999 NDIR Method
F.	Hydro Carbons	IS 5182: Part-17

Noise Level Measurement

Instant sound level meter is used for the collection of data related to noise at an interval of one hour per reading. Noise level for 24 hours was conducted location.

Noise (Sound) Measuring Instrument

Instrument	Make	Model No.	Detection Limit
Integrated Sound Level Measurement Instrument Standard Accessories	HTC	SL-1352	Lower level: 35-80dB(A) Higher level: 80-130dB(A)

Testing Method to be followed

S. No.	Particular		Testing Method to be Followed
1	Noise Level Measurement		
	A	Noise Level in dB (A) for continuous 24 hours at 1 hour interval	Comply With IEC61672-1 Class 2 Standard

Water Quality Survey

Water samples were collected in Pre-sterilized sampling container. Chemical and Metals analysis was carried out as per standard Methods for water Analysis, Published by BIS, AWWA, APHA, etc.

Soil Quality Survey

Soil samples were collected in sealed sampling Polyethylene covers. Chemical and Metals analysis was carried out as per standard Methods for Soil Analysis, Published by BIS etc.

Quality Assurance

VISON LABS is accredited by Ministry Of Environment & forests, GOVT. OF INDIA and follows quality systems as per ISO 9001:2015. The QA/QC procedures are laid prior to sample collection and laboratory analysis. It includes the standard procedures of sample collection, preservation, transportation and laboratory analysis with all documented procedures and continuous monitoring of Quality Control Division.

Results of Survey Data

The Survey results of Ambient Air Quality, Ambient Noise Monitoring and Water Sampling analysis are presented below

JULY-2020

Ambient Air Quality Monitoring

The Ambient Air Quality has been monitored at five locations. The table showing Ambient Air Quality is present in **Table -1 to Table 5** respectively.

Ambient Air Quality Locations

Location Code	Location Name	Date Of Monitoring	Date Of Monitoring
AQ-1	Project Site	06.07.2020	27.07.2020
AQ-2	Kasarkod Village	06.07.2020	27.07.2020
AQ-3	Honnavar Village	06.07.2020	27.07.2020
AQ-4	Kulkod Village	07.07.2020	28.07.2020
AQ-5	Ramatheerth Village	07.07.2020	28.07.2020

TABLE-1

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Near Project House
Date of Monitoring : 06.07.2020
Ambient Temperature °C : 26(Average)
Wind Direction : SW
Weather Condition : Clear
Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	56	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	30	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	7.0	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	22.5	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-2

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Kasarkod Village
Date of Monitoring : 06.07.2020
Ambient Temperature °C : 26 (Average)
Wind Direction : SW
Weather Condition : Clear
Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	53	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	27	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	6.5	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	20.1	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-3

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Honnavar Village

Date of Monitoring : 06.07.2020

Ambient Temperature °C : 26 (Average)

Wind Direction : SW

Weather Condition : Clear

Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	42	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	23	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	5.5	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	17.3	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-4

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Kulkod Village

Date of Monitoring : 07.07.2020

Ambient Temperature °C : 26 (Average)

Wind Direction : SW

Weather Condition : Clear

Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	36	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	20	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	5.0	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	16.1	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-5

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Ramtheerth Village
Date of Monitoring : 07.07.2020
Ambient Temperature °C : 26 (Average)
Wind Direction : SW
Weather Condition : Clear
Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	37	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	19	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	5.3	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	15.0	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-6

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Near Project Site
Date of Monitoring : 27.07.2020
Ambient Temperature °C : 27 (Average)
Wind Direction : N
Weather Condition : Clear
Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	67	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	35	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	8.2	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	25.3	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-7

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Kasarkod Village
Date of Monitoring : 27.07.2020
Ambient Temperature °C : 27 (Average)
Wind Direction : N
Weather Condition : Clear
Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	58	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	30	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	7.3	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	24.3	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-8

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Honnavar Village
Date of Monitoring : 27.07.2020
Ambient Temperature °C : 27 (Average)
Wind Direction : N
Weather Condition : Clear
Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	50	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	26	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	6.6	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	19.4	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-9

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Kulkod Village
Date of Monitoring : 28.07.2020
Ambient Temperature °C : 27 (Average)
Wind Direction : N
Weather Condition : Clear
Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	44	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	23	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	6.1	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	16.4	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-10

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Ramtheerth Village
Date of Monitoring : 28.07.2020
Ambient Temperature °C : 27 (Average)
Wind Direction : N
Weather Condition : Clear
Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	39	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	20	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	5.8	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	14.2	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

AMBIENT NOISE LEVELS IN THE STUDY AREA

The statistical analysis is done for measured noise levels at ten locations in the study area. The parameters are analyzed for L_{day} and L_{night}, The statistical analysis results are given in **TABLE-11**

TABLE-11

Ambient Noise Quality Locations

Location Code	Location Name	Date Of Monitoring
N-1	Project Site	06.07.2020
N-2	Kasarkod Village	06.07.2020
N-3	Honnavar Village	06.07.2020
N-4	Kulkod Village	07.07.2020
N-5	Ramatheerth Village	07.07.2020

TABLE-11

Ambient Noise Quality Locations

Location Code	Location Name	Date Of Monitoring
N-1	Project Site	27.07.2020
N-2	Kasarkod Village	27.07.2020
N-3	Honnavar Village	27.07.2020
N-4	Kulkod Village	28.07.2020
N-5	Ramatheerth Village	28.07.2020

TABLE-11

AMBIENT NOISE LEVELS IN THE STUDY AREA

All the values are expressed in dB (A)

Time	N-1	N-2	N-3	N-4	N-5	N-1	N-2	N-3	N-4	N-5
HOURS										
06:00 – 07:00	46.8	44.9	45.3	43.8	41.3	49.5	45.2	44.8	42.8	43.8
07:00 – 08:00	51.3	47.6	48.7	46.2	42.6	51.4	47.8	47.3	46.6	48.6
08:00 – 09:00	52.8	50.2	49.6	45.9	45.1	53.4	52.0	51.5	48.3	46.2
09:00 – 10:00	50.9	49.5	51.2	48.2	47.3	54.7	50.6	50.1	50.5	45.4
10:00 – 11:00	54.1	52.4	49.7	51.4	50.1	59.0	48.2	49.7	52.8	44.5
11:00 – 12:00	56.8	50.3	51.6	52.6	48.6	62.4	52.1	52.6	50.1	46.4
12:00 – 13:00	59.4	52.1	54.2	50.1	52.3	61.9	51.9	50.4	51.7	43.8
13:00 – 14:00	61.2	54.7	51.3	49.2	49.1	59.6	54.3	53.8	49.3	47.0
14:00 – 15:00	57.6	52.6	52.5	48.3	47.5	57.1	55.7	55.1	50.8	49.0
15:00 – 16:00	55.9	51.1	50.4	50.8	48.3	61.5	52.2	51.7	52.5	46.8
16:00 – 17:00	59.5	49.7	55.6	51.5	50.1	58.9	54.4	53.9	54.1	48.2
17:00 – 18:00	62.1	53.2	53.1	50.4	47.2	63.6	55.8	55.2	50.3	49.3
18:00 – 19:00	60.5	50.8	50.1	47.3	45.6	62.5	56.1	53.6	51.5	46.1
19:00 – 20:00	58.3	47.6	48.5	44.6	43.7	59.4	53.9	51.4	48.2	44.9
20:00 – 21:00	56.7	45.7	45.7	42.1	40.4	56.5	50.1	48.6	45.6	41.4
21:00 – 22:00	54.2	42.6	42.6	39.8	43.1	55.1	46.8	45.3	43.4	38.9
22:00 – 23:00	51.5	40.1	40.1	37.2	41.5	49.4	43.1	42.7	40.7	37.6
23:00 – 24:00	48.6	38.5	38.3	35.1	39.6	47.0	40.9	39.5	38.3	35.3
24:00 – 01:00	45.2	36.2	36.4	32.9	37.5	46.7	38.1	36.7	36.1	34.9
01:00 – 02:00	44.3	34.7	34.2	34.3	34.3	44.4	39.7	35.3	35.7	33.5
02:00 – 03:00	41.4	35.6	33.6	36.1	33.0	46.2	40.6	38.2	36.6	34.8
03:00 – 04:00	39.6	37.9	36.7	38.3	34.9	45.4	41.0	37.6	37.1	35.5
04:00 – 05:00	41.5	39.1	38.5	37.1	36.8	48.6	43.5	39.1	38.0	37.2
05:00 – 06:00	43.4	41.6	40.2	39.5	38.2	49.4	43.1	42.7	40.7	42.4
L Day	**57.6**	**50.6**	**51.0**	**48.8**	**47.5**	**59.4**	**52.7**	**51.8**	**50.2**	**46.3**
L Night	**46.2**	**38.5**	**37.8**	**36.8**	**37.8**	**47.5**	**41.6**	**39.7**	**38.3**	**37.4**

TABLE-12

Ground Water Quality

Two Ground water samples was collected and analyzed. The analytical results are given in **TABLE-12**

Location Code	Bore Well Location	Date of Sampling
GW-1	Honnavar Village	06.07.2020
GW-2	Kasarkod Village	06.07.2020

TEST RESULTS

S.No.	Parameters	Units	Test Method	Results		Drinking Water Limits As per IS: 10500; 2012	
				GW-1	GW-2	Acceptable Limits	Permissible limits in absence of alternative Source
1.	pH @25^{0}C	--	IS:3025 part 11 1983, RA-2017	7.26	7.47	6.50 – 8.50	No relaxation
2.	Conductivity@25^{0}C	µmhos/cm	IS: 3025 Part 14 1984 RA-2013	518	556	--	--
3.	Temperature	°C	IS: 3025 Part 1 1984 RA-2014	26.0	25.8	--	--
4.	Total Dissolved Solids	mg/L	IS: 3025 Part 16 1984, RA-2017	324	352	500	2000
5.	Total Suspended Solids	mg/L	IS 3025 Part 17 1984, RA-2017	<1.0	<1.0	--	--
6.	Turbidity	NTC	IS: 3025 Part 10 1984, RA-2017	<1.0	<1.0	1	5
7.	Total Hardness as $CaCO_3$	mg/L	IS: 3025 Part 21 2009, RA-2014	140	150	200	600
8.	Calcium as Ca	mg/L	IS: 3025 Part 40 1991, RA-2014	32.0	32.0	75	200
9.	Magnesium as Mg	mg/L	IS: 3025 Part 46 1994, RA-2014	14.4	16.8	30	100
10.	Chloride as Cl	mg/L	IS: 3025 Part 32 1988, RA-2014	25	30	250	1000
11.	Sulphate as SO_4	mg/L	IS: 3025 Part 24 1986, RA-2014	70.0	60.2	200	400
12.	Sodium as Na	mg/L	IS: 3025 Part 45 1993, RA-2014	51.1	55.2	---	---
13.	Potassium as K	mg/L	IS: 3025 Part 45 1993, RA-2014	2.3	2.3	---	---
14.	Nitrate as NO_3	mg/L	IS: 3025 Part 34 1988, RA-2014	6.3	7.5	45	No Relaxation
15.	Iron as Fe	mg/L	IS: 3025 Part 53 2003, RA-2014	0.14	0.15	0.3	No Relaxation
16.	Lead as Pb	mg/L	IS 3025 Part 47 1994, RA2014	<0.001	<0.001	0.01	No Relaxation
17.	Dissolved Oxygen	mg/L	IS 3025 Part 38 2009	<1.0	<1.0	--	--
18.	Biological Oxygen Demand(3 Days For27°C)	mg/L	IS 3025 Part 44 1993, RA-2014	<3.0	<3.0	--	--
19.	Chemical Oxygen Demand	mg/L	IS 3025 Part 58 2006, RA-2017	<4.0	<4.0	--	--
20	Oil & Grease	mg/L	IS 3025 Part 39 :1991, RA-2014	<1.0	<1.0	--	--
21.	Coli form Bacteria	CFU /100ml	IS: 15185: 2016	Not Detected	Not Detected	Must not be Detected	
22.	E. Coli	CFU /100ml	IS: 15185: 2016	Not Detected	Not Detected	Must not be Detected	

Surface Water Quality

Two Surface water samples was collected and analyzed. The analytical results are given in **TABLE-13**

TABLE-13

Surface water Quality Location

Location Code	Location Name	Sample Collection Dates
SW1	Sharavati River	06.07.2020
SW2	Badgani River	06.07.2020

TEST RESULTS

S.No.	Parameters	Units	Test Method	Results		Limits as Per As per IS: 2296 Class C
				SW-1	SW-2	
1.	pH @25^{0}C	--	IS:3025 part 11 1983, RA-2017	7.84	8.39	6.5-8.5
2.	Conductivity@25^{0}C	µmhos/cm	IS: 3025 Part 14 1984 RA-2013	3112	35290	--
3.	Temperature	^{0}C	IS: 3025 Part 1 1984 RA-2014	25.6	25.8	--
4.	Total Dissolved Solids	mg/L	IS: 3025 Part 16 1984, RA-2017	1994	22590	1500 max
5.	Total Suspended Solids	mg/L	IS 3025 Part 17 1984, RA-2017	10.4	46	--
6.	Turbidity	NTC	IS: 3025 Part 10 1984, RA-2017	18.3	52.4	--
7.	Total Hardness as $CaCO_3$	mg/L	IS: 3025 Part 21 2009, RA-2014	630	5600	--
8.	Calcium as Ca	mg/L	IS: 3025 Part 40 1991, RA-2014	160.0	664	--
9.	Magnesium as Mg	mg/L	IS: 3025 Part 46 1994, RA-2014	55.2	945.6	--
10.	Chloride as Cl	mg/L	IS: 3025 Part 32 1988, RA-2014	450	11405	600
11.	Sulphate as SO_4	mg/L	IS: 3025 Part 24 1986, RA-2014	507.3	1268.5	400
12.	Nitrate as NO_3	mg/L	IS: 3025 Part 34 1988, RA-2014	26.7	50.4	50
13.	Iron as Fe	mg/L	IS: 3025 Part 53 2003, RA-2014	0.18	0.30	50
14.	Lead as Pb	mg/L	IS 3025 Part 47 1994, RA2014	<0.001	<0.001	0.1
15.	Dissolved Oxygen	mg/L	IS 3025 Part 38 2009	4.4	4.6	4-6
16.	Biological Oxygen Demand (3 Days For27°C)	mg/L	IS 3025 Part 44 1993, RA-2014	12	08	<3.0
17.	Chemical Oxygen Demand	mg/L	IS 3025 Part 58 2006, RA-2017	40	30	--
18.	Oil & Grease	mg/L	IS 3025 Part 39 :1991, RA-2014	<1.0	<1.0	0.1
19.	Coli form Bacteria	MPN /100ml	APHA 23rd ED 2017 9221 B	2400	440	Should not exceed 5000

Soil Quality Analysis .

Three Soil samples was collected and analyzed. The analytical results are given in below Table-14

Table-14

Soil Quality Location:

Location Code	Soil Sampling Location	Sampling dates
S-1	Near Project Site	06.07.2020
S-2	Honnavar Village	07.07.2020
S-3	Musadia VillageKasarkod Village	07.07.2020

TEST RESULTS

Sr. No.	Parameters	Units	Test Method	Results		
				S-1	S-2	S-3
01.	pH (10% Slurry) at 25 °C	-	IS 2720 Part-26 1987, RA-2011	8.17	7.42	7.78
02.	Conductivity at 25°C	dS/m (deci-Siemens/meter)	IS 14767:2000, RA-2010	572	124	152
03.	Moisture	%	FAO Method (Page 23) Air dry Oven Method):2007	27.6	29.4	26.5
04.	Texture	--	Soil & Solid Waste Analysis Mr.P.K Behera	Sandy	Clay	Clay
05.	Bulk density	Gram/cc	EPA 3050B:1996 Rev.2	1.24	1.18	1.20
06.	Sodium Absorption Ratio	Meq/kg	IS 11624:1986, RA-2001	0.94	1.47	1.33
07.	Calcium as Ca	mg/kg	FAO Method (Page 44):2007	3.12	4.24	2.48
08.	Magnesium as Mg	mg/kg	FAO Method (Page 44):2007	0.74	1.18	0.84
09.	Oil & Grease	mg/kg	EPA Method 1664	<1.0	<1.0	<1.0
10.	Nitrogen as N	mg/kg	IS 14684: 1999 (RA - 2014)	132	396	402
11.	Potassium as K	mg/kg	Methods of Analysis of Soil FAO -2007,Page 77	10.8	214	226
12.	Phosphorus as P	mg/kg	FAO Method (Page.No-75) 2007(Olsen's method)	9.24	64.2	60
13.	Zinc as Zn	mg/kg	EPA 3050B:1996 Rev.2	0.84	2.30	3.34
14.	Lead as Pb	mg/kg	EPA 3050B:1996 Rev.2	<0.002	<0.002	<0.002

AUGUST-2020

Ambient Air Quality Monitoring

The Ambient Air Quality has been monitored at five locations. The table showing Ambient Air Quality is present in **Table -15 to Table 24** respectively.

Ambient Air Quality Locations

Location Code	Location Name	Date Of Monitoring	Date Of Monitoring
AQ-1	Project Site	03.08.2020	18.08.2020
AQ-2	Kasarkod Village	03.08.2020	18.08.2020
AQ-3	Honnavar Village	03.08.2020	18.08.2020
AQ-4	Kulkod Village	04.08.2020	19.08.2020
AQ-5	Ramatheerth Village	04.08.2020	19.08.2020

TABLE-15

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Near Project House
Date of Monitoring : 03.08.2020
Ambient Temperature °C : 27(Average)
Wind Direction : S
Weather Condition : Clear
Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	50	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	26	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	7.3	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	19.2	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-16

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Kasarkod Village
Date of Monitoring : 03.08.2020
Ambient Temperature °C : 27 (Average)
Wind Direction : S
Weather Condition : Clear
Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	47	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	24	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	7.6	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	17.4	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-17

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Honnavar Village
Date of Monitoring : 03.08.2020
Ambient Temperature °C : 27 (Average)
Wind Direction : S
Weather Condition : Clear
Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	46	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	24	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	6.2	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	15.6	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-18

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Kulkod Village
Date of Monitoring : 04.08.2020
Ambient Temperature °C : 27 (Average)
Wind Direction : S
Weather Condition : Clear
Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	40	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	21	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	6.1	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	14.8	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-19

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Ramtheerth Village
Date of Monitoring : 04.08.2020
Ambient Temperature °C : 27 (Average)
Wind Direction : S
Weather Condition : Clear
Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	34	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	18	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	4.7	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	13.2	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-20

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Near Project Site
Date of Monitoring : 18.08.2020
Ambient Temperature °C : 27 (Average)
Wind Direction : NW
Weather Condition : Clear
Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	59	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	31	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	7.8	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	21.3	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-21

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Kasarkod Village

Date of Monitoring : 18.08.2020

Ambient Temperature °C : 27 (Average)

Wind Direction : NW

Weather Condition : Clear

Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	53	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	28	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	6.8	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	20.5	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-22

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Honnavar Village

Date of Monitoring : 18.08.2020

Ambient Temperature °C : 27 (Average)

Wind Direction : NW

Weather Condition : Clear

Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	54	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	29	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	7.0	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	15.7	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-23

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Kulkod Village

Date of Monitoring : 19.08.2020

Ambient Temperature °C : 27 (Average)

Wind Direction : NW

Weather Condition : Clear

Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	36	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	19	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	5.8	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	15.0	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001; RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-24

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Ramtheerth Village

Date of Monitoring : 19.08.2020

Ambient Temperature °C : 27 (Average)

Wind Direction : NW

Weather Condition : Clear

Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	43	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	22	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	6.1	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	17.0	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

AMBIENT NOISE LEVELS IN THE STUDY AREA

The statistical analysis is done for measured noise levels at ten locations in the study area. The parameters are analyzed for L_{day} and L_{night}, The statistical analysis results are given in **TABLE-25**

TABLE-25

Ambient Noise Quality Locations

Location Code	Location Name	Date Of Monitoring
N-1	Project Site	03.08.2020
N-2	Kasarkod Village	03.08.2020
N-3	Honnavar Village	03.08.2020
N-4	Kulkod Village	04.08.2020
N-5	Ramatheerth Village	04.08.2020

TABLE-25

Ambient Noise Quality Locations

Location Code	Location Name	Date Of Monitoring
N-1	Project Site	18.08.2020
N-2	Kasarkod Village	18.08.2020
N-3	Honnavar Village	18.08.2020
N-4	Kulkod Village	19.08.2020
N-5	Ramatheerth Village	19.08.2020

TABLE-25

AMBIENT NOISE LEVELS IN THE STUDY AREA

All the values are expressed in dB (A)

Time	N-1	N-2	N-3	N-4	N-5	N-1	N-2	N-3	N-4	N-5
HOURS										
06:00 – 07:00	48.2	45.1	44.6	42.5	38.7	51.4	46.9	47.4	43.4	40.3
07:00 – 08:00	50.4	48.7	46.9	44.6	41.6	49.7	47.8	49.1	44.3	41.6
08:00 – 09:00	47.3	50.6	48.1	47.1	44.5	52.6	49.6	52.3	45.9	44.8
09:00 – 10:00	50.6	49.5	50.6	45.7	46.1	54.1	51.5	49.5	47.7	42.8
10:00 – 11:00	52.7	51.3	48.5	48.9	43.7	56.2	53.6	50.4	48.0	45.3
11:00 – 12:00	51.1	54.7	50.2	50.2	47.5	52.7	55.2	47.6	47.7	41.5
12:00 – 13:00	54.3	51.6	52.6	52.6	48.3	50.4	51.7	50.1	45.6	40.5
13:00 – 14:00	51.8	52.3	53.4	49.8	50.7	53.3	49.8	52.7	47.7	44.9
14:00 – 15:00	53.4	50.7	50.7	47.5	52.5	55.1	51.3	51.4	45.3	46.2
15:00 – 16:00	55.1	48.9	48.5	50.6	47.1	54.0	54.4	48.7	43.0	49.5
16:00 – 17:00	52.8	51.6	51.6	48.5	46.4	51.6	52.6	50.2	45.6	47.6
17:00 – 18:00	50.1	53.7	48.9	46.2	44.7	52.7	51.5	52.6	47.7	48.3
18:00 – 19:00	48.3	50.1	45.7	43.7	46.9	50.8	53.6	47.4	48.5	45.2
19:00 – 20:00	46.4	48.4	44.1	40.4	42.4	49.6	49.1	45.2	46.0	44.1
20:00 – 21:00	45.8	46.1	42.7	38.6	44.5	47.4	46.7	44.4	44.4	41.7
21:00 – 22:00	43.4	44.7	40.3	36.4	41.6	45.1	45.4	42.3	41.0	40.2
22:00 – 23:00	40.5	42.8	39.5	34.1	38.5	44.3	45.1	40.1	39.5	38.4
23:00 – 24:00	37.6	40.3	37.2	32.8	36.4	42.5	42.8	38.6	35.4	37.9
24:00 – 01:00	38.9	37.5	35.1	35.7	34.2	40.7	40.1	35.4	32.6	35.3
01:00 – 02:00	35.4	35.9	33.4	36.1	31.9	38.6	37.5	32.8	33.7	34.1
02:00 – 03:00	33.7	34.1	35.2	38.2	33.5	35.9	35.4	34.7	34.2	33.2
03:00 – 04:00	36.4	33.2	37.4	35.1	35.6	37.2	36.9	36.1	35.1	35.9
04:00 – 05:00	39.7	36.5	39.1	37.6	37.2	39.4	38.2	38.2	36.9	36.8
05:00 – 06:00	42.5	37.8	40.5	38.4	38.9	41.8	39.4	40.5	38.5	37.5
L Day	**51.1**	**50.6**	**49.2**	**47.6**	**46.7**	**52.4**	**51.5**	**49.6**	**46.1**	**44.9**
L Night	**38.9**	**38.3**	**37.8**	**36.4**	**36.3**	**40.8**	**40.6**	**37.8**	**36.3**	**36.5**

TABLE-26

Ground Water Quality

Two Ground water samples was collected and analyzed. The analytical results are given in **TABLE-26**

Location Code	Bore Well Location	Date of Sampling
GW-1	Honnavar Village	03.08.2020
GW-2	Kasarkod Village	03.08.2020

TEST RESULTS

S.No.	Parameters	Units	Test Method	Results		Drinking Water Limits As per IS: 10500; 2012	
				GW-1	GW-2	Acceptable Limits	Permissible limits in absence of alternative Source
1.	pH @25°C	--	IS:3025 part 11 1983, RA-2017	7.40	7.22	6.50 – 8.50	No relaxation
2.	Conductivity@25°C	µmhos/cm	IS: 3025 Part 14 1984 RA-2013	454	494	--	--
3.	Temperature	°C	IS: 3025 Part 1 1984 RA-2014	25.8	25.4	--	--
4.	Total Dissolved Solids	mg/L	IS: 3025 Part 16 1984, RA-2017	286	305	500	2000
5.	Total Suspended Solids	mg/L	IS 3025 Part 17 1984, RA-2017	<1.0	<1.0	--	--
6.	Turbidity	NTC	IS: 3025 Part 10 1984, RA-2017	<1.0	<1.0	1	5
7.	Total Hardness as $CaCO_3$	mg/L	IS: 3025 Part 21 2009, RA-2014	120	130	200	600
8.	Calcium as Ca	mg/L	IS: 3025 Part 40 1991, RA-2014	28.0	32.0	75	200
9.	Magnesium as Mg	mg/L	IS: 3025 Part 46 1994, RA-2014	12.0	12.0	30	100
10.	Chloride as Cl	mg/L	IS: 3025 Part 32 1988, RA-2014	35	50.0	250	1000
11.	Sulphate as SO_4	mg/L	IS: 3025 Part 24 1986, RA-2014	55.4	62.9	200	400
12.	Sodium as Na	mg/L	IS: 3025 Part 45 1993, RA-2014	45.7	50.1	---	---
13.	Potassium as K	mg/L	IS: 3025 Part 45 1993, RA-2014	2.1	2.3	---	---
14.	Nitrate as NO_3	mg/L	IS: 3025 Part 34 1988, RA-2014	5.6	6.3	45	No Relaxation
15.	Iron as Fe	mg/L	IS: 3025 Part 53 2003, RA-2014	0.12	0.16	0.3	No Relaxation
16.	Lead as Pb	mg/L	IS 3025 Part 47 1994, RA2014	<0.001	<0.001	0.01	No Relaxation
17.	Dissolved Oxygen	mg/L	IS 3025 Part 38 2009	<1.0	<1.0	--	--
18.	Biological Oxygen Demand(3 Days For27°C)	mg/L	IS 3025 Part 44 1993, RA-2014	<3.0	<3.0	--	--
19.	Chemical Oxygen Demand	mg/L	IS 3025 Part 58 2006, RA-2017	<4.0	<4.0	--	--
20	Oil & Grease	mg/L	IS 3025 Part 39 :1991, RA-2014	<1.0	<1.0	--	--
21.	Coli form Bacteria	CFU /100ml	IS: 15185: 2016	Not Detected	Not Detected	Must not be Detected	
22.	E. Coli	CFU /100ml	IS: 15185: 2016	Not Detected	Not Detected	Must not be Detected	

Surface Water Quality

Two Surface water samples was collected and analyzed. The analytical results are given in **TABLE-27**

TABLE-27

Surface water Quality Location

Location Code	Location Name	Sample Collection Dates
SW1	Sharavati River	03.08.2020
SW2	Badgani River	03.08.2020

TEST RESULTS

S.No.	Parameters	Units	Test Method	Results		Limits as Per As per IS: 2296 Class C
				SW-1	SW-2	
1.	pH @25^{0}C	--	IS:3025 part 11 1983, RA-2017	8.10	8.46	6.5-8.5
2.	Conductivity@25^{0}C	µmhos/cm	IS: 3025 Part 14 1984 RA-2013	3208	36288	--
3.	Temperature	°C	IS: 3025 Part 1 1984 RA-2014	24.8	25.3	--
4.	Total Dissolved Solids	mg/L	IS: 3025 Part 16 1984, RA-2017	2048	20982	1500 max
5.	Total Suspended Solids	mg/L	IS 3025 Part 17 1984, RA-2017	14.2	38	--
6.	Turbidity	NTC	IS: 3025 Part 10 1984, RA-2017	10.6	26.1	--
7.	Total Hardness as $CaCO_3$	mg/L	IS: 3025 Part 21 2009, RA-2014	520	5960	--
8.	Calcium as Ca	mg/L	IS: 3025 Part 40 1991, RA-2014	120.0	648.0	--
9.	Magnesium as Mg	mg/L	IS: 3025 Part 46 1994, RA-2014	52.8	1042	--
10.	Chloride as Cl	mg/L	IS: 3025 Part 32 1988, RA-2014	480	11605	600
11.	Sulphate as SO_4	mg/L	IS: 3025 Part 24 1986, RA-2014	500	1444	400
12.	Nitrate as NO_3	mg/L	IS: 3025 Part 34 1988, RA-2014	35.2	72.4	50
13.	Iron as Fe	mg/L	IS: 3025 Part 53 2003, RA-2014	0.20	0.38	50
14.	Lead as Pb	mg/L	IS 3025 Part 47 1994, RA2014	<0.001	<0.001	0.1
15.	Dissolved Oxygen	mg/L	IS 3025 Part 38 2009	4.2	4.5	4-6
16.	Biological Oxygen Demand (3 Days For27°C)	mg/L	IS 3025 Part 44 1993, RA-2014	08	05	<3.0
17.	Chemical Oxygen Demand	mg/L	IS 3025 Part 58 2006, RA-2017	30	24	--
18.	Oil & Grease	mg/L	IS 3025 Part 39 :1991, RA-2014	<1.0	<1.0	0.1
19.	Coli form Bacteria	MPN /100ml	APHA 23rd ED 2017 9221 B	1800	4600	Should not exceed 5000

SEPTEMBER-2020

Ambient Air Quality Monitoring

The Ambient Air Quality has been monitored at five locations. The table showing Ambient Air Quality is present in **Table -28 to Table 37** respectively.

Ambient Air Quality Locations

Location Code	Location Name	Date Of Monitoring	Date Of Monitoring
AQ-1	Project Site	04.09.2020	18.09.2020
AQ-2	Kasarkod Village	04.09.2020	18.09.2020
AQ-3	Honnavar Village	04.09.2020	18.09.2020
AQ-4	Kulkod Village	05.09.2020	19.09.2020
AQ-5	Ramatheerth Village	05.09.2020	19.09.2020

TABLE-28

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Near Project House
Date of Monitoring : 04.09.2020
Ambient Temperature °C : 28(Average)
Wind Direction : NE
Weather Condition : Clear
Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	66	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	34	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	8.1	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	24.1	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-29

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Kasarkod Village
Date of Monitoring : 04.09.2020
Ambient Temperature °C : 28 (Average)
Wind Direction : NE
Weather Condition : Clear
Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	52	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	28	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	7.8	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	20.1	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-30

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Honnavar Village

Date of Monitoring : 04.09.2020

Ambient Temperature °C : 28 (Average)

Wind Direction : NE

Weather Condition : Clear

Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	44	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	23	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	4.8	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	16.5	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-31

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Kulkod Village

Date of Monitoring : 05.09.2020

Ambient Temperature °C : 28 (Average)

Wind Direction : NE

Weather Condition : Clear

Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	48	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	25	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	6.9	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	18.1	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-32

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Ramtheerth Village
Date of Monitoring : 05.09.2020
Ambient Temperature °C : 28 (Average)
Wind Direction : NE
Weather Condition : Clear
Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	35	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	18	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	4.2	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	12.8	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-33

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Project Site
Date of Monitoring : 18.09.2020
Ambient Temperature °C : 28 (Average)
Wind Direction : S
Weather Condition : Clear
Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	60	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	32	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	7.4	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	20.8	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-34

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Kasarkod Village

Date of Monitoring : 18.09.2020

Ambient Temperature °C : 28 (Average)

Wind Direction : S

Weather Condition : Clear

Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	54	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	29	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	7.5	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	24.5	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-35

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Honnavar Village

Date of Monitoring : 18.09.2020

Ambient Temperature °C : 28 (Average)

Wind Direction : S

Weather Condition : Clear

Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	52	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	27	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	7.1	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	18.3	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-36

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Kulkod Village
Date of Monitoring : 19.09.2020
Ambient Temperature °C : 28 (Average)
Wind Direction : S
Weather Condition : Clear
Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	39	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	20	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	5.2	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	14.6	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-37

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Ramtheerth Village
Date of Monitoring : 19.09.2020
Ambient Temperature °C : 28 (Average)
Wind Direction : S
Weather Condition : Clear
Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	42	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	22	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	5.2	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	16.6	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-38
Ambient Noise Quality Locations

Location Code	Location Name	Date Of Monitoring	
N-1	Project Site	04.09.2020	18.09.2020
N-2	Kasarkod Village	04.09.2020	18.09.2020
N-3	Honnavar Village	04.09.2020	18.09.2020
N-4	Kulkod Village	05.09.2020	19.09.2020
N-5	Ramatheerth Village	05.09.2020	19.09.2020

TABLE-38
AMBIENT NOISE LEVELS IN THE STUDY AREA

All the values are expressed in dB (A)

Time	N-1	N-2	N-3	N-4	N-5	N-1	N-2	N-3	N-4	N-5
HOURS										
06:00 – 07:00	46.8	44.2	46.3	46.4	44.2	51.6	46.5	47.2	46.5	44.7
07:00 – 08:00	48.5	46.7	48.7	45.6	47.5	53.4	49.7	49.1	49.1	46.2
08:00 – 09:00	50.3	48.5	52.6	49.5	48.3	55.7	53.1	51.6	51.6	48.3
09:00 – 10:00	52.1	51.6	50.1	51.3	50.6	58.3	51.8	52.8	52.8	50.4
10:00 – 11:00	53.5	50.7	53.7	49.5	47.1	60.1	54.6	54.6	50.1	51.7
11:00 – 12:00	56.6	53.1	51.5	52.1	45.9	62.7	56.7	55.3	51.6	49.2
12:00 – 13:00	52.4	55.2	52.9	47.6	48.7	63.9	57.3	52.1	49.5	50.6
13:00 – 14:00	53.6	52.6	55.7	48.9	50.4	66.2	52.6	53.6	47.3	48.5
14:00 – 15:00	54.9	54.1	50.2	51.3	51.6	64.5	54.7	51.8	50.2	51.2
15:00 – 16:00	51.2	55.8	52.4	50.5	49.5	67.1	51.5	53.2	52.1	50.4
16:00 – 17:00	53.4	52.4	53.6	51.3	52.1	65.2	50.8	52.4	48.7	52.4
17:00 – 18:00	55.1	50.7	50.5	49.4	50.6	64.3	52.1	50.6	50.6	49.7
18:00 – 19:00	51.6	48.6	54.0	46.3	47.6	60.6	50.7	54.3	49.3	47.5
19:00 – 20:00	49.2	47.2	51.1	43.8	45.4	58.1	49.8	50.7	47.6	46.1
20:00 – 21:00	47.1	45.1	48.7	45.1	42.7	56.9	51.3	48.5	45.1	45.4
21:00 – 22:00	45.3	43.9	46.2	40.5	40.6	54.7	47.8	47.0	44.2	44.1
22:00 – 23:00	42.8	41.5	43.8	38.4	42.1	52.6	45.9	45.6	41.6	42.6
23:00 – 24:00	40.1	40.2	41.3	36.9	39.4	51.8	43.6	43.1	40.4	40.3
24:00 – 01:00	38.5	37.9	39.4	35.7	37.1	48.3	40.5	40.7	37.5	37.8
01:00 – 02:00	36.4	35.4	38.1	36.3	35.3	45.5	38.6	38.5	36.1	34.8
02:00 – 03:00	34.6	33.4	36.5	37.9	32.4	43.1	36.4	37.1	34.3	32.9
03:00 – 04:00	37.2	36.1	37.8	38.8	35.9	42.8	35.8	39.3	36.7	35.7
04:00 – 05:00	39.5	38.5	39.1	39.5	37.6	41.6	37.1	38.0	38.9	37.8
05:00 – 06:00	42.5	40.2	42.5	40.8	39.5	44.3	39.6	41.5	40.2	39.2
L Day	**52.3**	**51.4**	**51.8**	**49.0**	**48.6**	**62.3**	**52.8**	**52.1**	**49.7**	**49.1**
L Night	**39.8**	**38.6**	**40.5**	**38.3**	**38.6**	**48.1**	**41.1**	**41.4**	**38.8**	**38.6**

TABLE-39
Ground Water Quality

Two Ground water samples was collected and analyzed. The analytical results are given in **TABLE-39**

Location Code	Bore Well Location	Date of Sampling
GW-1	Honnavar Village	04.09.2020
GW-2	Kasarkod Village	04.09.2020

TEST RESULTS

S.No.	Parameters	Units	Test Method	Results		Drinking Water Limits As per IS: 10500; 2012	
				GW-1	GW-2	Acceptable Limits	Permissible limits in absence of alternative Source
1.	pH @25^{0}C	--	IS:3025 part 11 1983, RA-2017	7.42	7.26	6.50 – 8.50	No relaxation
2.	Conductivity@25^{0}C	µmhos/cm	IS: 3025 Part 14 1984 RA-2013	444	492	--	--
3.	Temperature	°C	IS: 3025 Part 1 1984 RA-2014	25.4	25.6	--	--
4.	Total Dissolved Solids	mg/L	IS: 3025 Part 16 1984, RA-2017	275	304	500	2000
5.	Total Suspended Solids	mg/L	IS 3025 Part 17 1984, RA-2017	<1.0	<1.0	--	--
6.	Turbidity	NTC	IS: 3025 Part 10 1984, RA-2017	<1.0	<1.0	1	5
7.	Total Hardness as $CaCO_3$	mg/L	IS: 3025 Part 21 2009, RA-2014	120	140	200	600
8.	Calcium as Ca	mg/L	IS: 3025 Part 40 1991, RA-2014	28.0	32.0	75	200
9.	Magnesium as Mg	mg/L	IS: 3025 Part 46 1994, RA-2014	12.0	14.4	30	100
10.	Chloride as Cl	mg/L	IS: 3025 Part 32 1988, RA-2014	35.0	45.0	250	1000
11.	Sulphate as SO_4	mg/L	IS: 3025 Part 24 1986, RA-2014	50.6	68.7	200	400
12.	Sodium as Na	mg/L	IS: 3025 Part 45 1993, RA-2014	43.4	45.0	---	---
13.	Potassium as K	mg/L	IS: 3025 Part 45 1993, RA-2014	2.1	2.3	---	---
14.	Nitrate as NO_3	mg/L	IS: 3025 Part 34 1988, RA-2014	5.6	6.3	45	No Relaxation
15.	Iron as Fe	mg/L	IS: 3025 Part 53 2003, RA-2014	0.14	0.18	0.3	No Relaxation
16.	Lead as Pb	mg/L	IS 3025 Part 47 1994, RA2014	<0.001	<0.001	0.01	No Relaxation
17.	Dissolved Oxygen	mg/L	IS 3025 Part 38 2009	<1.0	<1.0	--	--
18.	Biological Oxygen Demand(3 Days For27°C)	mg/L	IS 3025 Part 44 1993, RA-2014	<3.0	<3.0	--	--
19.	Chemical Oxygen Demand	mg/L	IS 3025 Part 58 2006, RA-2017	<4.0	<4.0	--	--
20	Oil & Grease	mg/L	IS 3025 Part 39 :1991, RA-2014	<1.0	<1.0	--	--
21.	Coli form Bacteria	CFU /100ml	IS: 15185: 2016	Not Detected	Not Detected	Must not be Detected	
22.	E. Coli	CFU /100ml	IS: 15185: 2016	Not Detected	Not Detected	Must not be Detected	

Surface Water Quality

Two Surface water samples was collected and analyzed. The analytical results are given in **TABLE-40**

TABLE-40

Surface water Quality Location

Location Code	Location Name	Sample Collection Dates
SW1	Sharavati River	04.09.2020
SW2	Badgani River	04.09.2020

TEST RESULTS

S.No.	Parameters	Units	Test Method	Results		Limits as Per As per IS: 2296 Class C
				SW-1	SW-2	
1.	pH @25^{0}C	--	IS:3025 part 11 1983, RA-2017	8.24	8.44	6.5-8.5
2.	Conductivity@25^{0}C	µmhos/cm	IS: 3025 Part 14 1984 RA-2013	2974	34262	--
3.	Temperature	°C	IS: 3025 Part 1 1984 RA-2014	25.6	26.4	--
4.	Total Dissolved Solids	mg/L	IS: 3025 Part 16 1984, RA-2017	1918	21940	1500 max
5.	Total Suspended Solids	mg/L	IS 3025 Part 17 1984, RA-2017	22	35.2	--
6.	Turbidity	NTC	IS: 3025 Part 10 1984, RA-2017	17.6	24.8	--
7.	Total Hardness as $CaCO_3$	mg/L	IS: 3025 Part 21 2009, RA-2014	500	5290	--
8.	Calcium as Ca	mg/L	IS: 3025 Part 40 1991, RA-2014	120.0	592.0	--
9.	Magnesium as Mg	mg/L	IS: 3025 Part 46 1994, RA-2014	48.0	914.4	--
10.	Chloride as Cl	mg/L	IS: 3025 Part 32 1988, RA-2014	580	11405	600
11.	Sulphate as SO_4	mg/L	IS: 3025 Part 24 1986, RA-2014	293	766	400
12.	Nitrate as NO_3	mg/L	IS: 3025 Part 34 1988, RA-2014	40.0	56.7	50
13.	Iron as Fe	mg/L	IS: 3025 Part 53 2003, RA-2014	0.20	0.32	50
14.	Lead as Pb	mg/L	IS 3025 Part 47 1994, RA2014	<0.001	<0.001	0.1
15.	Dissolved Oxygen	mg/L	IS 3025 Part 38 2009	4.4	4.8	4-6
16.	Biological Oxygen Demand (3 Days For27°C)	mg/L	IS 3025 Part 44 1993, RA-2014	08	12	<3.0
17.	Chemical Oxygen Demand	mg/L	IS 3025 Part 58 2006, RA-2017	30	40	--
18.	Oil & Grease	mg/L	IS 3025 Part 39 :1991, RA-2014	<1.0	<1.0	0.1
19.	Coli form Bacteria	MPN /100ml	APHA 23rd ED 2017 9221 B	2400	3300	Should not exceed 5000

TABLE-41
Marine Water Quality

Six Marine water samples was collected and analyzed. The analytical results are given in **TABLE-41**

Location Code	Bore Well Location	Date of Sampling
M-1	Dredge Spoil Disposal Area	05.09.2020
M-2	Northern Break Water	05.09.2020
M-3	Southern Break Water	05.09.2020
M-4	Inner Navigation Channel	05.09.2020
M-5	Sharavari River, Near Berthing Area	05.09.2020
M-6	Sharavati/Badgani River Mouth (Near Confluence Point)	05.09.2020

TEST RESULTS

S.No.	Parameters	Units	Test Method	Results					
				M-1	M-2	M-3	M-4	M-5	M-6
1.	pH @25^{0}C	--	IS:3025 part 11 1983, RA-2017	7.97	8.07	7.94	8.10	7.84	7.95
2.	Conductivity@25^{0}C	µmhos/ cm	IS: 3025 Part 14 1984 RA-2013	36174	35816	36238	35214	32014	32918
3.	Temperature	^{o}C	IS: 3025 Part 1 1984 RA-2014	25.9	26.2	25.7	25.4	26.2	25.8
4.	Total Dissolved Solids	mg/L	IS: 3025 Part 16 1984, RA-2017	22748	22804	23204	21740	20248	20934
5.	Total Suspended Solids	mg/L	IS 3025 Part 17 1984, RA-2017	32	44	35	47	54	66
6.	Turbidity	NTC	IS: 3025 Part 10 1984, RA-2017	17.9	26.4	18.4	23.2	28.6	35.1
7.	Total Hardness as $CaCO_3$	mg/L	IS: 3025 Part 21 2009, RA-2014	4900	5400	5800	5160	4900	5300
8.	Calcium as Ca	mg/L	IS: 3025 Part 40 1991, RA-2014	368.0	400.0	400.0	484.0	320.0	320.0
9.	Magnesium as Mg	mg/L	IS: 3025 Part 46 1994, RA-2014	955.2	1056.0	1152.0	948.0	984.0	1080.0
10.	Chloride as Cl	mg/L	IS: 3025 Part 32 1988, RA-2014	12405	12230	12330	11955	10905	11110
11.	Sulphate as SO_4	mg/L	IS: 3025 Part 24 1986, RA-2014	380	463	512	445	236.1	386
12.	Nitrate as NO_3	mg/L	IS: 3025 Part 34 1988, RA-2014	68.6	72.4	74.9	66.1	64.2	68.6
13.	Iron as Fe	mg/L	IS: 3025 Part 53 2003, RA-2014	0.38	0.48	0.46	0.46	0.48	0.50
14.	Lead as Pb	mg/L	IS 3025 Part 47 1994, RA2014	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
15.	Dissolved Oxygen	mg/L	IS 3025 Part 38 2009	4.4	4.7	4.5	4.60	4.30	4.60
16.	Biological Oxygen Demand (3 Days For27^{0}C)	mg/L	IS 3025 Part 44 1993, RA-2014	08	10	08	07	12	10
17.	Chemical Oxygen Demand	mg/L	IS 3025 Part 58 2006, RA-2017	30	40	32	30	40	40
18.	Oil & Grease	mg/L	IS 3025 Part 39 :1991, RA-2014	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
19.	Coli form Bacteria	MPN /100ml	APHA 23rd ED 2017 9221 B	110	71	69	94	110	130

TABLE-42
Marine Biology

Six Plankton samples was collected and analyzed. The analytical results are given in **TABLE-41 to 42**

Location Code	Bore Well Location	Date of Sampling
M-1	Dredge Spoil Disposal Area	05.09.2020
M-2	Northern Break Water	05.09.2020
M-3	Southern Break Water	05.09.2020
M-4	Inner Navigation Channel	05.09.2020
M-5	Sharavari River, Near Berthing Area	05.09.2020
M-6	Sharavati/Badgani River Mouth (Near Confluence Point)	05.09.2020

TABLE-43
TEST RESULTS

Location Name: Dredge Spoil Disposal Area

Phytoplankton

S.No	Description	Result
1	Numerical abundance of species	1,32,758 nos/100m^3 to 11,42,516 nos/100m^3
2	Bio-mass net weight	4.1 mg/100m^3 to 29.7 mg/100m^3
3	Chlorophyll content	between 0.02 mg/m^3 to 4.52 mg/m^3
4	Phaeophytin content	0.2 mg/m^3 to 4.5 mg/m^3
5	Predominant species observed	Biddulphia mobiliensis, Chaetoceros curvisetus, Licmophora abbreviata, Skeletonema costatum, Prorocentrum micans and Oscillatoria sp, Coscinodiscus, Bacteriostrus, Chaetoceros (Chain), Pleurosigma, Staroneis, Leptocylindrus, Nitzschia, Naviculla, Thalassiosiro,
6	Productivity	between 52.46 mg C/m^3 to 1729.4 mg C/m^3
7	No of Species	32 - 46

Zooplankton

S.No	Description	Result
1	Numerical abundance of species	1,704,910 no.s/100m^3 to 2,75,628 nos/100m^3.
2	Bio-mass net weight	13.81 ml/100m^3 to 18.24 ml/100m^3
3	Fauna diversity	Above 09
4	Predominant species observed	Copedods (Six Larval forms as nauplii) Cyclopoids, Harpacticoid, Copepods, Doliolumsp., Salpasp., Hnthomedusole sp., Appendicularia, Gastropods, Cladocerans, Decapod Larvae, Undinula sp., Polychaete larvae, Lucifer sp,
5	No of Species	34 – 48

TABLE-44
TEST RESULTS

Location Name: Northern Break Water

Phytoplankton

S.No	Description	Result
1	Numerical abundance of species	1,18,642 nos/100m^3 to 6,78,537 nos/100m^3
2	Bio-mass net weight	3.9 mg/100m^3 to 19.4 mg/100m^3
3	Chlorophyll content	between 0.02 mg/m^3 to 5.02 mg/m^3
4	Phaeophytin content	0.2 mg/m^3 to 4.72 mg/m^3
5	Predominant species observed	Biddulphia mobiliensis, Chaetoceros curvisetus, Licmophora abbreviata, Skeletonema costatum, Prorocentrum micans and Oscillatoria sp, Coscinodiscus, Bacteriostrus, Chaetoceros (Chain), Pleurosigma, Staroneis, Leptocylindrus, Nitzschia, Naviculla, Thalassiosiro,
6	Productivity	between 45.24 mg C/m^3 to 1375.8 mg C/m^3
7	No of Species	32 - 40

Zooplankton

S.No	Description	Result
1	Numerical abundance of species	1,30,627 no.s/100m^3 to 2,84,326 nos/100m^3.
2	Bio-mass net weight	11.80 ml/100m^3 to 16.42 ml/100m^3
3	Fauna diversity	Above 09
4	Predominant species observed	Copedods (Six Larval forms as nauplii) Cyclopoids, Harpacticoid, Copepods, Doliolumsp., Salpasp., Hnthomedusole sp., Appendicularia, Gastropods, Cladocerans, Decapod Larvae, Undinula sp., Polychaete larvae, Lucifer sp,
5	No of Species	34 – 46

TABLE-45
TEST RESULTS

Lacation Name: Southern Break Water

Phytoplankton

S.No	Description	Result
1	Numerical abundance of species	1,15,728 nos/100m^3 to 7,32,462 nos/100m^3
2	Bio-mass net weight	3.8 mg/100m^3 to 15.2 mg/100m^3
3	Chlorophyll content	between 0.02 mg/m^3 to 4.24 mg/m^3
4	Phaeophytin content	0.2 mg/m^3 to 4.4 mg/m^3
5	Predominant species observed	Biddulphia mobiliensis, Chaetoceros curvisetus, Licmophora abbreviata, Skeletonema costatum, Prorocentrum micans and Oscillatoria sp, Coscinodiscus, Bacteriostrus, Chaetoceros (Chain), Pleurosigma, Staroneis, Leptocylindrus, Nitzschia, Naviculla, Thalassiosiro,
6	Productivity	between 49.94 mg C/m^3 to 1672.5 mg C/m^3
7	No of Species	36 - 44

Zooplankton

S.No	Description	Result
1	Numerical abundance of species	1, 24,182 no.s/100m^3 to 3, 08,242 nos/100m^3.
2	Bio-mass net weight	11.28 ml/100m^3 to 17.76 ml/100m^3
3	Fauna diversity	Above 09
4	Predominant species observed	Copedods (Six Larval forms as nauplii) Cyclopoids, Harpacticoid, Copepods, Doliolumsp., Salpasp., Hnthomedusole sp., Appendicularia, Gastropods, Cladocerans, Decapod Larvae, Undinula sp., Polychaete larvae, Lucifer sp,
5	No of Species	36 – 44

TABLE-46

TEST RESULTS

Location name: Inner Navigation Channel

Phytoplankton

S.No	Description	Result
1	Numerical abundance of species	1,29,664 nos/100m^3 to 6,28,792 nos/100m^3
2	Bio-mass net weight	3.6 mg/100m^3 to 16.42 mg/100m^3
3	Chlorophyll content	between 0.02 mg/m^3 to 4.75 mg/m^3
4	Phaeophytin content	0.2 mg/m^3 to 4.1 mg/m^3
5	Predominant species observed	Biddulphia mobiliensis, Chaetoceros curvisetus, Licmophora abbreviata, Skeletonema costatum, Prorocentrum micans and Oscillatoria sp, Coscinodiscus, Bacteriostrus, Chaetoceros (Chain), Pleurosigma, Staroneis, Leptocylindrus, Nitzschia, Naviculla, Thalassiosiro,
6	Productivity	between 26.42 mg C/m^3 to 1824.4 mg C/m^3
7	No of Species	38 - 44

Zooplankton

S.No	Description	Result
1	Numerical abundance of species	1, 32,418 no.s/100m^3 to 2, 94,624 nos/100m^3.
2	Bio-mass net weight	12.32 ml/100m^3 to 16.38 ml/100m^3
3	Fauna diversity	Above 09
4	Predominant species observed	Copedods (Six Larval forms as nauplii) Cyclopoids, Harpacticoid, Copepods, Doliolumsp., Salpasp., Hnthomedusole sp., Appendicularia, Gastropods, Cladocerans, Decapod Larvae, Undinula sp., Polychaete larvae, Lucifer sp,
5	No of Species	32 – 40

TABLE-47
TEST RESULTS

Location Name: Saravathi River Near Berthing Area

Phytoplankton

S.No	Description	Result
1	Numerical abundance of species	1,08,456 nos/100m^3 to 5,78,282 nos/100m^3
2	Bio-mass net weight	3.7 mg/100m^3 to 6.68 mg/100m^3
3	Chlorophyll content	between 0.02 mg/m^3 to 4.60 mg/m^3
4	Phaeophytin content	0.2 mg/m^3 to 4.4 mg/m^3
5	Predominant species observed	Biddulphia mobiliensis, Chaetoceros curvisetus, Licmophora abbreviata, Skeletonema costatum, Prorocentrum micans and Oscillatoria sp, Coscinodiscus, Bacteriostrus, Chaetoceros (Chain), Pleurosigma, Staroneis, Leptocylindrus, Nitzschia, Naviculla, Thalassiosiro,
6	Productivity	between 15.95 mg C/m^3 to 1328:4 mg C/m^3
7	No of Species	32 - 38

Zooplankton

S.No	Description	Result
1	Numerical abundance of species	1, 19,758 no.s/100m^3 to 2,42,242 nos/100m^3.
2	Bio-mass net weight	12.48 ml/100m^3 to 16.42 ml/100m^3
3	Fauna diversity	Above 09
4	Predominant species observed	Copedods (Six Larval forms as nauplii) Cyclopoids, Harpacticoid, Copepods, Doliolumsp., Salpasp., Hnthomedusole sp., Appendicularia, Gastropods, Cladocerans, Decapod Larvae, Undinula sp., Polychaete larvae, Lucifer sp,
5	No of Species	36 – 42

TABLE-48
TEST RESULTS

Location Name: Sharavati / Badgani River Mouth Near Confluence Point

Phytoplankton

S.No	Description	Result
1	Numerical abundance of species	1,22,326 nos/100m^3 to 6,24,728 nos/100m^3
2	Bio-mass net weight	4.0 mg/100m^3 to 14.82 mg/100m^3
3	Chlorophyll content	between 0.02 mg/m^3 to 5.10 mg/m^3
4	Phaeophytin content	0.2 mg/m^3 to 4.2 mg/m^3
5	Predominant species observed	Biddulphia mobiliensis, Chaetoceros curvisetus, Licmophora abbreviata, Skeletonema costatum, Prorocentrum micans and Oscillatoria sp, Coscinodiscus, Bacteriostrus, Chaetoceros (Chain), Pleurosigma, Staroneis, Leptocylindrus, Nitzschia, Naviculla, Thalassiosiro,
6	Productivity	between 16.48 mg C/m^3 to 1726.3 mg C/m^3
7	No of Species	36 - 44

Zooplankton

S.No	Description	Result
1	Numerical abundance of species	1, 20,440 nos/100m^3 to 2, 42,624 nos/100m^3.
2	Bio-mass net weight	11.60 ml/100m^3 to 18.42 ml/100m^3
3	Fauna diversity	Above 09
4	Predominant species observed	Copedods (Six Larval forms as nauplii) Cyclopoids, Harpacticoid, Copepods, Doliolumsp., Salpasp., Hnthomedusole sp., Appendicularia, Gastropods, Cladocerans, Decapod Larvae, Undinula sp., Polychaete larvae, Lucifer sp,
5	No of Species	32 – 38

TABLE-49
Sediment and Plankton Benthic Communities

Six Sediment & Benthic samples was collected and analyzed. The analytical results are given in **TABLE-47 to 52**

Location Code	Bore Well Location	Date of Sampling
M-1	Dredge Spoil Disposal Area	05.09.2020
M-2	Northern Break Water	05.09.2020
M-3	Southern Break Water	05.09.2020
M-4	Inner Navigation Channel	05.09.2020
M-5	Sharavari River, Near Berthing Area	05.09.2020
M-6	Sharavati/Badgani River Mouth (Near Confluence Point)	05.09.2020

TABLE-50
Sediment Quality
TEST RESULTS

Location Name: Dredge Spoil Disposal Area (14° 30'8 N, 74°41'5 E)

S. No.	Parameters	Units	Test Results
1.	Total Organic Carbon	%	0.68
2.	Total Organic Matter	%	1.17
3.	Inorganic Phosphates	mg/g	0.08
4.	Phosphates as $PO_4^{3-}P$	mg/g	0.06
5.	Sulphate as SO_4	mg/g	2.74
6.	Nitrite as NO_2	mg/g	<0.02
7.	Nitrate as NO_3	mg/g	5.30
8.	Calcium as Ca	mg/g	12.4
9.	Magnesium as Mg	mg/g	3.12
10.	Sodium as Na	mg/g	17.3
11.	Potassium as K	mg/g	0.48

PLANKTON & BENTHIC COMMUNITIES

1. Location: Dredge Spoil Disposal Area (14° 30'8 N, 74°41'5 E)
Sampling Date: 05.09.2020

Phytoplankton

The micro-benthic Phytoplankton species observed per kg sand collected at the water depth i.e., below the 4 mts of water of marine is as follows. The one kg sand sample collected was occupied space of about (12 X 6 cm) 72 cm^2 of area of the bottom of the sea coast. The prime parameters analyzed are:

S No	Description	Result
1.	Numerical abundance of species	27 to 512 no/m^2
2.	Bio-mass net weight	1.248 g/m^2
3.	Chlorophyll content	0.12 mg/m^3 to 5.30 mg/m^3
4.	Phaephytin content	0.10 mg/m^3 to 4.72 mg/m^3.
5.	Predominant species observed	Pteromonas, Lobomonas, Dichotomosiphon, Cryptomonas, Botryococcus, Carteria, Asterionella, Oscillatoria, Gomphonema, Chlorococcum.
6.	No of Species	30 - 36

Zooplankton

The micro marine Zooplanktonic species observed per kg sand collected at the bottom of the sea water below 4 mts of the water level spread over in the area of about (12cm X 6 cm) 72 cm^2. The prime parameters analysed are:

S No	Description	Result
1.	Predominant species observed	Crustaceans resparsent- Copepoda larval forms as Nauplii and the members Harpacticoid, Copepoda are abundant and other species are Cyclopoida, Calanoid, Copepods
2.	No of Species	10-16

TABLE-51
Sediment Quality
TEST RESULTS

Location Name: Northern Break Water

S. No.	Parameters	Units	Test Results
1.	Total Organic Carbon	%	0.76
2.	Total Organic Matter	%	1.31
3.	Inorganic Phosphates	mg/g	0.08
4.	Phosphates as $PO_4^{3-}P$	mg/g	0.12
5.	Sulphate as SO_4	mg/g	4.08
6.	Nitrite as NO_2	mg/g	<0.02
7.	Nitrate as NO_3	mg/g	3.64
8.	Calcium as Ca	mg/g	12.48
9.	Magnesium as Mg	mg/g	7.42
10.	Sodium as Na	mg/g	27.1
11.	Potassium as K	mg/g	0.46

PLANKTON & BENTHIC COMMUNITIES

1. Location: Northern Break Water
Sampling Date: 05.09.2020

Phytoplankton

The micro-benthic Phytoplankton species observed per kg sand collected at the water depth i.e., below the 4 mts of water of marine is as follows. The one kg sand sample collected was occupied space of about (12 X 6 cm) 72 cm^2 of area of the bottom of the sea coast. The prime parameters analyzed are:

S No	Description	Result
1.	Numerical abundance of species	20 to 478 no/m^2
2.	Bio-mass net weight	1.042 g/m^2
3.	Chlorophyll content	0.11 mg/m^3 to 5.12 mg/m^3
4.	Phaephytin content	0.14 mg/m^3 to 4.18 mg/m^3.
5.	Predominant species observed	Pteromonas, Lobomonas, Dichotomosiphon, Cryptomonas, Botryococcus, Carteria, Asterionella, Oscillatoria, Gomphonema, Chlorococcum.
6.	No of Species	24-34

Zooplankton

The micro marine Zooplankton species observed per kg sand collected at the bottom of the sea water below 4 mts of the water level spread over in the area of about (12cm X 6 cm) 72 cm^2. The prime parameters analyzed are:

S No	Description	Result
1.	Predominant species observed	Crustaceans resparsent- Copepoda larval forms as Nauplii and the members Harpacticoid, Copepoda are abundant and other species are Cyclopoida, Calanoid, Copepods
2.	No of Species	12-24

TABLE-52
Sediment Quality
TEST RESULTS

Location Name: Southern Break Water

S. No.	Parameters	Units	Test Results
1.	Total Organic Carbon	%	0.44
2.	Total Organic Matter	%	0.76
3.	Inorganic Phosphates	mg/g	0.06
4.	Phosphates as $PO_4^{3-}P$	mg/g	0.03
5.	Sulphate as SO_4	mg/g	3.24
6.	Nitrite as NO_2	mg/g	<0.02
7.	Nitrate as NO_3	mg/g	3.98
8.	Calcium as Ca	mg/g	12.64
9.	Magnesium as Mg	mg/g	7.72
10.	Sodium as Na	mg/g	18.50
11.	Potassium as K	mg/g	0.40

PLANKTON & BENTHIC COMMUNITIES

1. Location: Southern Break Water
Sampling Date: 05.09.2020

Phytoplankton

The micro-benthic Phytoplankton species observed per kg sand collected at the water depth i.e., below the 4 mts of water of marine is as follows. The one kg sand sample collected was occupied space of about (12 X 6 cm) 72 cm^2 of area of the bottom of the sea coast. The prime parameters analyzed are:

S No	Description	Result
1.	Numerical abundance of species	22 to 412 no/m^2
2.	Bio-mass net weight	1.024 g/m^2
3.	Chlorophyll content	0.18 mg/m^3 to 4.70 mg/m^3
4.	Phaephytin content	0.18 mg/m^3 to 4.78 mg/m^3.
5.	Predominant species observed	Pteromonas, Lobomonas, Dichotomosiphon, Cryptomonas, Botryococcus, Carteria, Asterionella, Oscillatoria, Gomphonema, Chlorococcum.
6.	No of Species	22-30

Zooplankton

The micro marine Zooplanktonic species observed per kg sand collected at the bottom of the sea water below 4 mts of the water level spread over in the area of about (12cm X 6 cm) 72 cm^2. The prime parameters analysed are:

S No	Description	Result
1.	Predominant species observed	Crustaceans resparsent- Copepoda larval forms as Nauplii and the members Harpacticoid, Copepoda are abundant and other species are Cyclopoida, Calanoid, Copepods
2.	No of Species	10-24

TABLE-53
Sediment Quality
TEST RESULTS

Location Name: Inner Navigation Channel

S. No.	Parameters	Units	Test Results
1.	Total Organic Carbon	%	0.74
2.	Total Organic Matter	%	1.27
3.	Inorganic Phosphates	mg/g	0.08
4.	Phosphates as $PO_4^{3-}P$	mg/g	0.05
5.	Sulphate as SO_4	mg/g	3.02
6.	Nitrite as NO_2	mg/g	<0.02
7.	Nitrate as NO_3	mg/g	4.07
8.	Calcium as Ca	mg/g	14.20
9.	Magnesium as Mg	mg/g	9.24
10.	Sodium as Na	mg/g	18.2
11.	Potassium as K	mg/g	0.40

PLANKTON & BENTHIC COMMUNITIES

1. Location: Inner Navigation Channel
Sampling Date: 05.09.2020

Phytoplankton

The micro-benthic Phytoplankton species observed per kg sand collected at the water depth i.e., below the 4 mts of water of marine is as follows. The one kg sand sample collected was occupied space of about (12 X 6 cm) 72 cm^2 of area of the bottom of the sea coast. The prime parameters analyzed are:

S No	Description	Result
1.	Numerical abundance of species	18 to 510 no/m^2
2.	Bio-mass net weight	1.072 g/m^2
3.	Chlorophyll content	0.14 mg/m^3 and 5.06 mg/m^3
4.	Phaephytin content	0.22 mg/m^3 to 3.94 mg/m^3.
5.	Predominant species observed	Pteromonas, Lobomonas, Dichotomosiphon, Cryptomonas, Botryococcus, Carteria, Asterionella, Oscillatoria, Gomphonema, Chlorococcum.
6.	No of Species	14-24

Zooplankton

The micro marine Zooplanktonic species observed per kg sand collected at the bottom of the sea water below 4 mts of the water level spread over in the area of about (12cm X 6 cm) 72 cm^2. The prime parameters analysed are:

S No	Description	Result
1.	Predominant species observed	Crustaceans resparsent- Copepoda larval forms as Nauplii and the members Harpacticoid, Copepoda are abundant and other species are Cyclopoida, Calanoid, Copepods
2.	No of Species	14-26

TABLE-54
Sediment Quality
TEST RESULTS

Location: Saravathi River Near Berthing Area

S. No.	Parameters	Units	Test Results
1.	Total Organic Carbon	%	0.78
2.	Total Organic Matter	%	1.34
3.	Inorganic Phosphates	mg/g	0.12
4.	Phosphates as $PO_4^{3-}P$	mg/g	0.08
5.	Sulphate as SO_4	mg/g	4.04
6.	Nitrite as NO_2	mg/g	<0.02
7.	Nitrate as NO_3	mg/g	4.92
8.	Calcium as Ca	mg/g	16.12
9.	Magnesium as Mg	mg/g	9.18
10.	Sodium as Na	mg/g	22.61
11.	Potassium as K	mg/g	0.43

PLANKTON & BENTHIC COMMUNITIES

1. Location: Saravathi River Near Berthing Area
Sampling Date: 05.09.2020

Phytoplankton

The micro-benthic Phytoplankton species observed per kg sand collected at the water depth i.e., below the 4 mts of water of marine is as follows. The one kg sand sample collected was occupied space of about (12 X 6 cm) 72 cm^2 of area of the bottom of the sea coast. The prime parameters analyzed are:

S No	Description	Result
1.	Numerical abundance of species	22 to 385 no/m^2
2.	Bio-mass net weight	1.110 g/m^2
3.	Chlorophyll content	0.10 mg/m^3 to 3.70 mg/m^3
4.	Phaephytin content	0.18 mg/m^3 to 3.42mg/m^3.
5.	Predominant species observed	Pteromonas, Lobomonas, Dichotomosiphon, Cryptomonas, Botryococcus, Carteria, Asterionella, Oscillatoria, Gomphonema, Chlorococcum.
6.	No of Species	18-28

Zooplankton

The micro marine Zooplanktonic species observed per kg sand collected at the bottom of the sea water below 4 mts of the water level spread over in the area of about (12cm X 6 cm) 72 cm^2. The prime parameters analysed are:

S No	Description	Result
1.	Predominant species observed	Crustaceans resparsent- Copepoda larval forms as Nauplii and the members Harpacticoid, Copepoda are abundant and other species are Cyclopoida, Calanoid, Copepods
2.	No of Species	10--16

TABLE-55
Sediment Quality
TEST RESULTS

Location: Saravathi/Badgani River Mouth Near Confluence Point

S. No.	Parameters	Units	Test Results
1.	Total Organic Carbon	%	0.66
2.	Total Organic Matter	%	1.14
3.	Inorganic Phosphates	mg/g	0.10
4.	Phosphates as $PO_4^{3-}P$	mg/g	0.06
5.	Sulphate as SO_4	mg/g	3.37
6.	Nitrite as NO_2	mg/g	<0.02
7.	Nitrate as NO_3	mg/g	4.40
8.	Calcium as Ca	mg/g	16.38
9.	Magnesium as Mg	mg/g	8.24
10.	Sodium as Na	mg/g	26.37
11.	Potassium as K	mg/g	0.39

PLANKTON & BENTHIC COMMUNITIES

1. **Location: Saravathi/Badgani River Mouth Near Confluence Point**
   Sampling Date: 05.09.2020

Phytoplankton

The micro-benthic Phytoplankton species observed per kg sand collected at the water depth i.e., below the 4 mts of water of marine is as follows. The one kg sand sample collected was occupied space of about (12 X 6 cm) 72 cm^2 of area of the bottom of the sea coast. The prime parameters analyzed are:

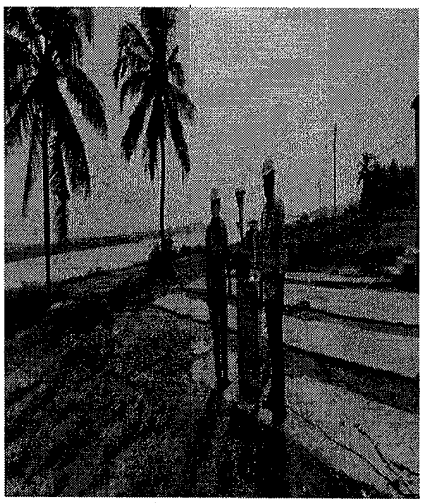
S No	Description	Result
1.	Numerical abundance of species	18 to 402 no/m^2
2.	Bio-mass net weight	1.104 g/m^2
3.	Chlorophyll content	0.16 mg/m^3 to 4.27 mg/m^3
4.	Phaephytin content	0.14 mg/m^3 to 4.56 mg/m^3.
5.	Predominant species observed	Pteromonas, Lobomonas, Dichotomosiphon, Cryptomonas, Botryococcus, Carteria, Asterionella, Oscillatoria, Gomphonema, Chlorococcum.
6.	No of Species	14-28

Zooplankton

The micro marine Zooplanktonic species observed per kg sand collected at the bottom of the sea water below 4 mts of the water level spread over in the area of about (12cm X 6 cm) 72 cm^2. The prime parameters analysed are:

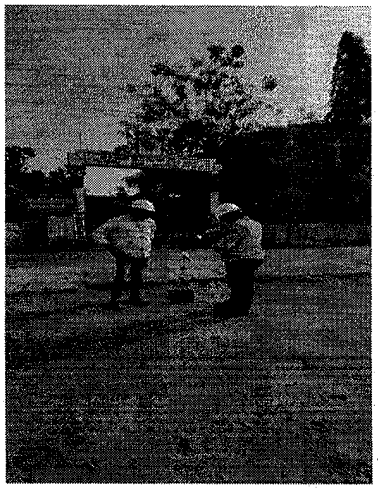
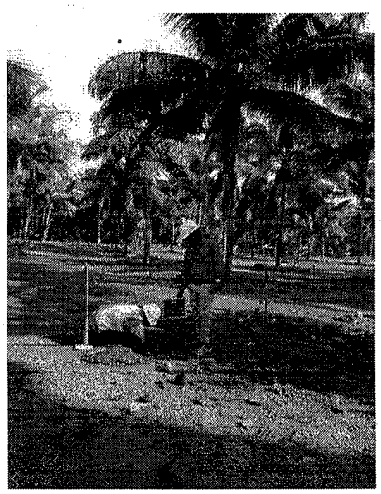
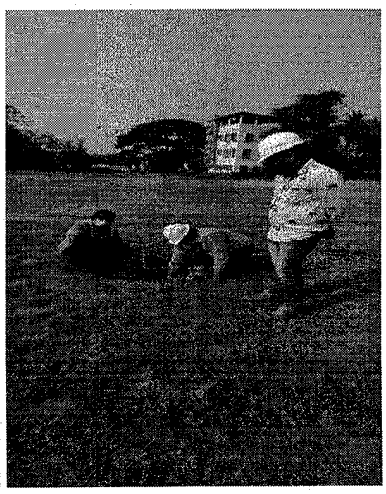
S No	Description	Result
1.	Predominant species observed	Crustaceans resparsent- Copepoda larval forms as Nauplii and the members Harpacticoid, Copepoda are abundant and other species are Cyclopoida, Calanoid, Copepods
2.	No of Species	12-26

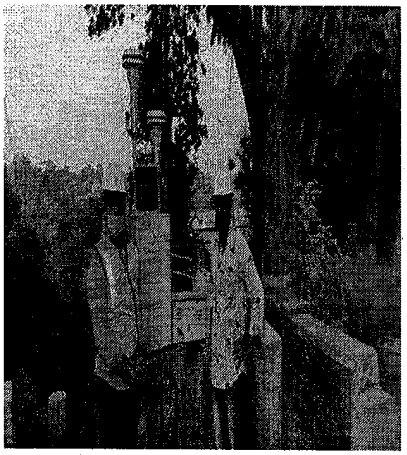
SOME PHOTO GRAPHS AT THE TIME OF SAMPLING





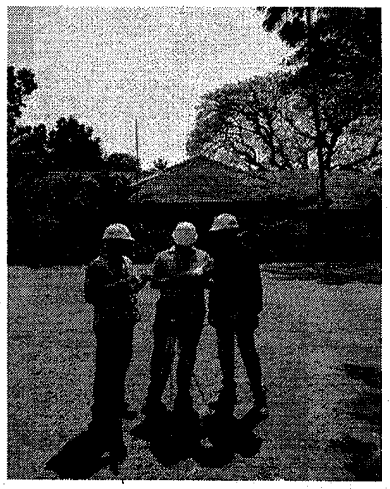


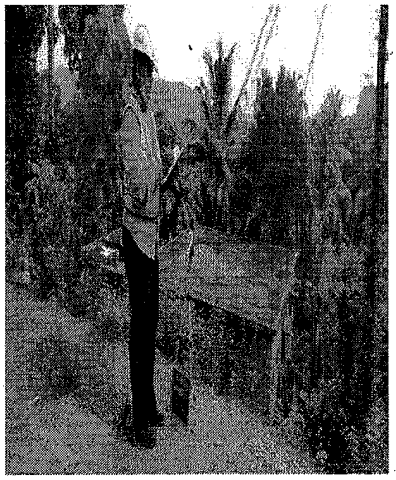




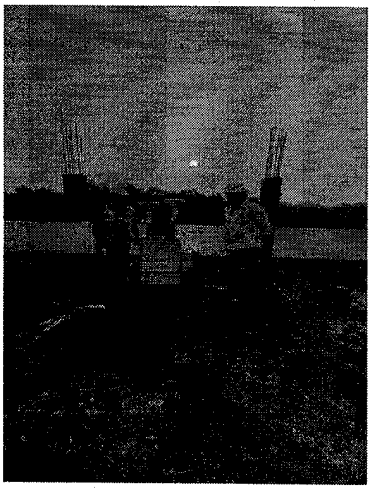
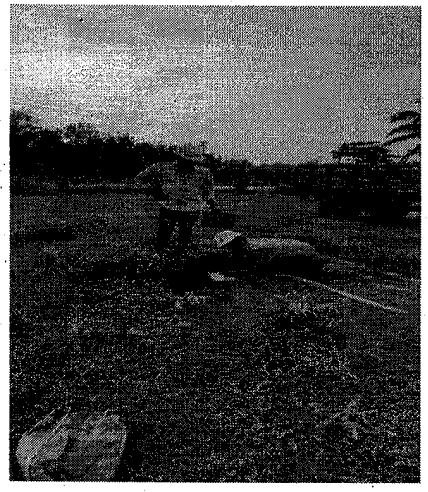


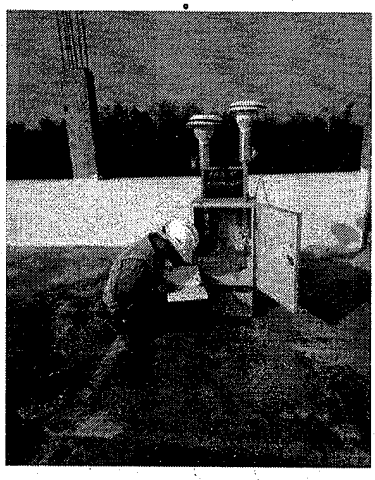
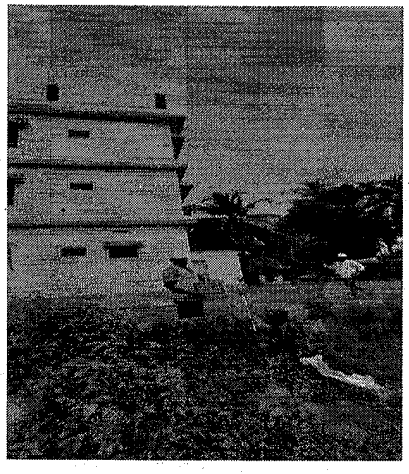


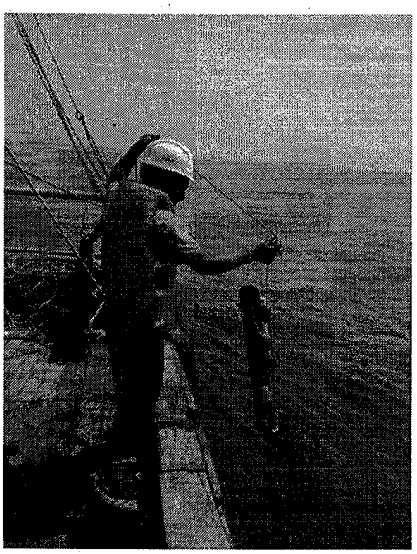


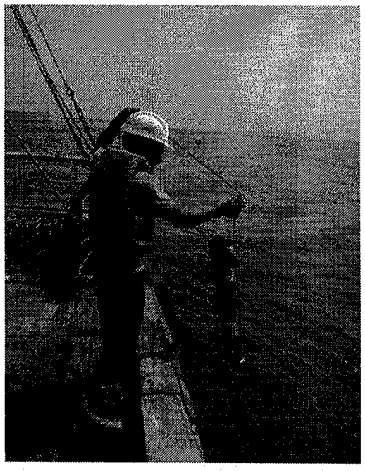
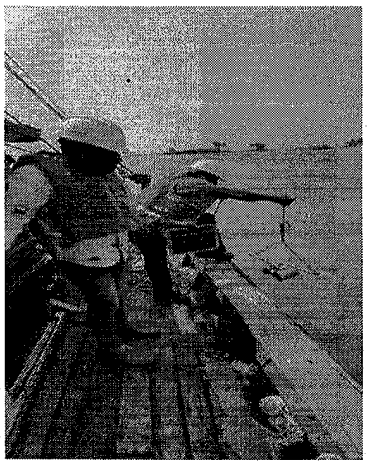
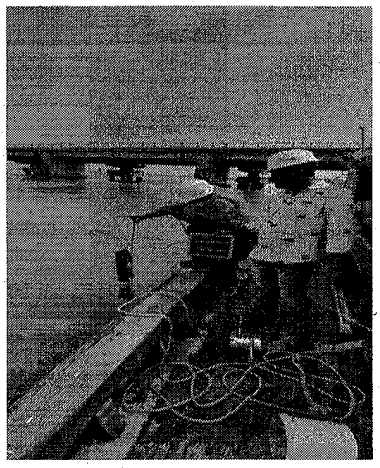
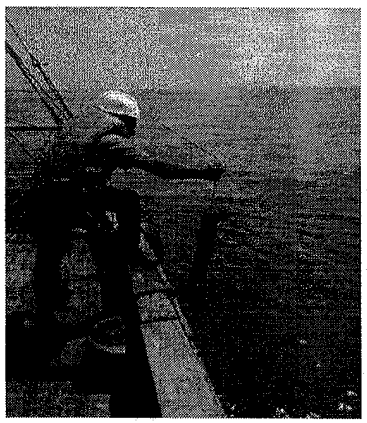
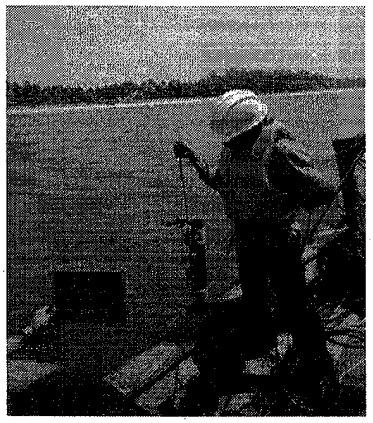
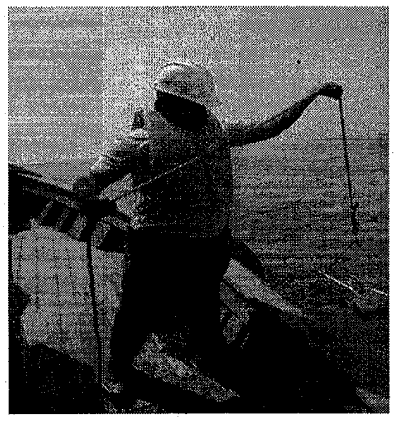
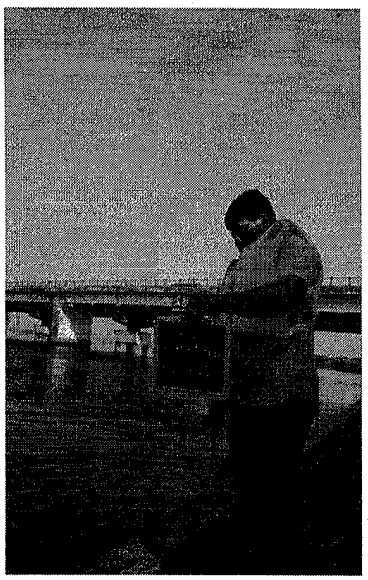
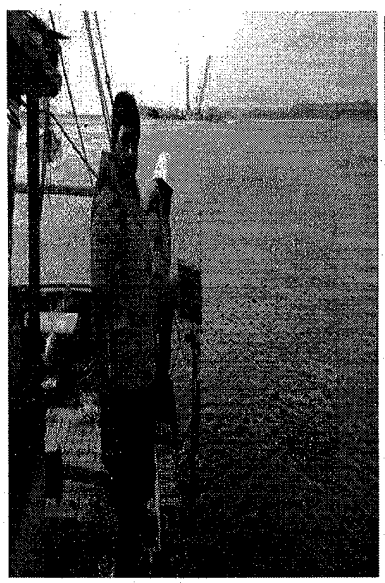
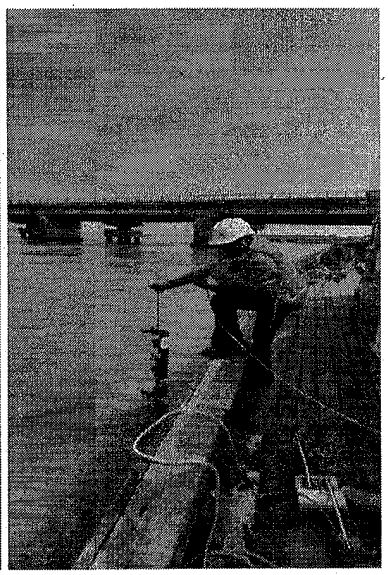


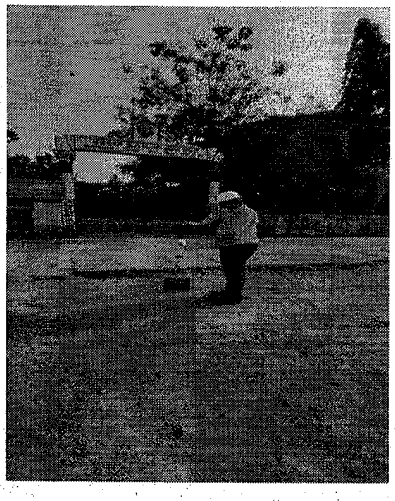


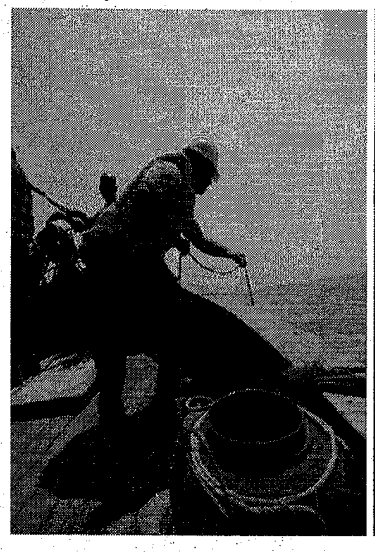



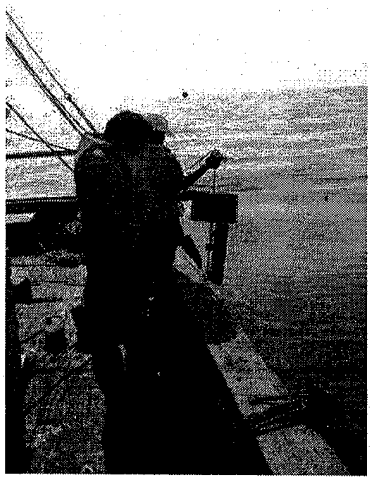
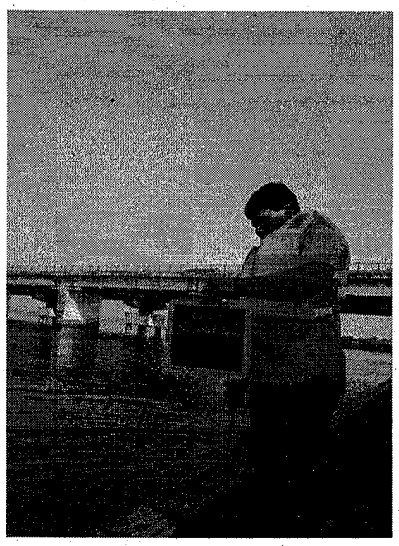
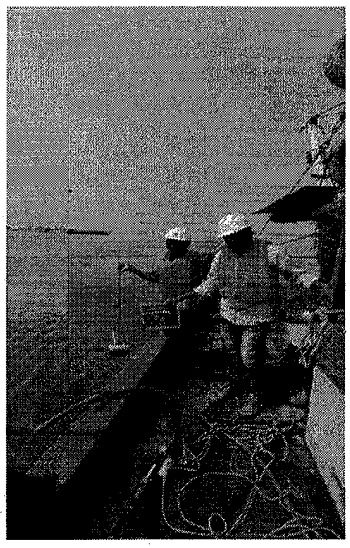



MOEF&CC CERTIFICATE

F. No. Q-15018/05/2019-CPW
Government of India
Ministry of Environment, Forest and Climate Change
(CP Division)

Agni-233, Indira Paryavaran Bhavan,
Jor Bagh Road,
New Delhi – 110 003.
Dated, the 8th January,2020

To

M/s Vison Labs
H. No. 16-11-23/37/A, Flat No. 205 & 206
2nd Floor, Andhra Bank Building
Opp. R.T.A. Office, Malakpet, Hyderabad-500036
Telangana

Subject: -Recognition of M/s Vison Labs, H. No. 16-11-23/37/A, Flat No. 205 & 206, 2nd Floor, Andhra Bank Building, Opp. R.T.A. Office, Malakpet, Hyderabad-500036, Telangana as Environmental Laboratory under the Environment (Protection) Act. 1986.

Sir,

I am directed to refer to your application dated: 01.02.2019 for recognition of your laboratory under Environment (Protection) Act, 1986. Based on the recommendations of the Expert Committee for Recognition of Environmental Laboratories in its 61th meeting held on 03.12.2019 and your acceptance of the revised terms and conditions at Annexure-III & IV of the Guidelines for recognition of Environmental Laboratories, this Ministry approves the renewal of recognition of M/s Vison Labs, H. No. 16-11-23/37/A, Flat No. 205 & 206, 2nd Floor, Andhra Bank Building, Opp. R.T.A. Office, Malakpet, Hyderabad-500036, Telangana , as shall be notified in the Gazette of India. **Considering the current validity of mandatory accreditations/certifications of the laboratory, this renewal shall be valid up to 20.07.2021.**

2. As sought in your aforementioned application M/s Vison Labs, Hyderabad may undertake the following tests:

I. **Physical Tests:** Conductivity, Colour, pH, Fixed & volatile solids, Total solids, Total dissolved solids, Total suspended solids, Turbidity, Temperature, Velocity & discharge measurement of industrial effluent stream, Flocculation test (Jar test), Odour, Salinity, Settleable solids and Sludge volume index (SVI).

II. **Inorganic (General & Non-metallic):** Acidity, Alkalinity, Ammonical nitrogen, Chloride, Chlorine residual, Dissolved oxygen, Fluoride, Total hardness, Total kjehldal nitrogen (TKN), Nitrite nitrogen, Nitrate nitrogen, Phosphate, Sulphate, Bromide, Carbon dioxide, Chlorine demand, Iodine, Sulphite, Silica, Cyanide and Sulphide.

III. **Inorganic (Trace metals):** Boron, Cadmium, Calcium, Chromium Total, Chromium Hexavalent, Copper, Iron, Lead, Magnesium, Mercury, Nickel, Potassium, Sodium, Sodium absorption ratio, Zinc, Arsenic, Aluminium, Beryllium, Barium, Lithium, Manganese, Selenium, Silver, Strontium, Tin, Antimony, Cobalt and Vanadium.

IV. **Organics (General) and Trace Organics:** Bio-chemical oxygen demand (BOD), Chemical oxygen demand (COD), Oil & grease, Phenol, Pesticide (each) ((Organo-chlorine, Organo nitrogen-phosphorous), Surfactants, Poly- chlorinated biphenyl (PCB's) each, Polynuclear aromatic hydrocarbon (PAH) each, Organic Carbon (in solid) and Carbon/Nitrogen ratio.

V. **Microbiological Tests:** Total Coliform, Faecal Coliform, Faecal streptococci, E. coli and Total Plate count.

VI. **Toxicological Tests:** Bioassay method for evaluation of toxicity using fish, Measurement of toxicity using Daphnia or other organism, Measurement of toxicity factor using zebra fish (dimensionless toxicity test).

VII. **Biological Tests:** Benthic organism identification and count, Planktonic identification count, Chlorophyll and P/R Ratio.

VIII. **Hazardous Waste:** Corrosivity, Ignibility (Flash point), Reactivity, Toxicity, Measurement of heavy metals/ pesticides in the waste/ leachate.

IX. **Soil/ Sludge/ Sediment and Solid Waste:** Boron, Cation Exchange Capacity (CEC), Electrical Conductivity, Nitrogen available, Organic carbon/ matter (chemical method), pH, Phosphorous (available), Phosphate (ortho), Phosphate (total), Potassium, SAR in soil extract, Sodium, Soil moisture, TKN, Calorific value, Ammonia, Bicarbonate, Calcium, Calcium carbonate, Chloride, Colour, Exchangeable sodium

percentage (ESP), H. Acid, Heavy metal, Magnesium, Nitrate, Nitrite, PAH, Pesticide, Potash (available), Sulphate, Sulphur, TOC, Total water soluble salt and Water holding capacity.

X. **Ambient Air/ Fugitive Emissions:** Nitrogen dioxide (NO_2), Sulphur dioxide (SO_2), Total Suspended particulate matter, Respirable suspended particulate matter (PM_{10}), Respirable Fine particulate matter ($PM_{2.5}$), Ammonia, Carbon monoxide, Chloride, Fluoride, Non methane hydrocarbon, Lead, Methane, Ozone, Benzene Toluene Xylene (BTX), Polycyclic aromatic hydrocarbon (PAH) Benzopyrine & other, Nickel, BaP and Arsenic as As.

XI. **Stack Gases/ Source Emission:** Particulate matter, Sulphur dioxide, Velocity & flow, Carbon dioxide, Carbon monoxide, Temperature, Oxides of nitrogen, Acid mist, Ammonia, Fluoride (Particulate), Fluoride (Gaseous), Hydrochloric acid, Total hydro carbon, Hydrogen Sulphide, Carbon disulphide and Mercaptain.

XII. **Noise Level:** Noise level measurement dB(A)), Ambient Noise & Source-specific Noise.

XIII. **Meteorological:** Ambient temperature, Wind direction, Wind speed, Relative Humidity Solar radiation and Rainfall.

2. Further, the following analysts have been approved for recognition as Government Analysts.

(i) Mr.T. Laxmikanth Reddy
(ii) Mr. K. Jitender Reddy
(iii) Mr. L. Chandra Sekhar Reddy

4. The laboratory shall compulsorily participate in the Analytical Quality Control (AQC) exercise conducted by the Central Pollution Control Board (CPCB) at least once a year to ascertain the capability of the laboratory and analyses carried out and shall submit quarterly progress reports to this Ministry.

5. Periodic surveillance of the recognized environmental laboratory will be undertaken by this Ministry/ CPCB to assess its proper functioning, systematic operation and reliability of data generated at the laboratory.

6. It is also mandatory for the laboratory to have requisite accreditations of the NABL/ ISO 9001 and OHSAS and its renewal as per accreditation rules. This recognition is subject to such accreditations and renewal, as applicable. **The laboratory may approach this Ministry for further extension of validity of recognition after renewal of the mandatory accreditations/ certification concerned**. Such application for extension of validity may be submitted to this Ministry in due advance, preferably before 6 months.

7. The laboratory should compulsorily follow the accepted Terms & Conditions. In case of serious non-compliance of any of the Terms and Conditions, the laboratory may be black-listed for a minimum period of two years and civil/ criminal proceedings, as applicable, may be initiated for performing functions on behalf of the Government in an unauthorized manner.

Yours faithfully,

(Dr. Susan George K.)
Scientist 'D'
Tel. No. 011-24695227
Email: susan.george@nic.in

Copy to:

1) Member Secretary, Central Pollution Control Board, Parivesh Bhawan, East Arjun Nagar, New Delhi – 110032.
2) Member Secretary, Telangana State Pollution Control Board, A-3, Industrial Estate, Sanath Nagar, Hyderabad
3) Additional Principal Conservator of Forests (C), Ministry of Environment, Forest and Climate Change, Regional Office (SEZ),1st and 2nd Floor, Handloom Export Promotion Council, 34, Cathedral Garden Road, Nungambakkam, Chennai-34.
4) Director, IT Division, MoEF&CC, New Delhi-110003: for uploading on MoEF&CC website

National Accreditation Board For Testing and Calibration Laboratories
Certificate of Accreditation

National Accreditation Board for Testing and Calibration Laboratories
(A Constituent Board of Quality Council of India)

CERTIFICATE OF ACCREDITATION

VISON LABS

[redacted]

rdance with the standard

005

ting & Calibration Laboratories"

has been assessed and accredited in acco

ISO/IEC 17025:2

"General Requirements for the Competence of Tes

for its facilities at

Malakpet, Hyderabad, Telangana

16-11-23/37A, Flat No. 205, 2nd Floor, Musarambagh,

[redacted]

in the field of

TESTING

umber TC-5064 *(in lieu of T-3216 & T-3334)*

Certificate N

26/11/2016 [redacted] Valid Until 25/11/2018

Issue Date

te remains valid for the Scope of Accreditation as specified in the annexure subject to atisfactory compliance to the above standard & the relevant requirements of NABL.

This certifica continued s

e the scope of accreditation of this laboratory, you may also visit NABL website www.nabl-india.org)

(To s

Signed for and on behalf of NABL

National Accreditation Board for Testing and Calibration Laboratories

(A Constituent Board of Quality Council of India)

26.06.2020

Extension in Validity of Accreditation

NABL **Policy:** It is decided to extend the validity of accreditation for a period of one year to all conformity assessment bodies (CABs) where renewal of accreditation is to take place and accreditation validity date is between 01.01.2020 and 30.06.2022 **subject to the following**:

1. Providing satisfactory documents based on NABL-218 wrt compliance to the requirements of the relevant Standard and NABL requirements.
2. The CABs are required to conduct additional internal audit to ensure compliance with the standard requirements (by increasing the existing frequency of their audit plan) and submit the document.
3. The CABs are required to provide control charts and trends for assuring the validity of results.
4. CABs are required to provide an undertaking to undergo unannounced assessment (onsite and/or remotely, depending on the situation) and actions as per NABL-216 thereof, at any point of time during the validity period.
5. Making payment of **annual accreditation fee** for the extended period.

Examples:

- Accredited CABs with date of issue 15.01.2018 and valid till 14.01.2020, then their Accreditation validity will be extended till 14.01.2021.

- Accredited CABs with date of issue 15.02.2019 and valid till 14.02.2021, then their Accreditation validity will be extended till 14.02.2022.

- Accredited CABs with date of issue 15.06.2020 and valid till 14.06.2022, then their Accreditation validity will be extended till 14.06.2023

NOTE:

1. The above will be applicable to the laboratories for which transition to ISO/IEC 17025:2017 version has been completed. For the laboratories which are accredited as per ISO/IEC 17025:2005 version, they have to undergo transition assessment (onsite and/or remotely, depending on the situation) and follow transition plan defined.
2. The above is not applicable to CABs where there will be a change in name of CAB and/or legal identity change and/or Premises change.
3. Also, **the above is not applicable to the CABs which are not registered in portal** (exemption- International accredited CABs).
4. Routine assessments will take place for any scope extension /addition.
5. Payment due to NABL can be deferred (postpone the payment) upto a period of Six (6) months. There will be no waive-off of any fee for any CABs. If payments are not made, then action as per procedure (NABL-216) will be initiated. There will be no relaxations wrt payment from 01.01.2021.

N.Venkateswaran
CEO, NABL

NABL House, Plot 45, Sector 44, Gurugram 122 002, Haryana
Tel. No.: +91-124-4679700 (30 lines) • Fax: +91-124-4679799 • Web: www.nabl-india.org

OHSAS Certificate Of Registration

ISO 45001:2018

Certificate of Registration

This is to Certify that
Occupational Health & Safety Management System of

M/S VISON LABS

H. NO. 16-11-23/37/A, FLAT NO. 205, OPP: R.T.A OFFICE,
MUSARAMBAGH, MALAKPET, HYDERABAD - 500036,
TELANGANA, INDIA.

has been assessed and found to conform to the requirements of

ISO 45001:2018

for the following scope :

PROVIDING ENVIRONMENTAL CONSULTANCY AND ANALYTICAL SERVICES

Certificate No	: I9IODO41		
Initial Registration Date	: 20/08/2019	Issuance Date	: 20/08/2019
Date of Expiry	: 19/08/2022		
1st Surve. Due	: 20/07/2020	2nd Surve. Due	: 20/07/2021

Director

IAS ACCREDITED Management Systems Certification Body MSCB-119

AQC MIDDLE EAST FZE.

Head Office: EI-I40I E Amber Gem Tower, Sheikh Khalifa Bin Zayed Road, 2, Ajman, UAE.
Key Location: 403, Madhuban Building, 55, Nehru Place, New Delhi - 110019, India. e-mail : info@aqcworld.com,
Validity of the Certificate is subject to successful completion of surveillance audit on or before of due date. In case surveillance audit is not allowed to be conducted, this certificate shall be suspended/withdrawn).
Certificate Verification: Please Re-check the validity of certificate at info@aqcworld.com/surveillance steps or www.aqcworld.com or Active Clients.
Certificate is the property of AQC Middle East FZE and shall be returned immediately when demanded

ISO Certificate Of Registration

ISO 9001:2015

Certificate of Registration

This is to Certify that
Quality Management System of

M/S VISON LABS

H. NO. 16-11-23/37/A, FLAT NO. 205, OPP: R.T.A OFFICE,MUS
ARAMBAGH, MALAKPET, HYDERABAD - 500036,
TELANGANA, INDIA.

has been assessed and found to conform to the requirements of

ISO 9001:2015

for the following scope :

PROVIDING ENVIRONMENTAL CONSULTANCY AND ANALYTICAL SERVICES

Certificate No	: 19IQDK35		
Initial Registration Date	: 20/08/2019	Issuance Date	: 20/08/2019
Date of Expiry	: 19/08/2022		
1st Surve. Due	: 20/07/2020	2nd Surve. Due	: 20/07/2021

Director

IAS ACCREDITED Management Systems Certification Body MSCB-119

MEMBER OF MULTILATERAL RECOGNITION ARRANGEMENT IAF

AQC MIDDLE EAST FZE.

Head Office: EL-140I E Amber Gem Tower, Sheikh Khalifa Bin Zayed Road, 2, Ajman, UAE. e-mail: info@aqcworld.com,
Key Locations: 403, Madhuban Building, 55, Nehru Place, New Delhi-110019, India.

Validity of the Certificate is subject to successful completion of surveillance audit on or before of due date. In case surveillance audit is not allowed to be conducted, this certificate shall be suspended/withdrawn).

Certificate Verification: Please Re-check the validity of certificate at http://www.aqcworld.com/certificates.aspx or www.aqcworld.com or Active Clients.

Certificate is the property of AQC Middle East FZE and shall be returned immediately when demanded.

ENVIRONMENTAL DATA GENERATION REPORT

Client

M/s. HONNAVAR PORT (P). LTD.
Kasarkod Tonka,
Honnavar Taluka, Uttar Kannada District,
Karnataka-581342.

CONDUCTED BY

VISON LABS
ENVIRONMENTAL CONSULTANTS & ANALYTICAL SERVICES

Recognised by MoEF&CC, ISO 9001:2015, OHSAS 45001:2018
H.No.16-11-23/37/A, 2nd Floor,
Above Union Bank of India, Opp: R.T.A Office,
Musaarambagh, Malakpet, Hyderabad.
Tel Fax: 040 – 24544320, 24558363.
Website: visonlabs.com
Email info@visonlabs.com & vison.labs@gmail.com

R E P O R T

For The Months of

October-2020, November-2020 and December-2020

FOR
M/s. HONNAVAR PORT (P) LTD.
Kasarkod Tonka,
Honnavar Taluka, Uttar Kannada District,
Karnataka-581342.

For and behalf of Vison Labs

Approved By	: T Laxmikanth Reddy
Signed	:
Position	: Chief Executive
Date	: January-2021

This report has been prepared by Vison Labs with all reasonable skill, care and diligence within the terms of the contract with the client, incorporating our General Terms and Conditions of Business and taking account of the resources devoted to it by agreement with the client.

We disclaim any responsibility to the client and others in respect of any matters outside the scope of the above.

This report is confidential to the client and we accept no responsibility of whatsoever nature to third parties to whom this report, or any part thereof, is made known, any such party relies on the report at their own risk.

SCOPE OF WORK

Monitoring of Ambient Air Quality, Water quality, Soil quality, Ambient Noise Quality measurement, Marine Water, Plankton & Benthic Communities and Sediment Quality are part of the scope of work given to M/s Vison Labs. The environmental Monitoring has been carried out at the following locations:

A] Ambient Air Quality Locations:

Location Code	Ambient Air Location Details
AQ-1	Project Site
AQ-2	Kasarkod Village
AQ-3	Honnavar Village
AQ-4	Kulkod Village
AQ-5	Ramatheerth Village

B] Ambient Noise Quality Locations:

Location Code	Noise Level Location Details
N-1	Project Site
N-2	Kasarkod Village
N-3	Honnavar Village
N-4	Kulkod Village
N-5	Ramatheerth Village

C] Ground Water Quality Locations:

Location Code	Ground Water Location Details
GW-1	Honnavar Village
GW-2	Kasorkod Village

D] Surface water Quality Location:

Location Code	Surface Water Locations Details
SW-1	Sharavati River
SW-2	Badgani River

E] Soil Quality Locations:

Location Code	Soil Locations Details
S-1	Project Site
S-2	Honnavar Village
S-3	Kasarkod Village

F]Marine Water Quality/Plankton/Sediment/Benthic Communities

Location Code	Marine/Sediment/Benthic Communities Location Details
M-1	Dredge Spoil Disposal Area
M-2	Northern Break Water
M-3	Southern Break Water
M-4	Inner Navigation Channel
M-5	Sharavari River, Near Berthing Area
M-6	Sharavati/Badgani River Mouth (Near Confluence Point)

MONITORING AND ANALYSIS METHODOLOGY

The consultant had Pre-identified the monitoring stations for Air, Water and Noise. Time bound program for carrying out fieldwork was prepared and was followed as far as possible. The IS methods are followed to decide the monitoring stations, analysis of different samples and also alternative methods are used, where the cross verification is required.

Ambient Air Quality Monitoring:

Respirable Dust Samplers (RDS) with gaseous attachment have been used for PM10/PM2.5 Sampling. RDS with Gaseous attachment assembly is used for the collection of gaseous pollutants such as SO_2, NO_2, HC and CO.

Ambient Air monitoring instruments

Instrument	Make	Model No.	Range and Sensitivity	
			PM10/PM2.5	Gases
Respirable Dust Sampler (RDS)	M/s. ECO Tech	AAS-271	PM_{10} 2.3 m^3/hour $PM_{2.5}$ 1.0 m^3/hour ±0.02 m^3/hour	.0 – 3 LPM ± 0.2 LPM

Testing Method to be followed for Ambient Air Quality

Particular		Testing Method to be Followed
Ambient Air Monitoring Parameter		
A.	PM_{10}	IS-5182 (part – IV) 2006, RA-2017
B.	$PM_{2.5}$	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
C.	SO_2 (Sulfur Dioxide)	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
D.	NO_2 (Nitrogen Dioxide)	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
E.	CO (Carbon Monoxide)	IS: 5182 P 10– 1999 NDIR Method
F.	Hydro Carbons	IS 5182: Part-17

Noise Level Measurement

Instant sound level meter is used for the collection of data related to noise at an interval of one hour per reading. Noise level for 24 hours was conducted location.

Noise (Sound) Measuring Instrument

Instrument	Make	Model No.	Detection Limit
Integrated Sound Level Measurement Instrument Standard Accessories	HTC	SL-1352	Lower level: 35-80dB(A) Higher level: 80-130dB(A)

Testing Method to be followed

S. No.	Particular		Testing Method to be Followed
1	Noise Level Measurement		
	A	Noise Level in dB (A) for continuous 24 hours at 1 hour interval	Comply With IEC61672-1 Class2 Standard

Water Quality Survey

Water samples were collected in Pre-sterilized sampling container. Chemical and Metals analysis was carried out as per standard Methods for water Analysis, Published by BIS, AWWA, APHA, etc.

Soil Quality Survey

Soil samples were collected in sealed sampling Polyethylene covers. Chemical and Metals analysis was carried out as per standard Methods for Soil Analysis, Published by BIS etc.

Quality Assurance

VISON LABS is accredited by Ministry Of Environment & forests, GOVT. OF INDIA and follows quality systems as per ISO 9001:2015. The QA/QC procedures are laid prior to sample collection and laboratory analysis. It includes the standard procedures of sample collection, preservation, transportation and laboratory analysis with all documented procedures and continuous monitoring of Quality Control Division.

Results of Survey Data

The Survey results of Ambient Air Quality, Ambient Noise Monitoring and Water Sampling analysis are presented below

OCTOBER-2020

Ambient Air Quality Monitoring

The Ambient Air Quality has been monitored at five locations. The table showing Ambient Air Quality is present in **Table -1 to Table 10** respectively.

Ambient Air Quality Locations

Location Code	Location Name	Date Of Monitoring	Date Of Monitoring
AQ-1	Project Site	05.10.2020	22.10.2020
AQ-2	Kasarkod Village	05.10.2020	22.10.2020
AQ-3	Honnavar Village	05.10.2020	22.10.2020
AQ-4	Kulkod Village	06.10.2020	23.10.2020
AQ-5	Ramatheerth Village	06.10.2020	23.10.2020

TABLE-1

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Near Project House
Date of Monitoring : 05.10.2020
Ambient Temperature °C : 27(Average)
Wind Direction : NE
Weather Condition : Clear
Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	61	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	33	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	8.3	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	25.6	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-2

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Kasarkod Village
Date of Monitoring : 05.10.2020
Ambient Temperature °C : 27(Average)
Wind Direction : NE
Weather Condition : Clear
Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	52	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	27	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	6.8	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	20.3	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-3

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Honnavar Village
Date of Monitoring : 05.10.2020
Ambient Temperature °C : 27 (Average)
Wind Direction : NE
Weather Condition : Clear
Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	49	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	25	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	5.3	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	15.7	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-4

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Kulkod Village
Date of Monitoring : 06.10.2020
Ambient Temperature °C : 27 (Average)
Wind Direction : NE
Weather Condition : Clear
Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	42	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	22	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	5.0	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	16.3	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-5
DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : **Ramtheerth Village**
Date of Monitoring : 06.10.2020
Ambient Temperature °C : 27 (Average)
Wind Direction : NE
Weather Condition : Clear
Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	36	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	19	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	5.5	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	14.6	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-6
DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : **Project Site**
Date of Monitoring : 22.10.2020
Ambient Temperature °C : 28 (Average)
Wind Direction : NE
Weather Condition : Clear
Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	67	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	35	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	7.6	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	27.8	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-7

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Kasarkod Village

Date of Monitoring : 22.10.2020

Ambient Temperature °C : 28 (Average)

Wind Direction : NE

Weather Condition : Clear

Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	56	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	29	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	7.2	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	23.6	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-8

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Honnavar Village

Date of Monitoring : 22.10.2020

Ambient Temperature °C : 28 (Average)

Wind Direction : NE

Weather Condition : Clear

Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	53	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	27	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	6.6	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	18.5	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-9

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Kulkod Village

Date of Monitoring : 23.10.2020

Ambient Temperature °C : 28 (Average)

Wind Direction : NE

Weather Condition : Clear

Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	47	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	24	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	6.7	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	19.1	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-10

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Ramtheerth Village

Date of Monitoring : 23.10.2020

Ambient Temperature °C : 28 (Average)

Wind Direction : NE

Weather Condition : Clear

Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	44	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	23	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	5.3	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	16.8	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-11

Ambient Noise Quality Locations

Location Code	Location Name	Date Of Monitoring	Date Of Monitoring
N-1	Project Site	05.10.2020	22.10.2020
N-2	Kasarkod Village	05.10.2020	22.10.2020
N-3	Honnavar Village	05.10.2020	22.10.2020
N-4	Kulkod Village	06.10.2020	23.10.2020
N-5	Ramatheerth Village	06.10.2020	23.10.2020

TABLE-12

AMBIENT NOISE LEVELS IN THE STUDY AREA

All the values are expressed in dB (A)

Time	N-1	N-2	N-3	N-4	N-5	N-1	N-2	N-3	N-4	N-5
HOURS										
06:00 – 07:00	48.9	45.8	43.9	42.6	43.1	48.6	45.1	44.7	44.1	42.4
07:00 – 08:00	52.6	49.3	45.6	45.7	45.9	51.4	48.2	46.4	45.9	44.8
08:00 – 09:00	51.7	50.4	48.9	48.2	47.6	53.2	49.6	48.3	48.1	47.3
09:00 – 10:00	53.6	53.1	51.4	50.1	49.1	55.7	51.4	52.4	47.1	50.1
10:00 – 11:00	55.8	50.6	52.6	47.6	50.6	58.2	49.5	50.1	50.6	48.6
11:00 – 12:00	57.6	52.7	49.7	49.5	49.2	60.6	51.8	49.3	49.2	45.9
12:00 – 13:00	60.4	54.1	51.3	51.3	52.6	62.7	50.3	51.5	48.5	47.4
13:00 – 14:00	62.3	55.6	52.8	52.6	48.7	63.1	52.6	50.6	51.2	50.2
14:00 – 15:00	60.1	53.4	53.4	53.4	50.3	62.5	53.1	53.4	50.1	48.9
15:00 – 16:00	64.4	50.8	51.3	50.4	49.7	64.0	50.7	52.8	52.6	45.3
16:00 – 17:00	65.7	51.5	54.7	52.7	51.5	65.1	52.2	54.3	50.8	49.1
17:00 – 18:00	66.1	53.3	51.4	50.3	49.7	66.2	53.1	53.5	48.5	50.2
18:00 – 19:00	63.4	51.8	50.5	48.7	47.1	62.7	51.6	50.6	47.1	49.5
19:00 – 20:00	60.2	50.4	49.7	46.5	45.6	58.5	53.4	48.3	45.3	47.7
20:00 – 21:00	58.5	48.6	47.3	42.7	42.3	56.9	50.2	45.2	42.8	44.8
21:00 – 22:00	55.7	46.9	45.4	40.6	40.4	53.7	48.7	43.8	40.6	41.6
22:00 – 23:00	53.2	45.1	42.3	38.7	38.5	51.3	45.8	41.6	38.3	39.8
23:00 – 24:00	50.4	43.4	39.5	36.1	36.1	49.5	43.6	38.2	36.4	36.8
24:00 – 01:00	47.9	40.7	37.3	35.7	34.8	46.8	41.4	36.3	35.2	34.8
01:00 – 02:00	45.2	38.5	35.1	34.6	33.9	44.3	39.2	35.8	36.8	33.6
02:00 – 03:00	42.8	36.4	34.6	35.9	35.2	41.5	36.4	38.2	37.1	35.1
03:00 – 04:00	40.6	37.2	37.2	36.4	36.7	39.8	35.3	39.5	38.2	36.1
04:00 – 05:00	41.8	39.4	38.5	38.5	38.1	41.3	36.1	40.8	39.1	37.8
05:00 – 06:00	44.6	41.2	41.2	40.2	39.8	43.0	39.1	41.4	40.4	38.5
L Day	**60.9**	**51.7**	**50.8**	**49.6**	**48.7**	**61.2**	**51.0**	**50.7**	**48.6**	**47.7**
L Night	**47.9**	**41.2**	**39.0**	**37.4**	**37.1**	**46.5**	**41.1**	**39.4**	**38.0**	**37.0**

Ambient Noise Level Standards

Area Code	Category of Area	Limits in dB (A) Day Time	Limits in dB (A) Night Time
(A)	Industrial Area	< 75	< 70
(B)	Commercial Area	< 65	< 55
(C)	Residential Area	< 55	< 45
(D)	Silence Zone	< 50	< 40

TABLE-13
Ground Water Quality

Two Ground water samples was collected and analyzed. The analytical results are given in **TABLE-13**

Location Code	Bore Well Location	Date of Sampling
GW-1	Honnavar Village	05.10.2020
GW-2	Kasarkod Village	05.10.2020

TEST RESULTS

S.No.	Parameters	Units	Test Method	Results		Drinking Water Limits As per IS: 10500; 2012	
				GW-1	GW-2	Acceptable Limits	Permissible limits in absence of alternative Source
1.	pH @25^{0}C	--	IS:3025 part 11 1983, RA-2017	7.05	7.26	6.50 – 8.50	No relaxation
2.	Conductivity@25^{0}C	µmhos/cm	IS: 3025 Part 14 1984 RA-2013	342	416	--	--
3.	Temperature	°C	IS: 3025 Part 1 1984 RA-2014	25.9	25.6	--	--
4.	Total Dissolved Solids	mg/L	IS: 3025 Part 16 1984, RA-2017	218	274	500	2000
5.	Total Suspended Solids	mg/L	IS 3025 Part 17 1984, RA-2017	<1.0	<1.0	--	--
6.	Turbidity	NTC	IS: 3025 Part 10 1984, RA-2017	<1.0	<1.0	1	5
7.	Total Hardness as $CaCO_3$	mg/L	IS: 3025 Part 21 2009, RA-2014	100	130	200	600
8.	Calcium as Ca	mg/L	IS: 3025 Part 40 1991, RA-2014	24.0	28.0	75	200
9.	Magnesium as Mg	mg/L	IS: 3025 Part 46 1994, RA-2014	9.6	14.4	30	100
10.	Chloride as Cl	mg/L	IS: 3025 Part 32 1988, RA-2014	25	20	250	1000
11.	Sulphate as SO_4	mg/L	IS: 3025 Part 24 1986, RA-2014	37.2	57.9	200	400
12.	Sodium as Na	mg/L	IS: 3025 Part 45 1993, RA-2014	29.6	32.4	---	---
13.	Potassium as K	mg/L	IS: 3025 Part 45 1993, RA-2014	1.7	2.1	---	---
14.	Nitrate as NO_3	mg/L	IS: 3025 Part 34 1988, RA-2014	3.8	5.3	45	No Relaxation
15.	Iron as Fe	mg/L	IS: 3025 Part 53 2003, RA-2014	0.10	0.15	0.3	No Relaxation
16.	Lead as Pb	mg/L	IS 3025 Part 47 1994, RA2014	<0.001	<0.001	0.01	No Relaxation
17.	Dissolved Oxygen	mg/L	IS 3025 Part 38 2009	<1.0	<1.0	--	--
18.	Biological Oxygen Demand(3 Days For27°C)	mg/L	IS 3025 Part 44 1993, RA-2014	<3.0	<3.0	--	--
19.	Chemical Oxygen Demand	mg/L	IS 3025 Part 58 2006, RA-2017	<4.0	<4.0	--	--
20	Oil & Grease	mg/L	IS 3025 Part 39 :1991, RA-2014	<1.0	<1.0	--	--
21.	Coli form Bacteria	CFU /100mL	IS: 15185: 2016	Not Detected	Not Detected	Must not be Detected	
22.	E. Coli	CFU /100mL	IS: 15185: 2016	Not Detected	Not Detected	Must not be Detected	

Surface Water Quality

Two Surface water samples was collected and analyzed. The analytical results are given in **TABLE-14**

TABLE-14

Surface water Quality Location

Location Code	Location Name	Sample Collection Dates
SW1	Sharavati River	05.10.2020
SW2	Badgani River	05.10.2020

TEST RESULTS

S.No.	Parameters	Units	Test Method	Results		Limits as Per As per IS: 2296 Class C
				SW-1	SW-2	
1.	pH @25^{0}C	--	IS:3025 part 11 1983, RA-2017	7.44	8.04	6.5-8.5
2.	Conductivity@25^{0}C	µmhos/cm	IS: 3025 Part 14 1984 RA-2013	4130	32814	--
3.	Temperature	^{0}C	IS: 3025 Part 1 1984 RA-2014	25.9	25.7	--
4.	Total Dissolved Solids	mg/L	IS: 3025 Part 16 1984, RA-2017	2612	20684	1500 max
5.	Total Suspended Solids	mg/L	IS 3025 Part 17 1984, RA-2017	18.4	42	--
6.	Turbidity	NTC	IS: 3025 Part 10 1984, RA-2017	26.1	62.8	--
7.	Total Hardness as $CaCO_3$	mg/L	IS: 3025 Part 21 2009, RA-2014	500	5820	--
8.	Calcium as Ca	mg/L	IS: 3025 Part 40 1991, RA-2014	144.0	616.0	--
9.	Magnesium as Mg	mg/L	IS: 3025 Part 46 1994, RA-2014	33.6	1027.2	--
10.	Chloride as Cl	mg/L	IS: 3025 Part 32 1988, RA-2014	910	10505	600
11.	Sulphate as SO_4	mg/L	IS: 3025 Part 24 1986, RA-2014	347.3	1307	400
12.	Nitrate as NO_3	mg/L	IS Part 34 1988, RA-2014	37.8	50.4	50
13.	Iron as Fe	mg/L	IS: 3025 Part 53 2003, RA-2014	0.28	0.42	50
14.	Lead as Pb	mg/L	IS 3025 Part 47 1994, RA2014	<0.001	<0.001	0.1
15.	Dissolved Oxygen	mg/L	IS 3025 Part 38 2009	4.4	4.7	4-6
16.	Biological Oxygen Demand (3 Days For27°C)	mg/L	IS 3025 Part 44 1993, RA-2014	02	10	<3.0
17.	Chemical Oxygen Demand	mg/L	IS 3025 Part 58 2006, RA-2017	10	40	--
18.	Oil & Grease	mg/L	IS 3025 Part 39 :1991, RA-2014	<1.0	<1.0	0.1
19.	Coli form Bacteria	MPN /100mL	APHA 23rd ED 2017 9221 B	540	980	Should not exceed 5000

November-2020

Ambient Air Quality Locations

Location Code	Location Name	Date Of Monitoring	Date Of Monitoring
AQ-1	Project Site	02.11.2020	17.11.2020
AQ-2	Kasarkod Village	02.11.2020	17.11.2020
AQ-3	Honnavar Village	02.11.2020	17.11.2020
AQ-4	Kulkod Village	03.11.2020	18.11.2020
AQ-5	Ramatheerth Village	03.11.2020	18.11.2020

TABLE-15
DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Near Project House
Date of Monitoring : 02.11.2020
Ambient Temperature °C : 28(Average)
Wind Direction : NE
Weather Condition : Clear
Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	70	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	36	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	8.7	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	28.3	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-16
DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Kasarkod Village
Date of Monitoring : 02.11.2020
Ambient Temperature °C : 28 (Average)
Wind Direction : NE
Weather Condition : Clear
Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	60	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	31	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	7.8	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	22.4	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-17

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Honnavar Village
Date of Monitoring : 02.11.2020
Ambient Temperature °C : 28 (Average)
Wind Direction : NE
Weather Condition : Clear
Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	55	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	28	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	7.0	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	20.5	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-18

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Kulkod Village
Date of Monitoring : 03.11.2020
Ambient Temperature °C : 28 (Average)
Wind Direction : NE
Weather Condition : Clear
Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	48	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	25	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	6.5	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	18.3	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-19

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Ramtheerth Village
Date of Monitoring : 03.11.2020
Ambient Temperature °C : 28 (Average)
Wind Direction : NE
Weather Condition : Clear
Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	41	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	22	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	6.1	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	16.9	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-20

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Near Project Site
Date of Monitoring : 17.11.2020
Ambient Temperature °C : 28 (Average)
Wind Direction : E
Weather Condition : Clear
Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	66	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	34	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	9.1	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	32.4	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-21

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Kasarkod Village

Date of Monitoring : 17.11.2020

Ambient Temperature °C : 28 (Average)

Wind Direction : E

Weather Condition : Clear

Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	53	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	27	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	8.0	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	25.3	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-22

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Honnavar Village

Date of Monitoring : 17.11.2020

Ambient Temperature °C : 28 (Average)

Wind Direction : E

Weather Condition : Clear

Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	48	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	25	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	6.4	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	19.1	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-23

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Kulkod Village
Date of Monitoring : 18.11.2020
Ambient Temperature °C : 28 (Average)
Wind Direction : E
Weather Condition : Clear
Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	44	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	23	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	6.6	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	17.4	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-24

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Ramtheerth Village
Date of Monitoring : 18.11.2020
Ambient Temperature °C : 28 (Average)
Wind Direction : E
Weather Condition : Clear
Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	36	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	20	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	4.9	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	13.6	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

AMBIENT NOISE LEVELS IN THE STUDY AREA

The statistical analysis is done for measured noise levels at ten locations in the study area. The parameters are analyzed for L_{day} and L_{night}, The statistical analysis results are given in **TABLE-25**

TABLE-25

Ambient Noise Quality Locations

Location Code	Location Name	Date Of Monitoring	Date of Monitoring
N-1	Project Site	02.11.2020	17.11.2020
N-2	Kasarkod Village	02.11.2020	17.11.2020
N-3	Honnavar Village	02.11.2020	17.11.2020
N-4	Kulkod Village	03.11.2020	18.11.2020
N-5	Ramatheerth Village	03.11.2020	18.11.2020

TABLE-26

AMBIENT NOISE LEVELS IN THE STUDY AREA

All the values are expressed in dB (A)

Time	N-1	N-2	N-3	N-4	N-5	N-1	N-2	N-3	N-4	N-5
HOURS										
06:00 – 07:00	47.1	47.3	45.8	44.9	44.2	51.2	45.6	44.9	43.6	42.4
07:00 – 08:00	50.7	49.8	47.3	47.3	46.2	53.4	47.3	46.7	46.1	44.6
08:00 – 09:00	53.2	52.6	50.4	49.1	48.6	54.9	49.1	50.1	48.5	47.2
09:00 – 10:00	57.4	51.4	52.1	51.5	50.2	58.2	51.4	52.3	50.2	49.1
10:00 – 11:00	55.9	53.1	53.6	50.2	48.8	60.4	53.2	50.1	49.7	45.3
11:00 – 12:00	59.6	50.3	51.7	49.5	47.1	62.3	50.6	48.9	52.3	49.1
12:00 – 13:00	61.3	49.2	50.5	52.3	49.3	61.8	52.8	51.3	50.1	48.5
13:00 – 14:00	62.7	50.7	52.8	53.7	48.6	64.2	54.6	49.7	49.6	50.1
14:00 – 15:00	60.4	53.6	49.6	50.1	50.8	66.5	51.2	50.6	48.1	51.6
15:00 – 16:00	58.3	52.0	52.1	48.6	49.5	63.7	49.8	49.5	47.1	48.3
16:00 – 17:00	61.6	50.4	54.0	49.9	50.1	60.1	50.6	50.3	50.6	46.7
17:00 – 18:00	59.7	51.3	51.7	51.7	48.7	59.8	53.8	51.4	51.8	50.2
18:00 – 19:00	60.1	52.7	53.2	52.4	50.6	61.5	55.1	49.5	48.3	47.1
19:00 – 20:00	58.3	50.4	51.6	50.8	47.6	59.7	52.4	47.3	45.7	45.4
20:00 – 21:00	56.4	48.6	49.4	48.3	46.2	57.3	50.3	45.1	42.1	42.8
21:00 – 22:00	53.7	46.1	47.2	46.1	45.0	56.4	48.7	43.4	39.6	39.5
22:00 – 23:00	50.2	44.5	44.5	43.7	42.6	54.2	46.1	40.2	37.1	36.5
23:00 – 24:00	48.5	41.7	41.3	40.5	40.8	51.6	44.2	37.3	36.1	35.6
24:00 – 01:00	46.1	38.6	38.5	37.3	39.2	48.7	42.8	36.1	34.4	34.2
01:00 – 02:00	44.8	36.1	36.1	35.2	36.6	45.3	40.6	34.9	35.1	35.1
02:00 – 03:00	42.1	35.3	35.6	34.6	38.3	42.4	38.3	37.2	36.7	34.9
03:00 – 04:00	39.8	36.2	36.7	35.7	37.5	40.7	36.1	35.4	37.3	36.2
04:00 – 05:00	40.3	37.4	38.2	36.5	39.6	43.4	37.5	38.1	38.1	37.0
05:00 – 06:00	42.6	40.6	40.8	38.7	40.3	45.1	39.7	40.2	39.8	38.6
L Day	**58.7**	**50.9**	**51.3**	**50.2**	**48.5**	**61.0**	**51.6**	**49.4**	**48.7**	**47.7**
L Night	**45.8**	**39.9**	**40.0**	**38.9**	**39.7**	**48.7**	**41.9**	**37.8**	**37.1**	**36.2**

Ambient Noise Level Standards

Area Code	Category of Area	Limits in dB (A) Day Time	Limits in dB (A) Night Time
(A)	Industrial Area	< 75	< 70
(B)	Commercial Area	< 65	< 55
(C)	Residential Area	< 55	< 45
(D)	Silence Zone	< 50	< 40

TABLE-27

Ground Water Quality

Two Ground water samples was collected and analyzed. The analytical results are given in **TABLE-27**

Location Code	Bore Well Location	Date of Sampling
GW-1	Honnavar Village	03.11.2020
GW-2	Kasarkod Village	03.11.2020

TEST RESULTS

S.No.	Parameters	Units	Test Method	Results		Drinking Water Limits As per IS: 10500; 2012	
				GW-1	GW-2	Acceptable Limits	Permissible limits in absence of alternative Source
1.	pH @25^{0}C	--	IS:3025 part 11 1983, RA-2017	7.24	7.49	6.50 – 8.50	No relaxation
2.	Conductivity@25^{0}C	µmhos/cm	IS: 3025 Part 14 1984 RA-2013	406	456	--	--
3.	Temperature	^{0}C	IS: 3025 Part 1 1984 RA-2014	26.0	25.7	--	--
4.	Total Dissolved Solids	mg/L	IS: 3025 Part 16 1984, RA-2017	260	292	500	2000
5.	Total Suspended Solids	mg/L	IS 3025 Part 17 1984, RA-2017	<1.0	<1.0	--	--
6.	Turbidity	NTC	IS: 3025 Part 10 1984, RA-2017	<1.0	<1.0	1	5
7.	Total Hardness as $CaCO_3$	mg/L	IS: 3025 Part 21 2009, RA-2014	120	140	200	600
8.	Calcium as Ca	mg/L	IS: 3025 Part 40 1991, RA-2014	28.0	32.0	75	200
9.	Magnesium as Mg	mg/L	IS: 3025 Part 46 1994, RA-2014	12.0	14.4	30	100
10.	Chloride as Cl	mg/L	IS:3025 Part 32 1988, RA-2014	40	45.0	250	1000
11.	Sulphate as SO_4	mg/L	IS: 3025 Part 24 1986, RA-2014	35.2	42.3	200	400
12.	Sodium as Na	mg/L	IS: 3025 Part 45 1993, RA-2014	34.9	37.0	---	---
13.	Potassium as K	mg/L	IS: 3025 Part 45 1993, RA-2014	2.0	2.1	---	---
14.	Nitrate as NO_3	mg/L	IS: 3025 Part 34 1988, RA-2014	5.7	5.9	45	No Relaxation
15.	Iron as Fe	mg/L	IS: 3025 Part 53 2003, RA-2014	0.14	0.15	0.3	No Relaxation
16.	Lead as Pb	mg/L	IS 3025 Part 47 1994, RA2014	<0.001	<0.001	0.01	No Relaxation
17.	Dissolved Oxygen	mg/L	IS 3025 Part 38 2009	<1.0	<1.0	--	--
18.	Biological Oxygen Demand(3 Days For27^{0}C)	mg/L	IS 3025 Part 44 1993, RA-2014	<3.0	<3.0	--	--
19.	Chemical Oxygen Demand	mg/L	IS 3025 Part 58 2006, RA-2017	<4.0	<4.0	--	--
20	Oil & Grease	mg/L	IS 3025 Part 39 :1991, RA-2014	<1.0	<1.0	--	--
21.	Coli form Bacteria	CFU /100mL	IS: 15185: 2016	Not Detected	Not Detected	Must not be Detected	
22.	E. Coli	CFU /100mL	IS: 15185: 2016	Not Detected	Not Detected	Must not be Detected	

Surface Water Quality

Two Surface water samples was collected and analyzed. The analytical results are given in **TABLE-28**

TABLE-28

Surface water Quality Location

Location Code	Location Name	Sample Collection Dates
SW1	Sharavati River	03.11.2020
SW2	Badgani River	03.11.2020

TEST RESULTS

S.No.	Parameters	Units	Test Method	Results		Limits as Per As per IS: 2296 Class C
				SW-1	SW-2	
1.	pH @25^{0}C	--	IS:3025 part 11 1983, RA-2017	7.88	8.20	6.5-8.5
2.	Conductivity@25^{0}C	µmhos/cm	IS: 3025 Part 14 1984 RA-2013	3946	33272	--
3.	Temperature	^{0}C	IS: 3025 Part 1 1984 RA-2014	25.6	25.8	--
4.	Total Dissolved Solids	mg/L	IS: 3025 Part 16 1984, RA-2017	2490	20980	1500 max
5.	Total Suspended Solids	mg/L	IS 3025 Part 17 1984, RA-2017	23.1	46	--
6.	Turbidity	NTC	IS: 3025 Part 10 1984, RA-2017	32.6	58.4	--
7.	Total Hardness as $CaCO_3$	mg/L	IS: 3025 Part 21 2009, RA-2014	450	5700	--
8.	Calcium as Ca	mg/L	IS: 3025 Part 40 1991, RA-2014	100.0	580.0	--
9.	Magnesium as Mg	mg/L	IS: 3025 Part 46 1994, RA-2014	48.0	1020.0	--
10.	Chloride as Cl	mg/L	IS: 3025 Part 32 1988, RA-2014	840	11005	600
11.	Sulphate as SO_4	mg/L	IS: 3025 Part 24 1986, RA-2014	358.5	827	400
12.	Nitrate as NO_3	mg/L	IS: 3025 Part 34 1988, RA-2014	34.6	73.0	50
13.	Iron as Fe	mg/L	IS: 3025 Part 53 2003, RA-2014	0.26	0.32	50
14.	Lead as Pb	mg/L	IS 3025 Part 47 1994, RA2014	<0.001	<0.001	0.1
15.	Dissolved Oxygen	mg/L	IS 3025 Part 38 2009	4.1	4.4	4-6
16.	Biological Oxygen Demand (3 Days For27^{0}C)	mg/L	IS 3025 Part 44 1993, RA-2014	03	06	<3.0
17.	Chemical Oxygen Demand	mg/L	IS 3025 Part 58 2006, RA-2017	10	30	--
18.	Oil & Grease	mg/L	IS 3025 Part 39 :1991, RA-2014	<1.0	<1.0	0.1
19.	Coli form Bacteria	MPN /100mL	APHA 23rd ED 2017 9221 B	540	660	Should not exceed 5000

DECEMBER-2020

Ambient Air Quality Monitoring

The Ambient Air Quality has been monitored at five locations. The table showing Ambient Air Quality is present in **Table -29 to Table 38** respectively.

Ambient Air Quality Locations

Location Code	Location Name	Date Of Monitoring	Date Of Monitoring
AQ-1	Project Site	04.12.2020	21.12.2020
AQ-2	Kasarkod Village	04.12.2020	21.12.2020
AQ-3	Honnavar Village	04.12.2020	21.12.2020
AQ-4	Kulkod Village	05.12.2020	22.12.2020
AQ-5	Ramatheerth Village	05.12.2020	22.12.2020

TABLE-29

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Near Project House
Date of Monitoring : 04.12.2020
Ambient Temperature °C : 28(Average)
Wind Direction : E
Weather Condition : Clear
Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	60	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	33	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	7.8	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	23.5	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-30

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Kasarkod Village
Date of Monitoring : 04.12.2020
Ambient Temperature °C : 28 (Average)
Wind Direction : E
Weather Condition : Clear
Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	54	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	28	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	6.9	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	18.9	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-31

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Honnavar Village

Date of Monitoring : 04.12.2020

Ambient Temperature °C : 28 (Average)

Wind Direction : E

Weather Condition : Clear

Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	48	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	25	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	6.6	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	18.2	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-32

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Kulkod Village

Date of Monitoring : 05.12.2020

Ambient Temperature °C : 28 (Average)

Wind Direction : E

Weather Condition : Clear

Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	45	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	23	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	5.7	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	16.5	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-33

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Ramtheerth Village

Date of Monitoring : 05.12.2020

Ambient Temperature °C : 28 (Average)

Wind Direction : E

Weather Condition : Clear

Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	42	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	22	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	5.1	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	14.9	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-34

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Project Site

Date of Monitoring : 21.12.2020

Ambient Temperature °C : 28 (Average)

Wind Direction : E

Weather Condition : Clear

Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	68	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	35	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	8.4	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	25.6	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-35

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Kasarkod Village

Date of Monitoring : 21.12.2020

Ambient Temperature °C : 28 (Average)

Wind Direction : E

Weather Condition : Clear

Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	56	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	29	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	7.0	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	20.3	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-36

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Honnavar Village

Date of Monitoring : 21.12.2020

Ambient Temperature °C : 28 (Average)

Wind Direction : E

Weather Condition : Clear

Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	50	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	26	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	6.7	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	18.6	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-37

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Kulkod Village

Date of Monitoring : 22.12.2020

Ambient Temperature °C : 28 (Average)

Wind Direction : E

Weather Condition : Clear

Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	48	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	25	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	6.1	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	17.2	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-38

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Ramtheerth Village

Date of Monitoring : 22.12.2020

Ambient Temperature °C : 28 (Average)

Wind Direction : E

Weather Condition : Clear

Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	45	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	23	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	5.8	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	15.0	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2017)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-39

Ambient Noise Quality Locations

Location Code	Location Name	Date Of Monitoring	
N-1	Project Site	04.12.2020	21.12.2020
N-2	Kasarkod Village	04.12.2020	21.12.2020
N-3	Honnavar Village	04.12.2020	21.12.2020
N-4	Kulkod Village	05.12.2020	22.12.2020
N-5	Ramatheerth Village	05.12.2020	22.12.2020

TABLE-40

AMBIENT NOISE LEVELS IN THE STUDY AREA

All the values are expressed in dB (A)

Time	N-1	N-2	N-3	N-4	N-5	N-1	N-2	N-3	N-4	N-5
HOURS										
06:00 – 07:00	49.7	45.1	43.9	42.8	41.8	48.1	47.4	44.6	43.1	42.8
07:00 – 08:00	52.4	48.7	46.1	44.6	43.2	52.8	49.6	46.8	45.7	45.3
08:00 – 09:00	54.1	50.2	48.5	47.5	45.0	54.3	52.1	48.3	48.5	46.8
09:00 – 10:00	58.2	49.5	51.4	49.1	48.2	54.7	53.7	50.2	49.2	49.5
10:00 – 11:00	56.7	51.6	49.2	46.5	46.9	55.9	54.2	53.4	49.7	50.4
11:00 – 12:00	60.3	52.8	50.6	49.7	49.1	59.1	52.4	49.5	51.4	47.5
12:00 – 13:00	58.6	50.4	53.1	51.3	50.4	62.4	50.6	51.3	50.1	49.1
13:00 – 14:00	61.4	54.6	50.7	50.2	48.7	64.1	49.4	48.2	48.6	51.6
14:00 – 15:00	63.3	52.1	48.5	47.9	51.3	66.7	51.3	52.6	51.8	50.2
15:00 – 16:00	60.1	54.7	49.9	49.2	50.4	63.1	52.8	51.8	53.4	52.8
16:00 – 17:00	62.7	56.5	52.5	51.6	48.2	62.8	50.5	50.4	51.6	50.4
17:00 – 18:00	60.3	53.1	51.6	50.3	50.6	66.1	54.0	52.5	50.2	48.5
18:00 – 19:00	59.6	50.7	50.7	48.5	47.1	64.8	51.8	50.3	47.1	46.3
19:00 – 20:00	57.1	48.9	47.6	47.2	45.8	66.4	52.7	49.8	45.3	44.8
20:00 – 21:00	55.6	47.1	45.2	44.5	43.4	61.8	49.6	46.3	44.1	42.3
21:00 – 22:00	52.8	45.3	44.1	42.1	41.2	58.3	47.8	44.5	42.6	40.4
22:00 – 23:00	50.1	42.8	41.6	40.3	39.5	55.6	45.1	41.2	40.8	39.1
23:00 – 24:00	47.5	40.6	38.6	37.2	36.5	53.2	42.8	38.6	38.3	37.3
24:00 – 01:00	46.1	38.9	37.2	34.5	33.8	50.8	40.6	36.4	37.2	35.1
01:00 – 02:00	43.2	36.4	34.6	33.9	35.2	47.4	38.1	36.5	36.1	34.6
02:00 – 03:00	40.8	35.2	36.1	35.7	34.9	44.6	36.7	37.9	35.4	35.7
03:00 – 04:00	38.6	37.5	37.3	37.3	36.7	40.4	38.2	38.2	34.7	37.8
04:00 – 05:00	40.3	39.1	38.6	38.1	37.5	41.3	37.0	39.3	36.5	36.9
05:00 – 06:00	43.1	41.3	40.1	39.3	38.8	42.1	39.5	41.0	39.1	38.5
L Day	**59.0**	**51.7**	**49.7**	**48.4**	**47.9**	**62.4**	**51.6**	**50.1**	**49.3**	**48.6**
L Night	**45.3**	**39.6**	**38.5**	**37.5**	**37.0**	**50.1**	**40.7**	**39.0**	**37.7**	**37.1**

Ambient Noise Level Standards

Area Code	Category of Area	Limits in dB (A) Day Time	Limits in dB (A) Night Time
(A)	Industrial Area	< 75	< 70
(B)	Commercial Area	< 65	< 55
(C)	Residential Area	< 55	< 45
(D)	Silence Zone	< 50	< 40

TABLE-41
Ground Water Quality

Two Ground water samples was collected and analyzed. The analytical results are given in **TABLE-41**

Location Code	Bore Well Location	Date of Sampling
GW-1	Honnavar Village	04.12.2020
GW-2	Kasarkod Village	04.12.2020

TEST RESULTS

S.No.	Parameters	Units	Test Method	Results		Drinking Water Limits As per IS: 10500; 2012	
				GW-1	GW-2	Acceptable Limits	Permissible limits in absence of alternative Source
1.	pH @25°C	--	IS:3025 part 11 1983, RA-2017	7.54	7.35	6.50 – 8.50	No relaxation
2.	Conductivity@25°C	µmhos/cm	IS: 3025 Part 14 1984 RA-2013	390	428	--	--
3.	Temperature	°C	IS: 3025 Part 1 1984 RA-2014	25.7	25.9	--	--
4.	Total Dissolved Solids	mg/L	IS: 3025 Part 16 1984, RA-2017	248	272	500	2000
5.	Total Suspended Solids	mg/L	IS 3025 Part 17 1984, RA-2017	<1.0	<1.0	--	--
6.	Turbidity	NTC	IS: 3025 Part 10 1984, RA-2017	<1.0	<1.0	1	5
7.	Total Hardness as $CaCO_3$	mg/L	IS: 3025 Part 21 2009, RA-2014	120	130	200	600
8.	Calcium as Ca	mg/L	IS: 3025 Part 40 1991, RA-2014	28.0	32.0	75	200
9.	Magnesium as Mg	mg/L	IS: 3025 Part 46 1994, RA-2014	12.0	12.0	30	100
10.	Chloride as Cl	mg/L	IS: 3025 Part 32 1988, RA-2014	20.0	40.0	250	1000
11.	Sulphate as SO_4	mg/L	IS: 3025 Part 24 1986, RA-2014	54.5	44.8	200	400
12.	Sodium as Na	mg/L	IS: 3025 Part 45 1993, RA-2014	31.3	35.2	---	---
13.	Potassium as K	mg/L	IS: 3025 Part 45 1993, RA-2014	2.0	2.1	---	---
14.	Nitrate as NO_3	mg/L	IS: 3025 Part 34 1988, RA-2014	5.7	6.0	45	No Relaxation
15.	Iron as Fe	mg/L	IS: 3025 Part 53 2003, RA-2014	0.13	0.15	0.3	No Relaxation
16.	Lead as Pb	mg/L	IS 3025 Part 47 1994, RA2014	<0.001	<0.001	0.01	No Relaxation
17.	Dissolved Oxygen	mg/L	IS 3025 Part 38 2009	<1.0	<1.0	--	--
18.	Biological Oxygen Demand(3 Days For27°C)	mg/L	IS 3025 Part 44 1993, RA-2014	<2.0	<2.0	--	--
19.	Chemical Oxygen Demand	mg/L	IS 3025 Part 58 2006, RA-2017	<4.0	<4.0	--	--
20	Oil & Grease	mg/L	IS 3025 Part 39 :1991, RA-2014	<1.0	<1.0	--	--
21.	Coli form Bacteria	CFU /100mL	IS: 15185: 2016	Not Detected	Not Detected	Must not be Detected	
22.	E. Coli	CFU /100mL	IS: 15185: 2016	Not Detected	Not Detected	Must not be Detected	

Surface Water Quality

- Two Surface water samples was collected and analyzed. The analytical results are given in **TABLE-42**

TABLE-42

Surface water Quality Location

Location Code	Location Name	Sample Collection Dates
SW1	Sharavati River	04.12.2020
SW2	Badgani River	04.12.2020

TEST RESULTS

S.No.	Parameters	Units	Test Method	Results		Limits as Per As per IS: 2296 Class C
				SW-1	SW-2	
1.	pH @25^{0}C	--	IS:3025 part 11 1983, RA-2017	7.78	8.35	6.5-8.5
2.	Conductivity@25^{0}C	µmhos/cm	IS: 3025 Part 14 1984 RA-2013	3754	34896	--
3.	Temperature	^{0}C	IS: 3025 Part 1 1984 RA-2014	25.8	26.1	--
4.	Total Dissolved Solids	mg/L	IS: 3025 Part 16 1984, RA-2017	2370	22328	1500 max
5.	Total Suspended Solids	mg/L	IS 3025 Part 17 1984, RA-2017	18	39	--
6.	Turbidity	NTC	IS: 3025 Part 10 1984, RA-2017	21.6	26.4	--
7.	Total Hardness as $CaCO_3$	mg/L	IS: 3025 Part 21 2009, RA-2014	580	6240	--
8.	Calcium as Ca	mg/L	IS: 3025 Part 40 1991, RA-2014	128.0	672.0	--
9.	Magnesium as Mg	mg/L	IS: 3025 Part 46 1994, RA-2014	62.4	1094.4	--
10.	Chloride as Cl	mg/L	IS: 3025 Part 32 1988, RA-2014	625	11605	600
11.	Sulphate as SO_4	mg/L	IS: 3025 Part 24 1986, RA-2014	533.2	761	400
12.	Nitrate as NO_3	mg/L	IS: 3025 Part 34 1988, RA-2014	25.2	88.2	50
13.	Iron as Fe	mg/L	IS: 3025 Part 53 2003, RA-2014	0.18	0.28	50
14.	Lead as Pb	mg/L	IS 3025 Part 47 1994, RA2014	<0.001	<0.001	0.1
15.	Dissolved Oxygen	mg/L	IS 3025 Part 38 2009	4.2	4.6	4-6
16.	Biological Oxygen Demand (3 Days For27°C)	mg/L	IS 3025 Part 44 1993, RA-2014	10	08	<3.0
17.	Chemical Oxygen Demand	mg/L	IS 3025 Part 58 2006, RA-2017	40	30	--
18.	Oil & Grease	mg/L	IS 3025 Part 39 :1991, RA-2014	<1.0	<1.0	0.1
19.	Coli form Bacteria	MPN /100ml	APHA 23rd ED 2017 9221 B	330	940	Should not exceed 5000

TABLE-43
Marine Water Quality

Six Marine water samples was collected and analyzed. The analytical results are given in **TABLE-43**

Location Code	Marine Water Locations	Date of Sampling
M-1	Dredge Spoil Disposal Area	05.12.2020
M-2	Northern Break Water	05.12.2020
M-3	Southern Break Water	05.12.2020
M-4	Inner Navigation Channel	05.12.2020
M-5	Sharavari River, Near Berthing Area	05.12.2020
M-6	Sharavati/Badgani River Mouth (Near Confluence Point)	05.12.2020

TEST RESULTS

S.No.	Parameters	Units	Test Method	Results					
				M-1	M-2	M-3	M-4	M-5	M-6
1.	pH @25^{0}C	--	IS:3025 part 11 1983, RA-2017	8.10	7.92	7.98	8.02	7.89	7.88
2.	Conductivity@25^{0}C	µmhos/ cm	IS: 3025 Part 14 1984 RA-2013	35124	34744	36128	34222	30952	29946
3.	Temperature	°C	IS: 3025 Part 1 1984 RA-2014	26.0	25.7	25.9	25.6	25.7	25.7
4.	Total Dissolved Solids	mg/L	IS: 3025 Part 16 1984, RA-2017	22140	21896	22764	21560	19472	18920
5.	Total Suspended Solids	mg/L	IS 3025 Part 17 1984, RA-2017	40	36	44	36	48	54
6.	Turbidity	NTC	IS: 3025 Part 10 1984, RA-2017	22.6	20.8	25.6	19.7	26.7	34.1
7.	Total Hardness as $CaCO_3$	mg/L	IS: 3025 Part 21 2009, RA-2014	6100	5840	6230	5480	5280	5060
8.	Calcium as Ca	mg/L	IS: 3025 Part 40 1991, RA-2014	628.0	576.0	600.0	560.0	548.0	536.0
9.	Magnesium as Mg	mg/L	IS: 3025 Part 46 1994, RA-2014	1087.2	1056.0	1135.2	979.2	938.4	892.8
10.	Chloride as Cl	mg/L	IS: 3025 Part 32 1988, RA-2014	11805	11505	12005	11305	10535	10105
11.	Sulphate as SO_4	mg/L	IS: 3025 Part 24 1986, RA-2014	608.4	856.8	795	886.4	367.9	450.3
12.	Nitrate as NO_3	mg/L	IS: 3025 Part 34 1988, RA-2014	95.1	91.3	98.9	78.7	66.1	64.0
13.	Iron as Fe	mg/L	IS: 3025 Part 53 2003, RA-2014	0.42	0.40	0.41	0.38	0.40	0.39
14.	Lead as Pb	mg/L	IS 3025 Part 47 1994, RA2014	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
15.	Dissolved Oxygen	mg/L	IS 3025 Part 38 2009	4.1	4.5	4.7	4.10	4.4	4.3
16.	Biological Oxygen Demand (3 Days For27°C)	mg/L	IS 3025 Part 44 1993, RA-2014	10	07	12	06	10	12
17.	Chemical Oxygen Demand	mg/L	IS 3025 Part 58 2006, RA-2017	40	30	50	32	40	50
18.	Oil & Grease	mg/L	IS 3025 Part 39 :1991, RA-2014	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
19.	Coli form Bacteria	MPN /100ml	APHA 23rd ED 2017 9221 B	540	440	800	380	770	610

TABLE-44
Marine Biology

Six Plankton samples was collected and analyzed. The analytical results are given in **TABLE-44 to 49**

Location Code	Bore Well Location	Date of Sampling
M-1	Dredge Spoil Disposal Area	05.12.2020
M-2	Northern Break Water	05.12.2020
M-3	Southern Break Water	05.12.2020
M-4	Inner Navigation Channel	05.12.2020
M-5	Sharavari River, Near Berthing Area	05.12.2020
M-6	Sharavati/Badgani River Mouth (Near Confluence Point)	05.12.2020

TABLE-44
TEST RESULTS

Location Name: Dredge Spoil Disposal Area

Phytoplankton

S. No	Description	Result
1	Numerical abundance of species	1,26,891 nos/100m^3 to 12,05,482 nos/100m^3
2	Bio-mass net weight	3.4 mg/100m^3 to 18.5 mg/100m^3
3	Chlorophyll content	between 0.02 mg/m^3 to 3.96 mg/m^3
4	Phaeophytin content	0.2 mg/m^3 to3.76 mg/m^3
5	Predominant species observed	Biddulphia mobiliensis, Chaetoceros curvisetus, Licmophora abbreviata, Skeletonema costatum, Prorocentrum micans and Oscillatoria sp, Coscinodiscus, Bacteriostrus, Chaetoceros (Chain), Pleurosigma, Staroneis, Leptocylindrus, Nitzschia, Naviculla, Thalassiosiro,
6	Productivity	between 48.60 mg C/m^3 to 1652.8 mg C/m^3
7	No of Species	30 - 44

Zooplankton

S.No	Description	Result
1	Numerical abundance of species	1,4241280 no.s/100m^3 to 2,98,924 nos/100m^3.
2	Bio-mass net weight	11.70 ml/100m^3 to 16.94 ml/100m^3
3	Fauna diversity	Above 09
4	Predominant species observed	Copedods (Six Larval forms as nauplii) Cyclopoids, Harpacticoid, Copepods, Doliolumsp., Salpasp., Hnthomedusole sp., Appendicularia, Gastropods, Cladocerans, Decapod Larvae, Undinula sp., Polychaete larvae, Lucifer sp,
5	No of Species	32 – 46

TABLE-45
TEST RESULTS

Location Name: Northern Break Water

Phytoplankton

S.No	Description	Result
1	Numerical abundance of species	1,46,772 nos/100m^3 to 5,84,624 nos/100m^3
2	Bio-mass net weight	3.6 mg/100m^3 to 18.6 mg/100m^3
3	Chlorophyll content	between 0.02 mg/m^3 to 4.36 mg/m^3
4	Phaeophytin content	0.2 mg/m^3 to 4.42 mg/m^3
5	Predominant species observed	Biddulphia mobiliensis, Chaetoceros curvisetus, Licmophora abbreviata, Skeletonema costatum, Prorocentrum micans and Oscillatoria sp, Coscinodiscus, Bacteriostrus, Chaetoceros (Chain), Pleurosigma, Staroneis, Leptocylindrus, Nitzschia, Naviculla, Thalassiosiro,
6	Productivity	between 38.56 mg C/m^3 to 1448.2 mg C/m^3
7	No of Species	34 - 48

Zooplankton

S.No	Description	Result
1	Numerical abundance of species	1,22,462 no.s/100m^3 to 3,24,582 nos/100m^3.
2	Bio-mass net weight	9.64 ml/100m^3 to 14.86 ml/100m^3
3	Fauna diversity	Above 09
4	Predominant species observed	Copedods (Six Larval forms as nauplii) Cyclopoids, Harpacticoid, Copepods, Doliolumsp., Salpasp., Hnthomedusole sp., Appendicularia, Gastropods, Cladocerans, Decapod Larvae, Undinula sp., Polychaete larvae, Lucifer sp,
5	No of Species	36 – 42

TABLE-46
TEST RESULTS

Location Name: Southern Break Water

Phytoplankton

S.No	Description	Result
1	Numerical abundance of species	1,09,925 nos/100m^3 to 6,75,392 nos/100m^3
2	Bio-mass net weight	3.4 mg/100m^3 to 12.86 mg/100m^3
3	Chlorophyll content	between 0.02 mg/m^3 to 3.94 mg/m^3
4	Phaeophytin content	0.2 mg/m^3 to 4.0 mg/m^3
5	Predominant species observed	Biddulphia mobiliensis, Chaetoceros curvisetus, Licmophora abbreviata, Skeletonema costatum, Prorocentrum micans and Oscillatoria sp, Coscinodiscus, Bacteriostrus, Chaetoceros (Chain), Pleurosigma, Staroneis, Leptocylindrus, Nitzschia, Naviculla, Thalassiosiro,
6	Productivity	between 38.62 mg C/m^3 to 1476.1 mg C/m^3
7	No of Species	32 - 48

Zooplankton

S.No	Description	Result
1	Numerical abundance of species	1, 18,462 no.s/100m^3 to 3, 42,294 nos/100m^3.
2	Bio-mass net weight	10.36 ml/100m^3 to 15.88 ml/100m^3
3	Fauna diversity	Above 09
4	Predominant species observed	Copedods (Six Larval forms as nauplii) Cyclopoids, Harpacticoid, Copepods, Doliolumsp., Salpasp., Hnthomedusole sp., Appendicularia, Gastropods, Cladocerans, Decapod Larvae, Undinula sp., Polychaete larvae, Lucifer sp,
5	No of Species	34 – 42

TABLE-47

TEST RESULTS

Location name: Inner Navigation Channel

Phytoplankton

S.No	Description	Result
1	Numerical abundance of species	1,46,782 nos/100m^3 to 7,32,640 nos/100m^3
2	Bio-mass net weight	3.9 mg/100m^3 to 15.67 mg/100m^3
3	Chlorophyll content	between 0.02 mg/m^3 to 4.42 mg/m^3
4	Phaeophytin content	0.2 mg/m^3 to 4.4 mg/m^3
5	Predominant species observed	Biddulphia mobiliensis, Chaetoceros curvisetus, Licmophora abbreviata, Skeletonema costatum, Prorocentrum micans and Oscillatoria sp, Coscinodiscus, Bacteriostrus, Chaetoceros (Chain), Pleurosigma, Staroneis, Leptocylindrus, Nitzschia, Naviculla, Thalassiosiro,
6	Productivity	between 18.26 mg C/m^3 to 1673.8 mg C/m^3
7	No of Species	36 - 42

Zooplankton

S.No	Description	Result
1	Numerical abundance of species	1, 24,492 no.s/100m^3 to 3, 72,546 nos/100m^3.
2	Bio-mass net weight	10.48 ml/100m^3 to 17.06 ml/100m^3
3	Fauna diversity	Above 09
4	Predominant species observed	Copedods (Six Larval forms as nauplii) Cyclopoids, Harpacticoid, Copepods, Doliolumsp., Salpasp., Hnthomedusole sp., Appendicularia, Gastropods, Cladocerans, Decapod Larvae, Undinula sp., Polychaete larvae, Lucifer sp,
5	No of Species	32 – 40

TABLE-48
TEST RESULTS

Location Name: Saravathi River near Berthing Area

Phytoplankton

S.No	Description	Result
1	Numerical abundance of species	1,12,684 nos/100m^3 to 6,48,364 nos/100m^3
2	Bio-mass net weight	3.6 mg/100m^3 to 5.94 mg/100m^3
3	Chlorophyll content	between 0.02 mg/m^3 to 4.42 mg/m^3
4	Phaeophytin content	0.2 mg/m^3 to 4.8 mg/m^3
5	Predominant species observed	Biddulphia mobiliensis, Chaetoceros curvisetus, Licmophora abbreviata, Skeletonema costatum, Prorocentrum micans and Oscillatoria sp, Coscinodiscus, Bacteriostrus, Chaetoceros (Chain), Pleurosigma, Staroneis, Leptocylindrus, Nitzschia, Naviculla, Thalassiosiro,
6	Productivity	between 13.20 mg C/m^3 to 1436.5 mg C/m^3
7	No of Species	34 – 44

Zooplankton

S.No	Description	Result
1	Numerical abundance of species	1, 12,440 no.s/100m^3 to 2,68,542 nos/100m^3.
2	Bio-mass net weight	11.32 ml/100m^3 to 15.76 ml/100m^3
3	Fauna diversity	Above 09
4	Predominant species observed	Copedods (Six Larval forms as nauplii) Cyclopoids, Harpacticoid, Copepods, Doliolumsp., Salpasp., Hnthomedusole sp., Appendicularia, Gastropods, Cladocerans, Decapod Larvae, Undinula sp., Polychaete larvae, Lucifer sp,
5	No of Species	36 – 44

TABLE-49
TEST RESULTS

Location Name: Sharavati / Badgani River Mouth Near Confluence Point

Phytoplankton

S. No	Description	Result
1	Numerical abundance of species	1,04,642 nos/100m^3 to 5,72,826 nos/100m^3
2	Bio-mass net weight	3.7 mg/100m^3 to 16.05 mg/100m^3
3	Chlorophyll content	between 0.02 mg/m^3 to 4.902 mg/m^3
4	Phaeophytin content	0.2 mg/m^3 to 4.6 mg/m^3
5	Predominant species observed	Biddulphia mobiliensis, Chaetoceros curvisetus, Licmophora abbreviata, Skeletonema costatum, Prorocentrum micans and Oscillatoria sp, Coscinodiscus, Bacteriostrus, Chaetoceros (Chain), Pleurosigma, Staroneis, Leptocylindrus, Nitzschia, Naviculla, Thalassiosiro,
6	Productivity	between 14.64 mg C/m^3 to 1692.7 mg C/m^3
7	No of Species	34 – 42

Zooplankton

S.No	Description	Result
1	Numerical abundance of species	1, 09,572 nos/100m^3 to 2, 66,918 nos/100m^3.
2	Bio-mass net weight	10.40 ml/100m^3 to 16.28 ml/100m^3
3	Fauna diversity	Above 09
4	Predominant species observed	Copedods (Six Larval forms as nauplii) Cyclopoids, Harpacticoid, Copepods, Doliolumsp., Salpasp., Hnthomedusole sp., Appendicularia, Gastropods, Cladocerans, Decapod Larvae, Undinula sp., Polychaete larvae, Lucifer sp,
5	No of Species	36 – 44

TABLE-50
Sediment and Plankton Benthic Communities

Six Sediment & Benthic samples was collected and analyzed. The analytical results are given in **TABLE-50 to 55**

Location Code	Sediment and Plankton Benthic Locations	Date of Sampling
M-1	Dredge Spoil Disposal Area	05.12.2020
M-2	Northern Break Water	05.12.2020
M-3	Southern Break Water	05.12.2020
M-4	Inner Navigation Channel	05.12.2020
M-5	Sharavari River, Near Berthing Area	05.12.2020
M-6	Sharavati/Badgani River Mouth (Near Confluence Point)	05.12.2020

TABLE-50
Sediment Quality
TEST RESULTS

Location Name: Dredge Spoil Disposal Area

S. No.	Parameters	Units	Test Results
1.	Total Organic Carbon	%	0.56
2.	Total Organic Matter	%	0.96
3.	Inorganic Phosphates	mg/g	0.06
4.	Phosphates as $PO_4^{3-}P$	mg/g	0.10
5.	Sulphate as SO_4	mg/g	1.76
6.	Nitrite as NO_2	mg/g	<0.02
7.	Nitrate as NO_3	mg/g	4.42
8.	Calcium as Ca	mg/g	6.48
9.	Magnesium as Mg	mg/g	2.10
10.	Sodium as Na	mg/g	12.4
11.	Potassium as K	mg/g	0.32

PLANKTON & BENTHIC COMMUNITIES

1. Location: Dredge Spoil Disposal Area
Sampling Date: 05.12.2020

Phytoplankton

The micro-benthic Phytoplankton species observed per kg sand collected at the water depth i.e., below the 4 mts of water of marine is as follows. The one kg sand sample collected was occupied space of about (12 X 6 cm) 72 cm^2 of area of the bottom of the sea coast. The prime parameters analyzed are:

S No	Description	Result
1.	Numerical abundance of species	24 to 624 no/m^2
2.	Bio-mass net weight	1.324 g/m^2
3.	Chlorophyll content	0.10 mg/m^3 to 4.86 mg/m^3
4.	Phaephytin content	0.08 mg/m^3 to 4.40 mg/m^3.
5.	Predominant species observed	Pteromonas, Lobomonas, Dichotomosiphon, Cryptomonas, Botryococcus, Carteria, Asterionella, Oscillatoria, Gomphonema, Chlorococcum.
6.	No of Species	32 – 40

Zooplankton

The micro marine Zooplanktonic species observed per kg sand collected at the bottom of the sea water below 4 mts of the water level spread over in the area of about (12cm X 6 cm) 72 cm^2. The prime parameters analysed are:

S No	Description	Result.
1.	Predominant species observed	Crustaceans resparsent- Copepoda larval forms as Nauplii and the members Harpacticoid, Copepoda are abundant and other species are Cyclopoida, Calanoid, Copepods
2.	No of Species	10-18

TABLE-51
Sediment Quality
TEST RESULTS

Location Name: Northern Break Water

S. No.	Parameters	Units	Test Results
1.	Total Organic Carbon	%	0.68
2.	Total Organic Matter	%	1.17
3.	Inorganic Phosphates	mg/g	0.06
4.	Phosphates as $PO_4^{3-}P$	mg/g	0.10
5.	Sulphate as SO_4	mg/g	3.74
6.	Nitrite as NO_2	mg/g	<0.02
7.	Nitrate as NO_3	mg/g	2.76
8.	Calcium as Ca	mg/g	8.24
9.	Magnesium as Mg	mg/g	2.36
10.	Sodium as Na	mg/g	18.3
11.	Potassium as K	mg/g	0.40

PLANKTON & BENTHIC COMMUNITIES

1. Location: Northern Break Water
Sampling Date: 05.12.2020

Phytoplankton

The micro-benthic Phytoplankton species observed per kg sand collected at the water depth i.e., below the 4 mts of water of marine is as follows. The one kg sand sample collected was occupied space of about (12 X 6 cm) 72 cm^2 of area of the bottom of the sea coast. The prime parameters analyzed are:

S No	Description	Result
1.	Numerical abundance of species	22 to 428 no/m^2
2.	Bio-mass net weight	1.426 g/m^2
3.	Chlorophyll content	0.09 mg/m^3 to 4.84 mg/m^3
4.	Phaephytin content	0.12 mg/m^3 to 4.25 mg/m^3.
5.	Predominant species observed	Pteromonas, Lobomonas, Dichotomosiphon, Cryptomonas, Botryococcus, Carteria, Asterionella, Oscillatoria, Gomphonema, Chlorococcum.
6.	No of Species	26-36

Zooplankton

The micro marine Zooplankton species observed per kg sand collected at the bottom of the sea water below 4 mts of the water level spread over in the area of about (12cm X 6 cm) 72 cm^2. The prime parameters analyzed are:

S No	Description	Result
1.	Predominant species observed	Crustaceans resparsent- Copepoda larval forms as Nauplii and the members Harpacticoid, Copepoda are abundant and other species are Cyclopoida, Calanoid, Copepods
2.	No of Species	14-22

TABLE-52
Sediment Quality
TEST RESULTS

Location Name: Southern Break Water

S. No.	Parameters	Units	Test Results
1.	Total Organic Carbon	%	0.42
2.	Total Organic Matter	%	0.72
3.	Inorganic Phosphates	mg/g	0.10
4.	Phosphates as $PO_4^{3-}P$	mg/g	0.05
5.	Sulphate as SO_4	mg/g	1.28
6.	Nitrite as NO_2	mg/g	<0.02
7.	Nitrate as NO_3	mg/g	4.46
8.	Calcium as Ca	mg/g	7.24
9.	Magnesium as Mg	mg/g	2.12
10.	Sodium as Na	mg/g	21.4
11.	Potassium as K	mg/g	0.34

PLANKTON & BENTHIC COMMUNITIES

1. Location: Southern Break Water
Sampling Date: 05.12.2020

Phytoplankton

The micro-benthic Phytoplankton species observed per kg sand collected at the water depth i.e., below the 4 mts of water of marine is as follows. The one kg sand sample collected was occupied space of about (12 X 6 cm) 72 cm^2 of area of the bottom of the sea coast. The prime parameters analyzed are:

S No	Description	Result
1.	Numerical abundance of species	18 to 440 no/m^2
2.	Bio-mass net weight	1.120 g/m^2
3.	Chlorophyll content	0.14 mg/m^3 to 3.94 mg/m^3
4.	Phaephytin content	0.12 mg/m^3 to 4.30 mg/m^3.
5.	Predominant species observed	Pteromonas, Lobomonas, Dichotomosiphon, Cryptomonas, Botryococcus, Carteria, Asterionella, Oscillatoria, Gomphonema, Chlorococcum.
6.	No of Species	24-34

Zooplankton

The micro marine Zooplanktonic species observed per kg sand collected at the bottom of the sea water below 4 mts of the water level spread over in the area of about (12cm X 6 cm) 72 cm^2. The prime parameters analysed are:

S No	Description	Result
1.	Predominant species observed	Crustaceans resparsent- Copepoda larval forms as Nauplii and the members Harpacticoid, Copepoda are abundant and other species are Cyclopoida, Calanoid, Copepods
2.	No of Species	14-22

TABLE-53
Sediment Quality
TEST RESULTS

Location Name: Inner Navigation Channel

S. No.	Parameters	Units	Test Results
1.	Total Organic Carbon	%	0.66
2.	Total Organic Matter	%	1.14
3.	Inorganic Phosphates	mg/g	0.13
4.	Phosphates as $PO_4^{3-}P$	mg/g	0.06
5.	Sulphate as SO_4	mg/g	2.64
6.	Nitrite as NO_2	mg/g	<0.02
7.	Nitrate as NO_3	mg/g	5.72
8.	Calcium as Ca	mg/g	10.4
9.	Magnesium as Mg	mg/g	3.72
10.	Sodium as Na	mg/g	21.4
11.	Potassium as K	mg/g	0.48

PLANKTON & BENTHIC COMMUNITIES

1. Location: Inner Navigation Channel
Sampling Date: 05.12.2020

Phytoplankton

The micro-benthic Phytoplankton species observed per kg sand collected at the water depth i.e., below the 4 mts of water of marine is as follows. The one kg sand sample collected was occupied space of about (12 X 6 cm) 72 cm^2 of area of the bottom of the sea coast. The prime parameters analyzed are:

S No	Description	Result
1.	Numerical abundance of species	14 to 432 no/m^2
2.	Bio-mass net weight	1.094 g/m^2
3.	Chlorophyll content	0.11 mg/m^3 and 4.28 mg/m^3
4.	Phaephytin content	0.16 mg/m^3 to 4.48 mg/m^3.
5.	Predominant species observed	Pteromonas, Lobomonas, Dichotomosiphon, Cryptomonas, Botryococcus, Carteria, Asterionella, Oscillatoria, Gomphonema, Chlorococcum.
6.	No of Species	16-28

Zooplankton

The micro marine Zooplanktonic species observed per kg sand collected at the bottom of the sea water below 4 mts of the water level spread over in the area of about (12cm X 6 cm) 72 cm^2. The prime parameters analysed are:

S No	Description	Result
1.	Predominant species observed	Crustaceans resparsent- Copepoda larval forms as Nauplii and the members Harpacticoid, Copepoda are abundant and other species are Cyclopoida, Calanoid, Copepods
2.	No of Species	12-20

TABLE-54
Sediment Quality
TEST RESULTS

Location: Saravathi River Near Berthing Area

S. No.	Parameters	Units	Test Results
1.	Total Organic Carbon	%	0.72
2.	Total Organic Matter	%	1.24
3.	Inorganic Phosphates	mg/g	0.09
4.	Phosphates as $PO_4^{3-}P$	mg/g	0.06
5.	Sulphate as SO_4	mg/g	3.92
6.	Nitrite as NO_2	mg/g	<0.02
7.	Nitrate as NO_3	mg/g	6.12
8.	Calcium as Ca	mg/g	9.72
9.	Magnesium as Mg	mg/g	4.10
10.	Sodium as Na	mg/g	24.6
11.	Potassium as K	mg/g	0.38

PLANKTON & BENTHIC COMMUNITIES

1. Location: Saravathi River Near Berthing Area
Sampling Date: 05.12.2020

Phytoplankton

The micro-benthic Phytoplankton species observed per kg sand collected at the water depth i.e., below the 4 mts of water of marine is as follows. The one kg sand sample collected was occupied space of about (12 X 6 cm) 72 cm^2 of area of the bottom of the sea coast. The prime parameters analyzed are:

S No	Description	Result
1.	Numerical abundance of species	18 to 464 no/m^2
2.	Bio-mass net weight	1.134 g/m^2
3.	Chlorophyll content	0.12 mg/m^3 to 4.05 mg/m^3
4.	Phaephytin content	0.14 mg/m^3 to 3.78mg/m^3.
5.	Predominant species observed	Pteromonas, Lobomonas, Dichotomosiphon, Cryptomonas, Botryococcus, Carteria, Asterionella, Oscillatoria, Gomphonema, Chlorococcum.
6.	No of Species	14-26

Zooplankton

The micro marine Zooplanktonic species observed per kg sand collected at the bottom of the sea water below 4 mts of the water level spread over in the area of about (12cm X 6 cm) 72 cm^2. The prime parameters analysed are:

S No	Description	Result
1.	Predominant species observed	Crustaceans resparsent- Copepoda larval forms as Nauplii and the members Harpacticoid, Copepoda are abundant and other species are Cyclopoida, Calanoid, Copepods
2.	No of Species	12--18

TABLE-55
Sediment Quality
TEST RESULTS

Location: Saravathi/Badgani River Mouth Near Confluence Point

S. No.	Parameters	Units	Test Results
1.	Total Organic Carbon	%	0.74
2.	Total Organic Matter	%	1.28
3.	Inorganic Phosphates	mg/g	0.12
4.	Phosphates as $PO_4^{3-}P$	mg/g	0.11
5.	Sulphate as SO_4	mg/g	3.56
6.	Nitrite as NO_2	mg/g	<0.02
7.	Nitrate as NO_3	mg/g	5.12
8.	Calcium as Ca	mg/g	11.2
9.	Magnesium as Mg	mg/g	3.32
10.	Sodium as Na	mg/g	20.6
11.	Potassium as K	mg/g	0.42

PLANKTON & BENTHIC COMMUNITIES

1. Location: Saravathi/Badgani River Mouth Near Confluence Point
Sampling Date: 05.12.2020

Phytoplankton

The micro-benthic Phytoplankton species observed per kg sand collected at the water depth i.e., below the 4 mts of water of marine is as follows. The one kg sand sample collected was occupied space of about (12 X 6 cm) 72 cm^2 of area of the bottom of the sea coast. The prime parameters analyzed are:

S No	Description	Result
1.	Numerical abundance of species	14 to 452 no/m^2
2.	Bio-mass net weight	1.122 g/m^2
3.	Chlorophyll content	0.13 mg/m^3 to 3.90 mg/m^3
4.	Phaephytin content	0.11 mg/m^3 to 4.18 mg/m^3.
5.	Predominant species observed	Pteromonas, Lobomonas, Dichotomosiphon, Cryptomonas, Botryococcus, Carteria, Asterionella, Oscillatoria, Gomphonema, Chlorococcum.
6.	No of Species	12-24

Zooplankton

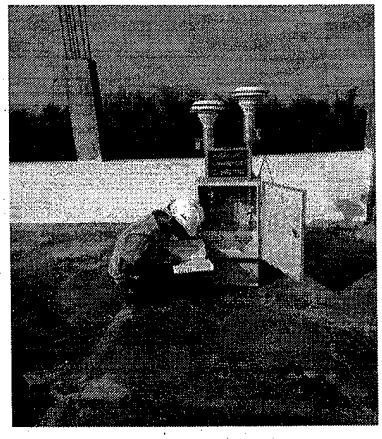
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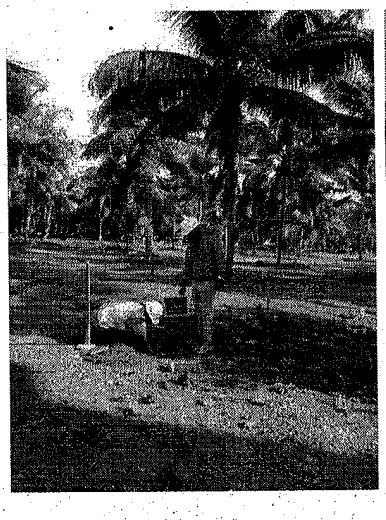
S No	Description	Result
1.	Predominant species observed	Crustaceans resparsent- Copepoda larval forms as Nauplii and the members Harpacticoid, Copepoda are abundant and other species are Cyclopoida, Calanoid, Copepods
2.	No of Species	14-28

SOME PHOTO GRAPHS AT THE TIME OF MONITORING

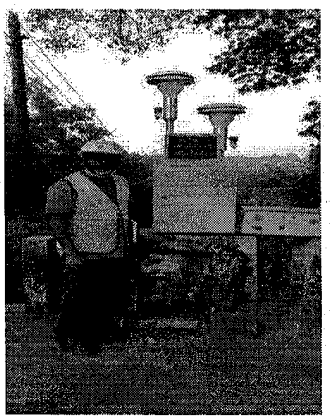


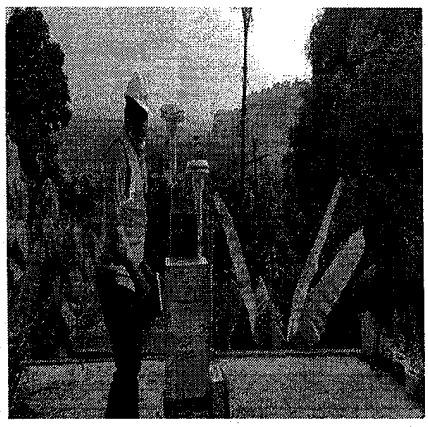




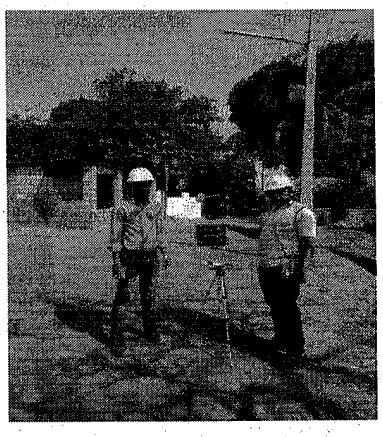
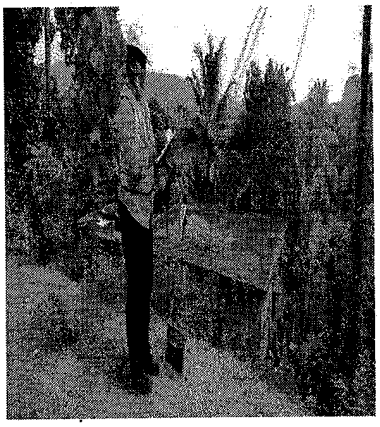



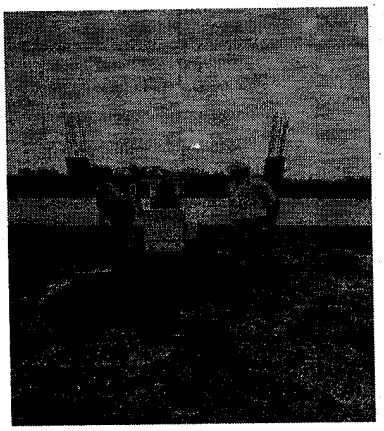


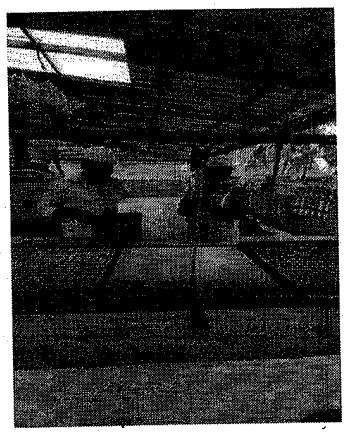
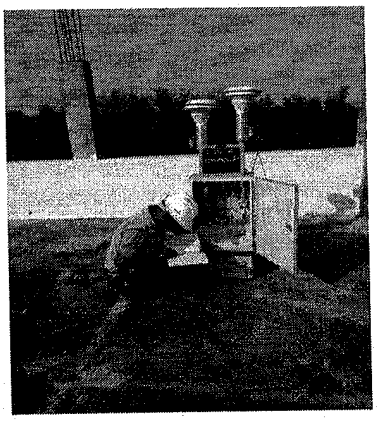
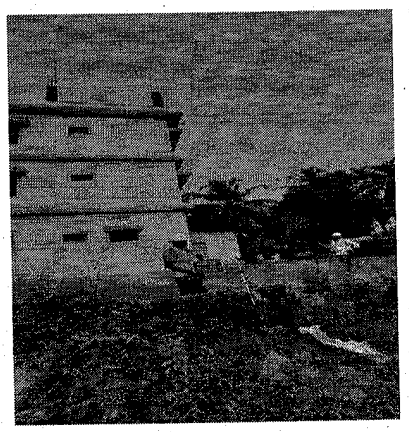
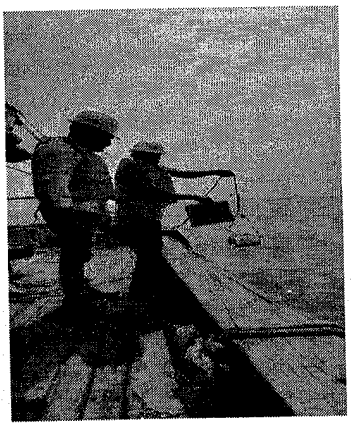
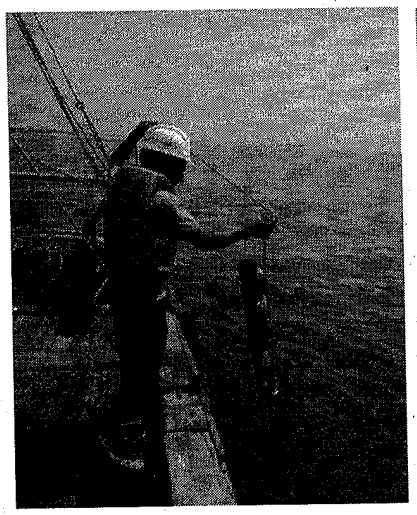
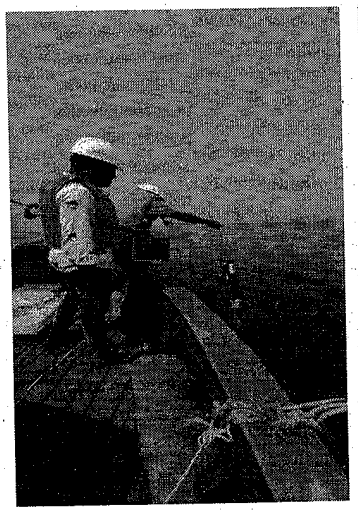






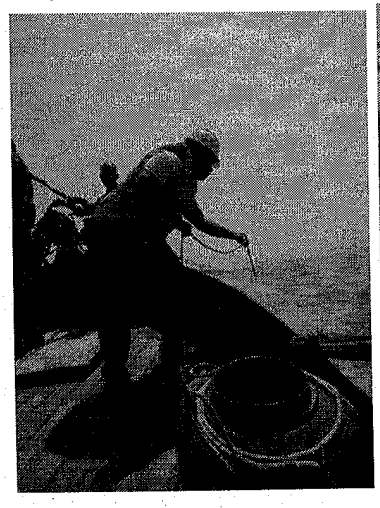
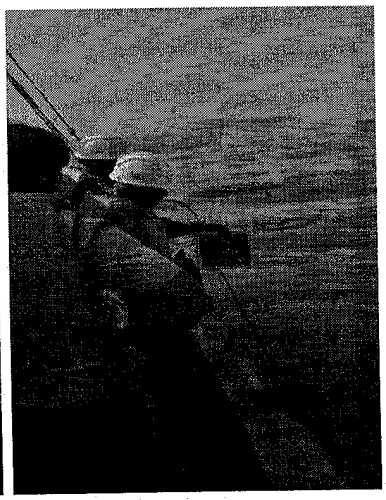
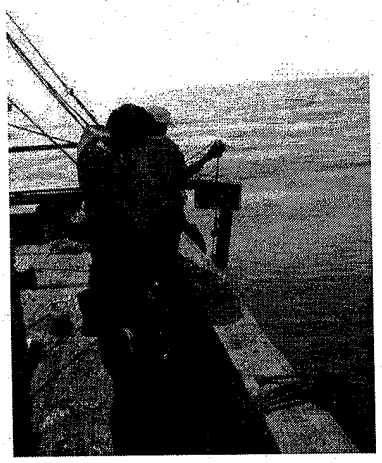
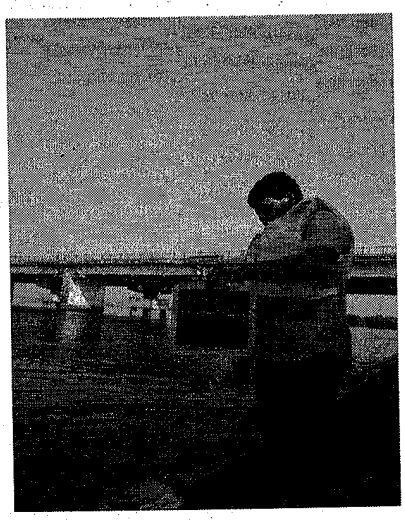
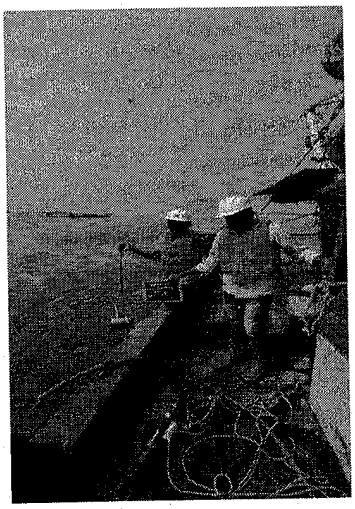








MOEF&CC CERTIFICATE

F. No. Q-15018/05/2019-CPW
Government of India
Ministry of Environment, Forest and Climate Change
(CP Division)

Agni-233, Indira Paryavaran Bhavan,
Jor Bagh Road,
New Delhi – 110 003.
Dated, the 8th January,2020

To

M/s Vison Labs
H. No. 16-11-23/37/A, Flat No. 205 & 206
2nd Floor, Andhra Bank Building
Opp. R.T.A. Office, Malakpet, Hyderabad-500036
Telangana

Subject: -Recognition of M/s Vison Labs, H. No. 16-11-23/37/A, Flat No. 205 & 206, 2nd Floor, Andhra Bank Building, Opp. R.T.A. Office, Malakpet, Hyderabad-500036, Telangana as Environmental Laboratory under the Environment (Protection) Act, 1986.

Sir,

I am directed to refer to your application dated: 01.02.2019 for recognition of your laboratory under Environment (Protection) Act, 1986. Based on the recommendations of the Expert Committee for Recognition of Environmental Laboratories in its 61th meeting held on 03.12.2019 and your acceptance of the revised terms and conditions at Annexure-III & IV of the Guidelines for recognition of Environmental Laboratories, this Ministry approves the renewal of recognition of M/s Vison Labs, H. No. 16-11-23/37/A, Flat No. 205 & 206, 2nd Floor, Andhra Bank Building, Opp. R.T.A. Office, Malakpet, Hyderabad-500036, Telangana , as shall be notified in the Gazette of India. **Considering the current validity of mandatory accreditations/certifications of the laboratory, this renewal shall be valid up to 20.07.2021.**

2. As sought in your aforementioned application M/s Vison Labs, Hyderabad may undertake the following tests:

I. **Physical Tests:** Conductivity, Colour, pH, Fixed & volatile solids, Total solids, Total dissolved solids, Total suspended solids, Turbidity, Temperature, Velocity & discharge measurement of industrial effluent stream, Flocculation test (Jar test), Odour, Salinity, Settleable solids and Sludge volume index (SVI).

II. **Inorganic (General & Non-metallic):** Acidity, Alkalinity, Ammonical nitrogen, Chloride, Chlorine residual, Dissolved oxygen, Fluoride, Total hardness, Total kjehldal nitrogen (TKN), Nitrite nitrogen, Nitrate nitrogen, Phosphate, Sulphate, Bromide, Carbon dioxide, Chlorine demand, Iodine, Sulphite, Silica, Cyanide and Sulphide.

III. **Inorganic (Trace metals):** Boron, Cadmium, Calcium, Chromium Total, Chromium Hexavalent, Copper, Iron, Lead, Magnesium, Mercury, Nickel, Potassium, Sodium, Sodium absorption ratio, Zinc, Arsenic, Aluminium, Beryllium, Barium, Lithium, Manganese, Selenium, Silver, Strontium, Tin, Antimony, Cobalt and Vanadium.

IV. **Organics (General) and Trace Organics:** Bio-chemical oxygen demand (BOD), Chemical oxygen demand (COD), Oil & grease, Phenol, Pesticide (each) ((Organo-chlorine, Organo nitrogen-phosphorous), Surfactants, Poly- chlorinated biphenyl (PCB's) each, Polynuclear aromatic hydrocarbon (PAH) each, Organic Carbon (in solid) and Carbon/Nitrogen ratio.

V. **Microbiological Tests:** Total Coliform, Faecal Coliform, Faecal streptococci, E. coli and Total Plate count.

VI. **Toxicological Tests:** Bioassay method for evaluation of toxicity using fish, Measurement of toxicity using Daphnia or other organism, Measurement of toxicity factor using zebra fish (dimensionless toxicity test).

VII. **Biological Tests:** Benthic organism identification and count, Planktonic identification count, Chlorophyll and P/R Ratio.

VIII. **Hazardous Waste:** Corrosivity, Ignibility (Flash point), Reactivity, Toxicity, Measurement of heavy metals/ pesticides in the waste/ leachate

IX. **Soil/ Sludge/ Sediment and Solid Waste:** Boron, Cation Exchange Capacity (CEC), Electrical Conductivity, Nitrogen available, Organic carbon/ matter (chemical method), pH, Phosphorous (available), Phosphate (ortho), Phosphate (total), Potassium, SAR in soil extract, Sodium, Soil moisture, TKN, Calorific value, Ammonia, Bicarbonate, Calcium, Calcium carbonate, Chloride, Colour, Exchangeable sodium

percentage (ESP), H. Acid, Heavy metal, Magnesium, Nitrate, Nitrite, PAH, Pesticide, Potash (available), Sulphate, Sulphur, TOC, Total water soluble salt and Water holding capacity.

X. **Ambient Air/ Fugitive Emissions:** Nitrogen dioxide (NO_2), Sulphur dioxide (SO_2), Total Suspended particulate matter, Respirable suspended particulate matter (PM_{10}), Respirable Fine particulate matter ($PM_{2.5}$), Ammonia, Carbon monoxide, Chloride, Fluoride, Non methane hydrocarbon, Lead, Methane, Ozone, Benzene Toluene Xylene (BTX), Polycyclic aromatic hydrocarbon (PAH) Benzopyrine & other, Nickel, BaP and Arsenic as As.

XI. **Stack Gases/ Source Emission:** Particulate matter, Sulphur dioxide, Velocity & flow, Carbon dioxide, Carbon monoxide, Temperature, Oxides of nitrogen, Acid mist, Ammonia, Fluoride (Particulate), Fluoride (Gaseous), Hydrochloric acid, Total hydro carbon, Hydrogen Sulphide, Carbon disulphide and Mercaptain.

XII. **Noise Level:** Noise level measurement dB(A)), Ambient Noise & Source-specific Noise.

XIII. **Meteorological:** Ambient temperature, Wind direction, Wind speed, Relative Humidity Solar radiation and Rainfall.

2. Further, the following analysts have been approved for recognition as Government Analysts.

(i) Mr.T. Laxmikanth Reddy
(ii) Mr. K. Jitender Reddy
(iii) Mr. L. Chandra Sekhar Reddy

4. The laboratory shall compulsorily participate in the Analytical Quality Control (AQC) exercise conducted by the Central Pollution Control Board (CPCB) at least once a year to ascertain the capability of the laboratory and analyses carried out and shall submit quarterly progress reports to this Ministry.

5. Periodic surveillance of the recognized environmental laboratory will be undertaken by this Ministry/ CPCB to assess its proper functioning, systematic operation and reliability of data generated at the laboratory.

6. It is also mandatory for the laboratory to have requisite accreditations of the NABL/ ISO 9001 and OHSAS and its renewal as per accreditation rules. This recognition is subject to such accreditations and renewal, as applicable. **The laboratory may approach this Ministry for further extension of validity of recognition after renewal of the mandatory accreditations/ certification concerned.** Such application for extension of validity may be submitted to this Ministry in due advance, preferably before 6 months.

7. The laboratory should compulsorily follow the accepted Terms & Conditions. In case of serious non-compliance of any of the Terms and Conditions, the laboratory may be black-listed for a minimum period of two years and civil/ criminal proceedings, as applicable, may be initiated for performing functions on behalf of the Government in an unauthorized manner.

Yours faithfully,

(Dr. Susan George K.)
Scientist 'D'
Tel. No. 011-24695327
Email: susan.george@nic.in

Copy to:

1) Member Secretary, Central Pollution Control Board, Parivesh Bhawan, East Arjun Nagar, New Delhi – 110032.
2) Member Secretary, Telangana State Pollution Control Board, A-3, Industrial Estate, Sanath Nagar, Hyderabad
3) Additional Principal Conservator of Forests (C), Ministry of Environment, Forest and Climate Change, Regional Office (SEZ),1st and 2nd Floor, Handloom Export Promotion Council, 34, Cathedral Garden Road, Nungambakkam, Chennai-34.
4) Director, IT Division, MoEF&CC, New Delhi-110003: for uploading on MoEF&CC website

Certificate of Accreditation

National Accreditation Board for Testing and Calibration Laboratories
(A Constituent Board of Quality Council of India)

CERTIFICATE OF ACCREDITATION

VISON LABS

has been assessed and accredited in accordance with the standard

ISO/IEC 17025:2005

"General Requirements for the Competence of Testing & Calibration Laboratories"

for its facilities at

16-11-23/37A, Flat No. 205, 2nd Floor, Musarambagh, Malakpet, Hyderabad, Telangana

in the field of

TESTING

Certificate Number TC-5064 *(In lieu of T-3216 & T-3334)*

Issue Date 26/11/2016 [redacted] **Valid Until** 25/11/2018

This certificate remains valid for the Scope of Accreditation as specified in the annexure subject to continued satisfactory compliance to the above standard & the relevant requirements of NABL.

(To see the scope of accreditation of this laboratory, you may also visit NABL website www.nabl-india.org)

Signed for and on behalf of NABL

N. Venkateswaran
Program Director

Anil Relia
Chief Executive Officer

National Accreditation Board for Testing and Calibration Laboratories

(A Constituent Board of Quality Council of India)

26.06.2020

Extension in Validity of Accreditation

NABL **Policy:** It is decided to extend the validity of accreditation for a period of one year to all conformity assessment bodies (CABs) where renewal of accreditation is to take place and accreditation validity date is between 01.01.2020 and 30.06.2022 **subject to the following.**

1. Providing satisfactory documents based on NABL-218 wrt compliance to the requirements of the relevant Standard and NABL requirements.
2. The CABs are required to conduct additional internal audit to ensure compliance with the standard requirements (by increasing the existing frequency of their audit plan) and submit the document.
3. The CABs are required to provide control charts and trends for assuring the validity of results.
4. CABs are required to provide an undertaking to undergo unannounced assessment (onsite and/or remotely, depending on the situation) and actions as per NABL-216 thereof, at any point of time during the validity period.
5. Making payment of **annual accreditation fee** for the extended period.

Examples:

- Accredited CABs with date of issue 15.01.2018 and valid till 14.01.2020, then their Accreditation validity will be extended till 14.01.2021.

- Accredited CABs with date of issue 15.02.2019 and valid till 14.02.2021, then their Accreditation validity will be extended till 14.02.2022.

- Accredited CABs with date of issue 15.06.2020 and valid till 14.06.2022, then their Accreditation validity will be extended till 14.06.2023

NOTE:

1. The above will be applicable to the laboratories for which transition to ISO/IEC 17025:2017 version has been completed. For the laboratories which are accredited as per ISO/IEC 17025:2005 version, they have to undergo transition assessment (onsite and/or remotely, depending on the situation) and follow transition plan defined.
2. The above is not applicable to CABs where there will be a change in name of CAB and/or legal identity change and/or Premises change.
3. Also, **the above is not applicable to the CABs which are not registered in portal** (exemption- International accredited CABs).
4. Routine assessments will take place for any scope extension /addition.
5. Payment due to NABL can be deferred (postpone the payment) upto a period of Six (6) months. There will be no waive-off of any fee for any CABs. If payments are not made, then action as per procedure (NABL-216) will be initiated. There will be no relaxations wrt payment from 01.01.2021.

N.Venkateswaran
CEO, NABL

NABL House, Plot 45, Sector 44, Gurugram 122 002, Haryana, India
Tel. No.: +91-124-4679700 (30 lines) • Fax: +91-124-4679799 • Web: www.nabl-india.org

OHSAS Certificate Of Registration

ISO 45001:2018

Certificate of Registration

This is to Certify that
Occupational Health & Safety Management System of

M/S VISON LABS

H. NO. 16-11-23/37/A, FLAT NO. 205, OPP: R.T.A OFFICE,
MUSARAMBAGH, MALAKPET, HYDERABAD - 500036,
TELANGANA, INDIA.

has been assessed and found to conform to the requirements of

ISO 45001:2018

for the following scope :

PROVIDING ENVIRONMENTAL CONSULTANCY AND ANALYTICAL SERVICES

Certificate No	: 19IODO41		
Initial Registration Date	: 20/08/2019	Issuance Date	: 20/08/2019
Date of Expiry	: 19/08/2022		
1st Surve. Due	: 20/07/2020	2nd Surve. Due	: 20/07/2021

Director

IAS ACCREDITED Management Systems Certification Body MSCB-119

AQC MIDDLE EAST FZE.

Head Office: EL-1401 E Amber Gem Tower, Sheikh Khalifa Bin Zayed Road, 2, Ajman, UAE.
Key Location: 403, Madhuban Building, 55, Nehru Place, New Delhi - 110019, India. e-mail : info@aqcworld.com,
**validity of the Certificate is subject to successful completion of surveillance audit on or before of due date. In case surveillance audit is not allowed to be conducted, this certificate shall be suspended/withdrawn.*
Certificate Verification: Please re-check the validity of certificate at http://www.aqcworld.com/certificate.aspx or www.aqcworld.com or Active Clients.
Certificate is the property of AQC Middle East FZE and shall be returned immediately when demanded

ISO Certificate Of Registration

ISO 9001:2015

Certificate of Registration

This is to Certify that
Quality Management System of

M/S VISON LABS

H. NO. 16-11-23/37/A, FLAT NO. 205, OPP: R.T.A OFFICE,MUS
ARAMBAGH, MALAKPET, HYDERABAD - 500036,
TELANGANA, INDIA.

has been assessed and found to conform to the requirements of

ISO 9001:2015

for the following scope :

PROVIDING ENVIRONMENTAL CONSULTANCY AND ANALYTICAL SERVICES

Certificate No	: 19IQDK35		
Initial Registration Date	: 20/08/2019	Issuance Date	: 20/08/2019
Date of Expiry	: 19/08/2022		
1st Surve. Due	: 20/07/2020	2nd Surve. Due	: 20/07/2021

Director

IAS ACCREDITED Management Systems Certification Body MSCB-119

MEMBER OF MULTILATERAL RECOGNITION ARRANGEMENT IAF

AQC MIDDLE EAST FZE.

Head Office: EI-140I E Amber Gem Tower, Sheikh Khalifa Bin Zayed Road, 2, Ajman, UAE. e-mail: info@aqcworld.com,
Key Locations: 403, Madhuban Building, 55, Nehru Place, New Delhi-110019, India.
Validity of the Certificate is subject to successful completion of surveillance audit on or before of the date. In case surveillance audit is not allowed to be conducted, this certificate shall be suspended/withdrawn.
Certificate Verification: Please Re-check the validity of certificate at http://www.aqcworld.com/activecheck.aspx or www.aqcworld.com or Active Check.
Certificate is the property of AQC Middle East FZE and shall be returned immediately when demanded.

ENVIRONMENTAL DATA GENERATION REPORT

Client

M/s. HONNAVAR PORT (P). LTD.
Kasarkod Tonka,
Honnavar Taluka, Uttar Kannada District,
Karnataka-581342.

CONDUCTED BY

VISON LABS
ENVIRONMENTAL CONSULTANTS & ANALYTICAL SERVICES

Recognised by MoEF&CC, ISO 9001:2015, OHSAS 45001:2018
H.No.16-11-23/37/A, 2nd Floor,
Above Union Bank of India, Opp: R.T.A Office,
Musaarambagh, Malakpet, Hyderabad.
Tel Fax: 040 – 24544320, 24558363.
Website: visonlabs.com
Email info@visonlabs.com & vison.labs@gmail.com

R E P O R T

For The Months of

March-2024

FOR
M/s. HONNAVAR PORT (P) LTD.
Kasarkod Tonka,
Honnavar Taluka, Uttar Kannada District,
Karnataka-581342.

For and behalf of Vison Labs

Approved By	: T Laxmikanth Reddy
Signed	:
Position	: Chief Executive
Date	: March-2024

This report has been prepared by Vison Labs with all reasonable skill, care and diligence within the terms of the contract with the client, incorporating our General Terms and Conditions of Business and taking account of the resources devoted to it by agreement with the client.

We disclaim any responsibility to the client and others in respect of any matters outside the scope of the above.

This report is confidential to the client and we accept no responsibility of whatsoever nature to third parties to whom this report, or any part thereof, is made known, any such party relies on the report at their own risk.

SCOPE OF WORK

Monitoring of Ambient Air Quality, Water quality, Soil quality, Ambient Noise Quality measurement, Marine Water, Plankton & Benthic Communities and Sediment Quality are part of the scope of work given to M/s Vison Labs. The environmental Monitoring has been carried out at the following locations:

A] Ambient Air Quality Locations:

Location Code	Ambient Air Location Details
AQ-1	Project Site
AQ-2	Kasarkod Village
AQ-3	Honnavar Village
AQ-4	Kulkod Village
AQ-5	Ramatheerth Village

B] Ambient Noise Quality Locations:

Location Code	Noise Level Location Details
N-1	Project Site
N-2	Kasarkod Village
N-3	Honnavar Village
N-4	Kulkod Village
N-5	Ramatheerth Village

C] Ground Water Quality Locations:

Location Code	Ground Water Location Details
GW-1	Honnavar Village
GW-2	Kasorkod Village

D] Surface water Quality Location:

Location Code	Surface Water Locations Details
SW-1	Sharavati River
SW-2	Badgani River

E] Marine Water Quality/Plankton/Sediment/Benthic Communities

Location Code	Marine/Sediment/Benthic Communities Location Details
M-1	Dredge Spoil Disposal Area
M-2	Northern Break Water
M-3	Southern Break Water
M-4	Inner Navigation Channel
M-5	Sharavari River, Near Berthing Area
M-6	Sharavati/Badgani River Mouth (Near Confluence Point)

MONITORING AND ANALYSIS METHODOLOGY

The consultant had Pre-identified the monitoring stations for Air, Water and Noise. Time bound program for carrying out fieldwork was prepared and was followed as far as possible. The IS methods are followed to decide the monitoring stations, analysis of different samples and also alternative methods are used, where the cross verification is required.

Ambient Air Quality Monitoring:

Respirable Dust Samplers (RDS) with gaseous attachment have been used for PM10/PM2.5 Sampling. RDS with Gaseous attachment assembly is used for the collection of gaseous pollutants such as SO_2, NO_2, HC and CO.

Ambient Air monitoring instruments

Instrument	Make	Model No.	Range and Sensitivity	
			PM10/PM2.5	Gases
Respirable Dust Sampler (RDS)	M/s. ECO Tech	AAS-271	PM_{10} 2.3 m^3/hour $PM_{2.5}$ 1.0 m^3/hour ±0.02 m^3/hour	0 – 3 LPM ± 0.2 LPM

Testing Method to be followed for Ambient Air Quality

Particular		Testing Method to be Followed
Ambient Air Monitoring Parameter		
A.	PM_{10}	IS-5182 (part – IV) 2006, RA-2017
B.	$PM_{2.5}$	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
C.	SO_2 (Sulfur Dioxide)	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
D.	NO_2 (Nitrogen Dioxide)	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2022)
E.	CO (Carbon Monoxide)	IS: 5182 P 10– 1999 NDIR Method
F.	Hydro Carbons	IS 5182: Part-17

Noise Level Measurement

Instant sound level meter is used for the collection of data related to noise at an interval of one hour per reading. Noise level for 24 hours was conducted location.

Noise (Sound) Measuring Instrument

Instrument	Make	Model No.	Detection Limit
Integrated Sound Level Measurement Instrument Standard Accessories	HTC	SL-1352	Lower level: 35-80dB(A) Higher level: 80-130dB(A)

Testing Method to be followed

S. No.	Particular		Testing Method to be Followed
1	Noise Level Measurement		
	A	Noise Level in dB (A) for continuous 24 hours at 1 hour interval	Comply With IEC61672-1 Class2 Standard

Water Quality Survey

Water samples were collected in Pre-sterilized sampling container. Chemical and Metals analysis was carried out as per standard Methods for water Analysis, Published by BIS, AWWA, APHA, etc.

Soil Quality Survey

Soil samples were collected in sealed sampling Polyethylene covers. Chemical and Metals analysis was carried out as per standard Methods for Soil Analysis, Published by BIS etc.

Quality Assurance

VISON LABS is accredited by Ministry Of Environment & forests, GOVT. OF INDIA and follows quality systems as per ISO 9001:2015. The QA/QC procedures are laid prior to sample collection and laboratory analysis. It includes the standard procedures of sample collection, preservation, transportation and laboratory analysis with all documented procedures and continuous monitoring of Quality Control Division.

Results of Survey Data

The Survey results of Ambient Air Quality, Ambient Noise Monitoring and Water Sampling analysis are presented below

March-2024

Ambient Air Quality Monitoring

The Ambient Air Quality has been monitored at five locations. The table showing Ambient Air Quality is present in **Table -1 to Table 10** respectively.

Ambient Air Quality Locations

Location Code	Location Name	Date Of Monitoring	Date Of Monitoring
AQ-1	Project Site	11.03.2024	25.03.2024
AQ-2	Kasarkod Village	11.03.2024	25.03.2024
AQ-3	Honnavar Village	11.03.2024	25.03.2024
AQ-4	Kulkod Village	12.03.2024	26.03.2024
AQ-5	Ramatheerth Village	12.03.2024	26.03.2024

TABLE-1

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Near Project Site
Date of Monitoring : 11.03.2024
Ambient Temperature °C : 29 (Average)
Wind Direction : N
Weather Condition : Clear
Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	74	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	37	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	.9.7	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	32.6	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2022)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method IS: 5182 P 10– 1999
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-2

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Kasarkod Village
Date of Monitoring : 11.03.2024
Ambient Temperature °C : 29 (Average)
Wind Direction : N
Weather Condition : Clear
Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	64	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	33	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	8.9	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	29.2	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2022)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method IS: 5182 P 10– 1999
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-3

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Honnavar Village

Date of Monitoring : 11.03.2024

Ambient Temperature °C : 30 (Average)

Wind Direction : N

Weather Condition : Clear

Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	58	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	31	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	7.8	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	24.3	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2022)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method IS: 5182 P 10– 1999
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-4

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Kulkod Village

Date of Monitoring : 12.03.2024

Ambient Temperature °C : 30 (Average)

Wind Direction : N

Weather Condition : Clear

Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	46	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	24	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	7.3	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	19.6	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2022)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method IS: 5182 P 10– 1999
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-5

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Ramtheerth Village
Date of Monitoring : 12.03.2024
Ambient Temperature °C : 30 (Average)
Wind Direction : N
Weather Condition : Clear
Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	48	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	25	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	7.1	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	16.2	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2022)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method IS: 5182 P 10– 1999
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-6

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Project Site
Date of Monitoring : 25.03.2024
Ambient Temperature °C : 30 (Average)
Wind Direction : SE
Weather Condition : Clear
Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	77	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	40	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	9.1	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	33.6	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2022)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method IS: 5182 P 10– 1999
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-7

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Kasarkod Village
Date of Monitoring : 25.03.2024
Ambient Temperature °C : 30 (Average)
Wind Direction : SE
Weather Condition : Clear
Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	68	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	35	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	9.2	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	30.1	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2022)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method IS: 5182 P 10– 1999
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-8

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Honnavar Village
Date of Monitoring : 25.03.2024
Ambient Temperature °C : 30 (Average)
Wind Direction : SE
Weather Condition : Clear
Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	63	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	34	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	7.8	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	26.4	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2022)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method IS: 5182 P 10– 1999
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-9

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Kulkod Village
Date of Monitoring : 26.03.2024
Ambient Temperature °C : 30 (Average)
Wind Direction : SE
Weather Condition : Clear
Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	52	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	27	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	6.6	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	22.8	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2022)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method IS: 5182 P 10– 1999
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-10

DETAILS OF AMBIENT AIR QUALITY

MONITORING STATION : Ramtheerth Village
Date of Monitoring : 26.03.2024
Ambient Temperature °C : 30 (Average)
Wind Direction : SE
Weather Condition : Clear
Flow Rate of Gases (LPM) : 0.2

TEST RESULTS

S. No.	Parameters	Units	Results	NAAQS	Analysis Method
1.	Particulate matter (PM_{10})	$\mu g/m^3$	44	<100	Respirable Dust Sampler method (IS: 5182 P 23 – 2006, RA-2017)
2.	Particulate matter ($PM_{2.5}$)	$\mu g/m^3$	23	<60	CPCB Guidelines for the measurement of Ambient Air Pollutants Vol. I, May 2011
3.	Sulphur Dioxide (SO_2)	$\mu g/m^3$	6.9	<80	Improved West and Geake method (IS: 5182 P II – 2001, RA-2017)
4.	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	18.7	<80	Jacob and Hochheiser modified (Na- Arsenite) method (IS:5182 P VI-2001, RA-2022)
5.	Carbon Monoxide (CO)	mg/m^3	<1.0	<2.0	NDIR method IS: 5182 P 10– 1999
6.	Hydrocarbons (HC)	ppb	<0.1	--	IS 5182: Part-17

TABLE-11

Ambient Noise Quality Locations

Location Code	Location Name	Date Of Monitoring	Date Of Monitoring
N-1	Project Site	11.03.2024	25.03.2024
N-2	Kasarkod Village	11.03.2024	25.03.2024
N-3	Honnavar Village	11.03.2024	25.03.2024
N-4	Kulkod Village	12.03.2024	26.03.2024
N-5	Ramatheerth Village	12.03.2024	26.03.2024

TABLE-12

AMBIENT NOISE LEVELS IN THE STUDY AREA

All the values are expressed in dB (A)

Time	N-1	N-2	N-3	N-4	N-5	N-1	N-2	N-3	N-4	N-5
HOURS										
06:00 – 07:00	54.6	48.2	45.9	43.9	44.6	55.2	49.3	47.6	45.1	43.5
07:00 – 08:00	57.2	51.1	48.2	45.2	47.8	57.8	51.6	49.4	46.4	45.8
08:00 – 09:00	59.4	52.6	52.3	48.1	46.3	60.4	50.7	48.3	48.7	47.1
09:00 – 10:00	60.8	54.7	50.8	47.9	49.2	62.3	52.3	50.7	50.5	49.5
10:00 – 11:00	62.3	53.4	52.6	50.2	48.1	64.1	54.6	51.2	49.2	50.4
11:00 – 12:00	58.9	55.8	54.1	52.1	50.5	66.8	52.1	52.1	51.3	47.6
12:00 – 13:00	62.1	52.5	51.3	49.8	52.3	64.6	55.8	50.6	52.6	51.4
13:00 – 14:00	60.6	54.6	49.7	51.3	49.1	62.7	53.4	51.9	49.5	50.6
14:00 – 15:00	64.1	56.1	52.4	48.7	50.6	63.9	55.1	54.4	47.7	48.1
15:00 – 16:00	62.9	57.2	50.6	50.9	47.7	64.1	52.4	50.3	46.1	52.3
16:00 – 17:00	65.4	55.5	53.2	51.2	49.5	62.3	50.6	52.8	48.9	49.7
17:00 – 18:00	67.1	53.7	51.9	53.4	51.3	64.2	52.1	50.3	50.1	51.2
18:00 – 19:00	66.3	51.9	52.6	50.1	52.4	60.4	50.8	51.7	48.6	48.8
19:00 – 20:00	68.7	52.4	50.4	48.4	48.9	58.7	51.6	48.9	45.6	45.6
20:00 – 21:00	64.5	50.6	48.7	46.7	46.1	56.4	48.5	50.1	43.8	43.7
21:00 – 22:00	60.2	48.1	46.9	44.3	43.6	54.3	46.7	47.5	40.7	41.4
22:00 – 23:00	58.1	46.7	44.5	41.8	40.2	51.7	47.2	45.1	39.6	38.8
23:00 – 24:00	55.4	42.3	46.1	39.7	38.5	48.9	43.7	41.6	37.2	36.2
24:00 – 01:00	49.8	39.6	42.5	36.5	35.6	50.2	40.5	38.4	35.4	34.6
01:00 – 02:00	47.6	37.1	38.9	35.1	37.1	47.8	37.3	35.2	36.8	37.1
02:00 – 03:00	44.8	36.9	35.6	34.8	34.8	45.1	38.4	37.1	38.8	35.9
03:00 – 04:00	46.5	38.5	37.1	36.6	37.1	43.9	40.2	38.5	40.5	38.1
04:00 – 05:00	48.1	40.2	39.5	38.8	38.5	46.1	42.4	40.4	39.7	40.4
05:00 – 06:00	51.3	43.6	42.3	41.1	40.2	49.8	46.1	43.3	41.9	42.1
L Day	**63.5**	**53.6**	**51.1**	**49.6**	**49.2**	**62.3**	**52.2**	**50.7**	**48.6**	**48.8**
L Night	**52.5**	**41.9**	**42.1**	**38.8**	**38.1**	**48.6**	**43.2**	**41.0**	**39.2**	**38.6**

Ambient Noise Level Standards

Area Code	Category of Area	Limits in dB (A) Day Time	Limits in dB (A) Night Time
(A)	Industrial Area	< 75	< 70
(B)	Commercial Area	< 65	< 55
(C)	Residential Area	< 55	< 45
(D)	Silence Zone	< 50	< 40

TABLE-13
Ground Water Quality

Two Ground water samples was collected and analyzed. The analytical results are given in **TABLE-13**

Location Code	Bore Well Location	Date of Sampling
GW-1	Honnavar Village	12.03.2024
GW-2	Kasarkod Village	12.03.2024

TEST RESULTS

S.No.	Parameters	Units	Test Method	Results		Drinking Water Limits As per IS: 10500; 2012	
				GW-1	GW-2	Acceptable Limits	Permissible limits in absence of alternative Source
1.	pH @25^{0}C	--	IS:3025 part 11 :2022	7.60	7.38	6.50 – 8.50	No relaxation
2.	Conductivity@25^{0}C	µmhos/cm	IS: 3025 Part 14 2013 RA-2019	332	440	--	--
3.	Temperature	°C	IS: 3025 Part 9 1984 RA-2019	26.1	25.8	--	--
4.	Total Dissolved Solids	mg/L	IS: 3025 Part 16:2023	225	294	500 max	2000 max
5.	Total Suspended Solids	mg/L	IS 3025 Part 17 :2022	<1.0	<1.0	--	--
6.	Turbidity	NTC	IS: 3025 Part 10:2023	<1.0	<1.0	1 max	5 max
7.	Total Hardness as $CaCO_3$	mg/L	IS: 3025 Part 21 2009, RA-2019	90	140	200 max	600 max
8.	Calcium as Ca	mg/L	IS: 3025 Part 40 1991, RA-2019	20.0	32.0	75 max	200 max
9.	Magnesium as Mg	mg/L	IS: 3025 Part 46 1994, RA-2019	9.6	14.4	30 max	100 max
10.	Chloride as Cl	mg/L	IS: 3025 Part 32 1988, RA-2019	40	45	250 max	1000 max
11.	Sulphate as SO_4	mg/L	APHA 24th Edn:2023 - 4500 SO_4 E	24.1	38.5	200 max	400 max
12.	Sodium as Na	mg/L	IS: 3025 Part 45 1993, RA-2019	33	35	---	---
13.	Potassium as K	mg/L	IS: 3025 Part 45 1993, RA-2019	2.0	2.3	---	---
14.	Nitrate as NO_3	mg/L	IS: 3025 Part 34 1988, RA-2019	4.3	7.0	45 max	No Relaxation
15.	Iron as Fe	mg/L	IS: 3025 Part 53 2003, RA-2019	0.08	0.12	1.0 max	No Relaxation
16.	Lead as Pb	mg/L	IS 3025 Part 47 1994, RA2019	<0.001	<0.001	0.01 max	No Relaxation
17.	Dissolved Oxygen	mg/L	IS 3025 Part 38 2009, RA-2019	<1.0	<1.0	--	--
18.	Biological Oxygen Demand(3 Days For27°C)	mg/L	IS 3025 Part 44:2023	<3.0	<3.0	--	--
19.	Chemical Oxygen Demand	mg/L	IS 3025 Part 58 2006, RA-2017	<4.0	<4.0	--	--
20	Oil & Grease	mg/L	IS 3025 Part 39 ::2021	<1.0	<1.0	--	--
21.	Coli form Bacteria	MPN /100mL	.IS 1622:1981	Not Detected	Not Detected	Shall Not Detectable in any 100 mL	
22.	E. Coli	MPN /100mL	IS 1622:1981	Not Detected	Not Detected	Shall Not Detectable in any 100 mL	

Surface Water Quality

Two Surface water samples was collected and analyzed. The analytical results are given in **TABLE-14**

TABLE-14

Surface water Quality Location

Location Code	Location Name	Sample Collection Dates
SW1	Sharavati River	12.03.2024
SW2	Badgani River	12.03.2024

TEST RESULTS

S.No.	Parameters	Units	Test Method	Results		Limits as Per As per IS: 2296 Class C
				SW-1	SW-2	
1.	pH @25^{0}C	--	IS:3025 part 11 :2022	8.10	7.92	6.5-8.5
2.	Conductivity@25^{0}C	µmhos/cm	IS: 3025 Part 14 2013 RA-2019	3248	8052	--
3.	Temperature	^{o}C	IS: 3025 Part 9 1984 RA-2014	25.9	26.0	--
4.	Total Dissolved Solids	mg/L	IS: 3025 Part 16:2023	2120	5326	1500 max
5.	Total Suspended Solids	mg/L	IS 3025 Part 17 :2022	44	60	--
6.	Turbidity	NTC	IS: 3025 Part 10:2023	78.5	92.4	--
7.	Total Hardness as $CaCO_3$	mg/L	IS: 3025 Part 21 2009, RA-2019	600	2950	--
8.	Calcium as Ca	mg/L	IS: 3025 Part 40 1991, RA-2019	140.0	332.0	--
9.	Magnesium as Mg	mg/L	IS: 3025 Part 46 1994, RA-2019	60.0	508.8	--
10.	Chloride as Cl	mg/L	IS: 3025 Part 32 1988, RA-2019	540	1980	600
11.	Sulphate as SO_4	mg/L	APHA 24th Edn:2023 - 4500 SO_4 E	366	751	400
12.	Nitrate as NO_3	mg/L	IS Part 34 1988, RA-2019	38.4	126.8	50
13.	Iron as Fe	mg/L	IS: 3025 Part 53 2003, RA-2019	0.20	0.54	50
14.	Lead as Pb	mg/L	IS 3025 Part 47 1994, RA2019	<0.001	<0,001	0.1
15.	Dissolved Oxygen	mg/L	IS 3025 Part 38 2009, RA-2019	4.1	4.2	4-6
16.	Biological Oxygen Demand (3 Days For27°C)	mg/L	IS 3025 Part 44:2023	15	28	<3.0
17.	Chemical Oxygen Demand	mg/L	IS 3025 Part 58 2006, RA-2017	50	140	--
18.	Oil & Grease	mg/L	IS 3025 Part 39 ::2021	<1.0	<1.0	0.1
19.	Coli form Bacteria	MPN /100mL	APHA 24th ED 2023 9221 B	1300	3400	Should not exceed 5000

TABLE-15
Marine Water Quality

Six Marine water samples was collected and analyzed. The analytical results are given in **TABLE-15**

Location Code	Marine Water Locations	Date of Sampling
M-1	Dredge Spoil Disposal Area	12.03.2024
M-2	Northern Break Water	12.03.2024
M-3	Southern Break Water	12.03.2024
M-4	Inner Navigation Channel	12.03.2024
M-5	Sharavari River, Near Berthing Area	12.03.2024
M-6	Sharavati/Badgani River Mouth (Near Confluence Point)	12.03.2024

TEST RESULTS

S.No.	Parameters	Units	Test Method	Results					
				M-1	M-2	M-3	M-4	M-5	M-6
1.	pH @25^{0}C	--	IS:3025 part 11 :2022	8.05	7.98	8.14	7.98	8.01	8.10
2.	Conductivity@25^{0}C	µmhos/cm	IS: 3025 Part 14 1984 RA-2019	40768	41072	42988	39248	8854	29590
3.	Temperature	^{0}C	IS: 3025 Part 9 1984 RA-2014	26.2	26.0	26.1	26.0	26.2	25.9
4.	Total Dissolved Solids	mg/L	IS: 3025 Part 16 1984, RA-2017	26914	27118	27960	25530	5768	19536
5.	Total Suspended Solids	mg/L	IS 3025 Part 17 :2022	52	40	36	58	63	70
6.	Turbidity	NTC	IS: 3025 Part 10 1984, RA-2017	91.4	74.6	58.9	85.4	92.4	94.6
7.	Total Hardness as $CaCO_3$	mg/L	IS: 3025 Part 21 2009, RA-2019	9400	9520	9660	8920	1100	8200
8.	Calcium as Ca	mg/L	IS: 3025 Part 40 1991, RA-2019	584.0	568.0	556.0	460.0	232.0	576.0
9.	Magnesium as Mg	mg/L	IS: 3025 Part 46 1994, RA-2019	1905.6	1944.0	1984.8	1864.8	124.8	1622.4
10.	Chloride as Cl	mg/L	IS: 3025 Part 32 1988, RA-2019	13390	13460	13695	12790	2105	9390
11.	Sulphate as SO_4	mg/L	APHA 23rd Edn:2017 - 4500 SO_4 E	1025.7	1093	1665	1138.4	974.5	1089.5
12.	Nitrate as NO_3	mg/L	IS: 3025 Part 34 1988, RA-2019	166.1	161.2	170.5	151.3	117.8	141.9
13.	Iron as Fe	mg/L	IS: 3025 Part 53 2003, RA-2019	0.38	0.36	0.30	0.32	0.28	0.42
14.	Lead as Pb	mg/L	IS 3025 Part 47 1994, RA2019	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
15.	Dissolved Oxygen	mg/L	IS 3025 Part 38 2009, RA-2019	4.0	4.2	4.1	4.2	4.1	4.2
16.	Biological Oxygen Demand (3 Days For27°C)	mg/L	IS 3025 Part 44 1993, RA-2019	15	12	09	16	24	29
17.	Chemical Oxygen Demand	mg/L	IS 3025 Part 58 2006, RA-2017	50	40	30	60	120	140
18.	Oil & Grease	mg/L	IS 3025 Part 39 :2021	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
19.	Coli form Bacteria	MPN /100mL	APHA 23rd ED 2017 9221 B	1100	940	630	1800	2700	3700

TABLE-16
Marine Biology

Six Plankton samples was collected and analyzed. The analytical results are given in **TABLE-16 to 21**

Location Code	Bore Well Location	Date of Sampling
M-1	Dredge Spoil Disposal Area	12.03.2024
M-2	Northern Break Water	12.03.2024
M-3	Southern Break Water	12.03.2024
M-4	Inner Navigation Channel	12.03.2024
M-5	Sharavari River, Near Berthing Area	12.03.2024
M-6	Sharavati/Badgani River Mouth (Near Confluence Point)	12.03.2024

TABLE-16
TEST RESULTS

Location Name: Dredge Spoil Disposal Area

Phytoplankton

S. No	Description	Result
1	Numerical abundance of species	1,38,920 nos/100m^3 to 12,17,450 nos/100m^3
2	Bio-mass net weight	2.1 mg/100m^3 to 12.8 mg/100m^3
3	Chlorophyll content	between 0.03 mg/m^3 to 4.26 mg/m^3
4	Phaeophytin content	0.2 mg/m^3 to 4.28 mg/m^3
5	Predominant species observed	Biddulphia mobiliensis, Chaetoceros curvisetus, Licmophora abbreviata, Skeletonema costatum, Prorocentrum micans and Oscillatoria sp, Coscinodiscus, Bacteriostrus, Chaetoceros (Chain), Pleurosigma, Staroneis, Leptocylindrus, Nitzschia, Naviculla, Thalassiosiro,
6	Productivity	between 16.86 mg C/m^3 to 1182.7 mg C/m^3
7	No of Species	28 – 34

Zooplankton

S.No	Description	Result
1	Numerical abundance of species	1, 92,782 no.s/100m^3 to 3,59,360 nos/100m^3.
2	Bio-mass net weight	7.80 ml/100m^3 to 10.65 ml/100m^3
3	Fauna diversity	Above 09
4	Predominant species observed	Copedods (Six Larval forms as nauplii) Cyclopoids, Harpacticoid, Copepods, Doliolumsp., Salpasp., Hnthomedusole sp., Appendicularia, Gastropods, Cladocerans, Decapod Larvae, Undinula sp., Polychaete larvae, Lucifer sp,
5	No of Species	26 – 34

TABLE-17
TEST RESULTS

Location Name: Northern Break Water

Phytoplankton

S.No	Description	Result
1	Numerical abundance of species	1,74,840 nos/100m^3 to 3,75,826 nos/100m^3
2	Bio-mass net weight	2.5 mg/100m^3 to 13.4 mg/100m^3
3	Chlorophyll content	between 0.02 mg/m^3 to 4.25 mg/m^3
4	Phaeophytin content	0.2 mg/m^3 to 3.98 mg/m^3
5	Predominant species observed	Biddulphia mobiliensis, Chaetoceros curvisetus, Licmophora abbreviata, Skeletonema costatum, Prorocentrum micans and Oscillatoria sp, Coscinodiscus, Bacteriostrus, Chaetoceros (Chain), Pleurosigma, Staroneis, Leptocylindrus, Nitzschia, Naviculla, Thalassiosiro,
6	Productivity	between 12.48 mg C/m^3 to 1360.4 mg C/m^3
7	No of Species	28 – 36

Zooplankton

S.No	Description	Result
1	Numerical abundance of species	1, 85,600 no's/100m^3 to 4, 78,462 no s/100m^3.
2	Bio-mass net weight	2.75 ml/100m^3 to 12.92 ml/100m^3
3	Fauna diversity	Above 09
4	Predominant species observed	Copedods (Six Larval forms as nauplii) Cyclopoids, Harpacticoid, Copepods, Doliolumsp., Salpasp., Hnthomedusole sp., Appendicularia, Gastropods, Cladocerans, Decapod Larvae, Undinula sp., Polychaete larvae, Lucifer sp,
5	No of Species	26 – 34

TABLE-18
TEST RESULTS

Location Name: Southern Break Water

Phytoplankton

S.No	Description	Result
1	Numerical abundance of species	2,32,920 nos/100m^3 to 6,48,164 nos/100m^3
2	Bio-mass net weight	2.12 mg/100m^3 to 10.84 mg/100m^3
3	Chlorophyll content	between 0.02 mg/m^3 to 3.86 mg/m^3
4	Phaeophytin content	0.2 mg/m^3 to 3.56 mg/m^3
5	Predominant species observed	Biddulphia mobiliensis, Chaetoceros curvisetus, Licmophora abbreviata, Skeletonema costatum, Prorocentrum micans and Oscillatoria sp, Coscinodiscus, Bacteriostrus, Chaetoceros (Chain), Pleurosigma, Staroneis, Leptocylindrus, Nitzschia, Naviculla, Thalassiosiro,
6	Productivity	between 12.63 mg C/m^3 to 1284.6 mg C/m^3
7	No of Species	28 – 36

Zooplankton

S.No	Description	Result
1	Numerical abundance of species	1, 96,140 no.s/100m^3 to 5,98,560 nos/100m^3.
2	Bio-mass net weight	3.88 ml/100m^3 to 12.84 ml/100m^3
3	Fauna diversity	Above 09
4	Predominant species observed	Copedods (Six Larval forms as nauplii) Cyclopoids, Harpacticoid, Copepods, Doliolumsp., Salpasp., Hnthomedusole sp., Appendicularia, Gastropods, Cladocerans, Decapod Larvae, Undinula sp., Polychaete larvae, Lucifer sp,
5	No of Species	28 – 34

TABLE-19

TEST RESULTS

Location name: Inner Navigation Channel

Phytoplankton

S.No	Description	Result
1	Numerical abundance of species	1,62,892 nos/100m^3 to 5,85,192 nos/100m^3
2	Bio-mass net weight	2.60 mg/100m^3 to 12.06 mg/100m^3
3	Chlorophyll content	between 0.03 mg/m^3 to 4.56 mg/m^3
4	Phaeophytin content	0.2 mg/m^3 to 3.98 mg/m^3
5	Predominant species observed	Biddulphia mobiliensis, Chaetoceros curvisetus, Licmophora abbreviata, Skeletonema costatum, Prorocentrum micans and Oscillatoria sp, Coscinodiscus, Bacteriostrus, Chaetoceros (Chain), Pleurosigma, Staroneis, Leptocylindrus, Nitzschia, Naviculla, Thalassiosiro,
6	Productivity	between 09.70 mg C/m^3 to 1326.4 mg C/m^3
7	No of Species	30 – 36

Zooplankton

S.No	Description	Result
1	Numerical abundance of species	1, 74,582 no.s/100m^3 to 4, 45, 360 nos/100m^3.
2	Bio-mass net weight	3.95 ml/100m^3 to 12.48 ml/100m^3
3	Fauna diversity	Above 09
4	Predominant species observed	Copedods (Six Larval forms as nauplii) Cyclopoids, Harpacticoid, Copepods, Doliolumsp., Salpasp., Hnthomedusole sp., Appendicularia, Gastropods, Cladocerans, Decapod Larvae, Undinula sp., Polychaete larvae, Lucifer sp,
5	No of Species	30 – 34

TABLE-20
TEST RESULTS

Location Name: Saravathi River near Berthing Area

Phytoplankton

S.No	Description	Result
1	Numerical abundance of species	1,05,726 nos/100m^3 to 3,84,856 nos/100m^3
2	Bio-mass net weight	2.64 mg/100m^3 to 3.95 mg/100m^3
3	Chlorophyll content	between 0.02 mg/m^3 to 4.78 mg/m^3
4	Phaeophytin content	0.2 mg/m^3 to 4.46 mg/m^3
5	Predominant species observed	Biddulphia mobiliensis, Chaetoceros curvisetus, Licmophora abbreviata, Skeletonema costatum, Prorocentrum micans and Oscillatoria sp, Coscinodiscus, Bacteriostrus, Chaetoceros (Chain), Pleurosigma, Staroneis, Leptocylindrus, Nitzschia, Naviculla, Thalassiosiro,
6	Productivity	between 10.28 mg C/m^3 to 1364.8mg C/m^3
7	No of Species	30 – 36

Zooplankton

S.No	Description	Result
1	Numerical abundance of species	1, 55,482 no.s/100m^3 to 4, 62,758 nos/100m^3.
2	Bio-mass net weight	9.63 ml/100m^3 to 13.45 ml/100m^3
3	Fauna diversity	Above 09
4	Predominant species observed	Copedods (Six Larval forms as nauplii) Cyclopoids, Harpacticoid, Copepods, Doliolumsp., Salpasp., Hnthomedusole sp., Appendicularia, Gastropods, Cladocerans, Decapod Larvae, Undinula sp., Polychaete larvae, Lucifer sp,
5	No of Species	30 – 36

TABLE-21
TEST RESULTS

Location Name: Sharavati / Badgani River Mouth Near Confluence Point

Phytoplankton

S. No	Description	Result
1	Numerical abundance of species	1,42,954 nos/100m^3 to 3,92,842 nos/100m^3
2	Bio-mass net weight	2.60 mg/100m^3 to 11.98 mg/100m^3
3	Chlorophyll content	between 0.02 mg/m^3 to 3.77 mg/m^3
4	Phaeophytin content	0.2 mg/m^3 to 4.15 mg/m^3
5	Predominant species observed	Biddulphia mobiliensis, Chaetoceros curvisetus, Licmophora abbreviata, Skeletonema costatum, Prorocentrum micans and Oscillatoria sp, Coscinodiscus, Bacteriostrus, Chaetoceros (Chain), Pleurosigma, Staroneis, Leptocylindrus, Nitzschia, Naviculla, Thalassiosiro,
6	Productivity	between 09.88 mg C/m^3 to 1196.4 mg C/m^3
7	No of Species	32 – 36

Zooplankton

S.No	Description	Result
1	Numerical abundance of species	1, 46,756 nos/100m^3 to 4,10, 428 nos/100m^3.
2	Bio-mass net weight	9.08 ml/100m^3 to 12.10 ml/100m^3
3	Fauna diversity	Above 09
4	Predominant species observed	Copedods (Six Larval forms as nauplii) Cyclopoids, Harpacticoid, Copepods, Doliolumsp., Salpasp., Hnthomedusole sp., Appendicularia, Gastropods, Cladocerans, Decapod Larvae, Undinula sp., Polychaete larvae, Lucifer sp,
5	No of Species	30 – 34

TABLE-22
Sediment and Plankton Benthic Communities

Six Sediment & Benthic samples was collected and analyzed. The analytical results are given in **TABLE-22 to 27**

Location Code	Sediment and Plankton Benthic Locations	Date of Sampling
M-1	Dredge Spoil Disposal Area	12.03.2024
M-2	Northern Break Water	12.03.2024
M-3	Southern Break Water	12.03.2024
M-4	Inner Navigation Channel	12.03.2024
M-5	Sharavari River, Near Berthing Area	12.03.2024
M-6	Sharavati/Badgani River Mouth (Near Confluence Point)	12.03.2024

TABLE-22
Sediment Quality
TEST RESULTS

Location Name: Dredge Spoil Disposal Area

S. No.	Parameters	Units	Test Results
1.	Total Organic Carbon	%	0.42
2.	Total Organic Matter	%	0.72
3.	Inorganic Phosphates	mg/g	0.06
4.	Phosphates as $PO_4^{3-}P$	mg/g	0.11
5.	Sulphate as SO_4	mg/g	1.36
6.	Nitrite as NO_2	mg/g	<0.02
7.	Nitrate as NO_3	mg/g	0.84
8.	Calcium as Ca	mg/g	3.20
9.	Magnesium as Mg	mg/g	1.64
10.	Sodium as Na	mg/g	11.2
11.	Potassium as K	mg/g	0.18

PLANKTON & BENTHIC COMMUNITIES

1. Location: Dredge Spoil Disposal Area
Sampling Date: 12.03.2024

Phytoplankton

The micro-benthic Phytoplankton species observed per kg sand collected at the water depth i.e., below the 4 mts of water of marine is as follows. The one kg sand sample collected was occupied space of about (12 X 6 cm) 72 cm^2 of area of the bottom of the sea coast. The prime parameters analyzed are:

S No	Description	Result
1.	Numerical abundance of species	08 to 642 no/m^2
2.	Bio-mass net weight	1.846 g/m^2
3.	Chlorophyll content	0.09 mg/m^3 to 4.28 mg/m^3
4.	Phaephytin content	0.08 mg/m^3 to 3.96 mg/m^3.
5.	Predominant species observed	Pteromonas, Lobomonas, Dichotomosiphon, Cryptomonas, Botryococcus, Carteria, Asterionella, Oscillatoria, Gomphonema, Chlorococcum.
6.	No of Species	28 – 34

Zooplankton

The micro marine Zooplanktonic species observed per kg sand collected at the bottom of the sea water below 4 mts of the water level spread over in the area of about (12cm X 6 cm) 72 cm^2. The prime parameters analysed are:

S No	Description	Result
1.	Predominant species observed	Crustaceans resparsent- Copepoda larval forms as Nauplii and the members Harpacticoid, Copepoda are abundant and other species are Cyclopoida, Calanoid, Copepods
2.	No of Species	24 -- 28

TABLE-23
Sediment Quality
TEST RESULTS

Location Name: Northern Break Water

S. No.	Parameters	Units	Test Results
1.	Total Organic Carbon	%	0.40
2.	Total Organic Matter	%	0.69
3.	Inorganic Phosphates	mg/g	0.04
4.	Phosphates as $PO_4^{3-}P$	mg/g	0.12
5.	Sulphate as SO_4	mg/g	2.04
6.	Nitrite as NO_2	mg/g	<0.02
7.	Nitrate as NO_3	mg/g	0.62
8.	Calcium as Ca	mg/g	3.88
9.	Magnesium as Mg	mg/g	1.72
10.	Sodium as Na	mg/g	14.6
11.	Potassium as K	mg/g	0.20

PLANKTON & BENTHIC COMMUNITIES

1. Location: Northern Break Water
Sampling Date: 12.03.2024

Phytoplankton

The micro-benthic Phytoplankton species observed per kg sand collected at the water depth i.e., below the 4 mts of water of marine is as follows. The one kg sand sample collected was occupied space of about (12 X 6 cm) 72 cm^2 of area of the bottom of the sea coast. The prime parameters analyzed are:

S No	Description	Result
1.	Numerical abundance of species	09 to 910 no/m^2
2.	Bio-mass net weight	1.448 g/m^2
3.	Chlorophyll content	0.08 mg/m^3 to 3.56 mg/m^3
4.	Phaephytin content	0.09 mg/m^3 to 4.28 mg/m^3.
5.	Predominant species observed	Pteromonas, Lobomonas, Dichotomosiphon, Cryptomonas, Botryococcus, Carteria, Asterionella, Oscillatoria, Gomphonema, Chlorococcum.
6.	No of Species	28-36

Zooplankton

The micro marine Zooplankton species observed per kg sand collected at the bottom of the sea water below 4 mts of the water level spread over in the area of about (12cm X 6 cm) 72 cm^2. The prime parameters analyzed are:

S No	Description	Result
1.	Predominant species observed	Crustaceans resparsent- Copepoda larval forms as Nauplii and the members Harpacticoid, Copepoda are abundant and other species are Cyclopoida, Calanoid, Copepods
2.	No of Species	28-34

TABLE-24
Sediment Quality
TEST RESULTS

Location Name: Southern Break Water

S. No.	Parameters	Units	Test Results
1.	Total Organic Carbon	%	0.35
2.	Total Organic Matter	%	0.60
3.	Inorganic Phosphates	mg/g	0.04
4.	Phosphates as $PO_4^{3-}P$	mg/g	0.14
5.	Sulphate as SO_4	mg/g	1.90
6.	Nitrite as NO_2	mg/g	<0.02
7.	Nitrate as NO_3	mg/g	0.54
8.	Calcium as Ca	mg/g	5.86
9.	Magnesium as Mg	mg/g	2.02
10.	Sodium as Na	mg/g	23.6
11.	Potassium as K	mg/g	0.22

PLANKTON & BENTHIC COMMUNITIES

1. Location: Southern Break Water
Sampling Date: 12.03.2024

Phytoplankton

The micro-benthic Phytoplankton species observed per kg sand collected at the water depth i.e., below the 4 mts of water of marine is as follows. The one kg sand sample collected was occupied space of about (12 X 6 cm) 72 cm^2 of area of the bottom of the sea coast. The prime parameters analyzed are:

S No	Description	Result
1.	Numerical abundance of species	09 to 778 no/m^2
2.	Bio-mass net weight	1.846 g/m^2
3.	Chlorophyll content	0.07 mg/m^3 to 4.36 mg/m^3
4.	Phaephytin content	0.09 mg/m^3 to 4.12 mg/m^3.
5.	Predominant species observed	Pteromonas, Lobomonas, Dichotomosiphon, Cryptomonas, Botryococcus, Carteria, Asterionella, Oscillatoria, Gomphonema, Chlorococcum.
6.	No of Species	28-36

Zooplankton

The micro marine Zooplanktonic species observed per kg sand collected at the bottom of the sea water below 4 mts of the water level spread over in the area of about (12cm X 6 cm) 72 cm^2. The prime parameters analysed are:

S No	Description	Result
1.	Predominant species observed	Crustaceans resparsent- Copepoda larval forms as Nauplii and the members Harpacticoid, Copepoda are abundant and other species are Cyclopoida, Calanoid, Copepods
2.	No of Species	28-34

TABLE-25
Sediment Quality
TEST RESULTS

Location Name: Inner Navigation Channel

S. No.	Parameters	Units	Test Results
1.	Total Organic Carbon	%	0.39
2.	Total Organic Matter	%	0.67
3.	Inorganic Phosphates	mg/g	0.06
4.	Phosphates as $PO_4^{3-}P$	mg/g	0.18
5.	Sulphate as SO_4	mg/g	1.94
6.	Nitrite as NO_2	mg/g	<0.02
7.	Nitrate as NO_3	mg/g	1.02
8.	Calcium as Ca	mg/g	6.20
9.	Magnesium as Mg	mg/g	1.94
10.	Sodium as Na	mg/g	22.7
11.	Potassium as K	mg/g	0.20

PLANKTON & BENTHIC COMMUNITIES

1. Location: Inner Navigation Channel
Sampling Date: 12.03.2024

Phytoplankton

The micro-benthic Phytoplankton species observed per kg sand collected at the water depth i.e., below the 4 mts of water of marine is as follows. The one kg sand sample collected was occupied space of about (12 X 6 cm) 72 cm^2 of area of the bottom of the sea coast. The prime parameters analyzed are:

S No	Description	Result
1.	Numerical abundance of species	08 to 925 no/m^2
2.	Bio-mass net weight	1.736 g/m^2
3.	Chlorophyll content	0.08 mg/m^3 and 4.26 mg/m^3
4.	Phaephytin content	0.09 mg/m^3 to 4.12 mg/m^3.
5.	Predominant species observed	Pteromonas, Lobomonas, Dichotomosiphon, Cryptomonas, Botryococcus, Carteria, Asterionella, Oscillatoria, Gomphonema, Chlorococcum.
6.	No of Species	26-34

Zooplankton

The micro marine Zooplanktonic species observed per kg sand collected at the bottom of the sea water below 4 mts of the water level spread over in the area of about (12cm X 6 cm) 72 cm^2. The prime parameters analysed are:

S No	Description	Result
1.	Predominant species observed	Crustaceans resparsent- Copepoda larval forms as Nauplii and the members Harpacticoid, Copepoda are abundant and other species are Cyclopoida, Calanoid, Copepods
2.	No of Species	28-32

TABLE-26
Sediment Quality
TEST RESULTS

Location: Saravathi River Near Berthing Area

S. No.	Parameters	Units	Test Results
1.	Total Organic Carbon	%	0.38
2.	Total Organic Matter	%	0.65
3.	Inorganic Phosphates	mg/g	0.04
4.	Phosphates as $PO_4^{3-}P$	mg/g	0.13
5.	Sulphate as SO_4	mg/g	1.45
6.	Nitrite as NO_2	mg/g	<0.02
7.	Nitrate as NO_3	mg/g	1.28
8.	Calcium as Ca_s	mg/g	5.80
9.	Magnesium as Mg	mg/g	1.42
10.	Sodium as Na	mg/g	23.1
11.	Potassium as K	mg/g	0.18

PLANKTON & BENTHIC COMMUNITIES

1. Location: Saravathi River Near Berthing Area
Sampling Date: 12.03.2024

Phytoplankton

The micro-benthic Phytoplankton species observed per kg sand collected at the water depth i.e., below the 4 mts of water of marine is as follows. The one kg sand sample collected was occupied space of about (12 X 6 cm) 72 cm^2 of area of the bottom of the sea coast. The prime parameters analyzed are:

S No	Description	Result
1.	Numerical abundance of species	09 to 646 no/m^2
2.	Bio-mass net weight	1.721 g/m^2
3.	Chlorophyll content	0.09 mg/m^3 to 4.54 mg/m^3
4.	Phaephytin content	0.09 mg/m^3 to 3.76 mg/m^3.
5.	Predominant species observed	Pteromonas, Lobomonas, Dichotomosiphon, Cryptomonas, Botryococcus, Carteria, Asterionella, Oscillatoria, Gomphonema, Chlorococcum.
6.	No of Species	26-32

Zooplankton

The micro marine Zooplanktonic species observed per kg sand collected at the bottom of the sea water below 4 mts of the water level spread over in the area of about (12cm X 6 cm) 72 cm^2. The prime parameters analysed are:

S No	Description	Result
1.	Predominant species observed	Crustaceans resparsent- Copepoda larval forms as Nauplii and the members Harpacticoid, Copepoda are abundant and other species are Cyclopoida, Calanoid, Copepods
2.	No of Species	26--32

TABLE-27
Sediment Quality
TEST RESULTS

Location: Saravathi/Badgani River Mouth Near Confluence Point

S. No.	Parameters	Units	Test Results
1.	Total Organic Carbon	%	0.47
2.	Total Organic Matter	%	0.81
3.	Inorganic Phosphates	mg/g	0.07
4.	Phosphates as $PO_4^{3-}P$	mg/g	0.20
5.	Sulphate as SO_4	mg/g	2.36
6.	Nitrite as NO_2	mg/g	<0.02
7.	Nitrate as NO_3	mg/g	1.77
8.	Calcium as Ca	mg/g	6.40
9.	Magnesium as Mg	mg/g	2.28
10.	Sodium as Na	mg/g	21.9
11.	Potassium as K	mg/g	0.20

PLANKTON & BENTHIC COMMUNITIES

1. **Location: Saravathi/Badgani River Mouth Near Confluence Point**
   Sampling Date: 12.03.2024

Phytoplankton

The micro-benthic Phytoplankton species observed per kg sand collected at the water depth i.e., below the 4 mts of water of marine is as follows. The one kg sand sample collected was occupied space of about (12 X 6 cm) 72 cm^2 of area of the bottom of the sea coast. The prime parameters analyzed are:

S No	Description	Result
1.	Numerical abundance of species	09 to 502 no/m^2
2.	Bio-mass net weight	1.642 g/m^2
3.	Chlorophyll content	0.08 mg/m^3 to 3.84 mg/m^3
4.	Phaephytin content	0.09 mg/m^3 to 3.10 mg/m^3.
5.	Predominant species observed	Pteromonas, Lobomonas, Dichotomosiphon, Cryptomonas, Botryococcus, Carteria, Asterionella, Oscillatoria, Gomphonema, Chlorococcum.
6.	No of Species	28-34

Zooplankton

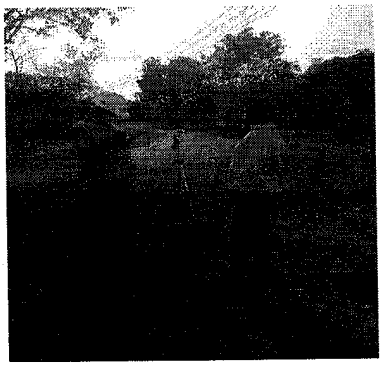
The micro marine Zooplanktonic species observed per kg sand collected at the bottom of the sea water below 4 mts of the water level spread over in the area of about (12cm X 6 cm) 72 cm^2. The prime parameters analysed are:

S No	Description	Result
1.	Predominant species observed	Crustaceans resparsent- Copepoda larval forms as Nauplii and the members Harpacticoid, Copepoda are abundant and other species are Cyclopoida, Calanoid, Copepods
2.	No of Species	26-32

SOME PHOTO GRAPHS AT THE TIME OF MONITORING







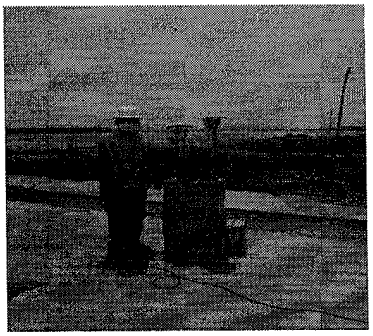


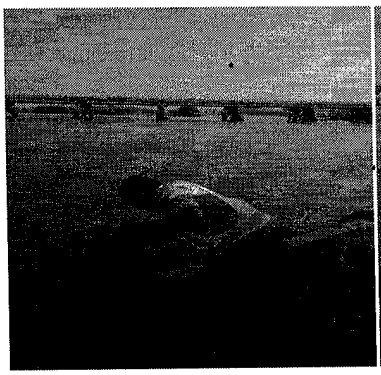
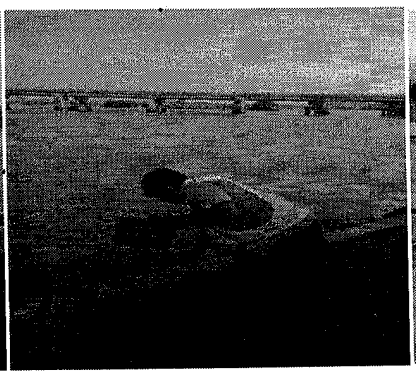


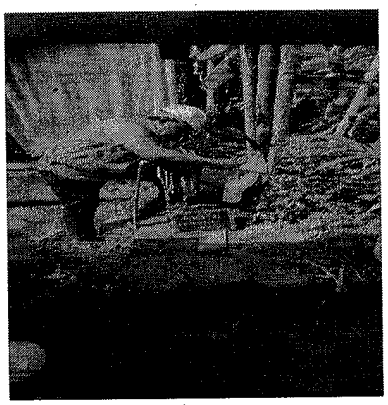
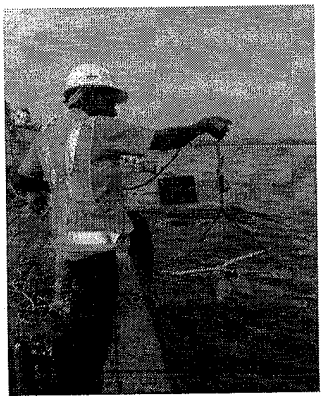
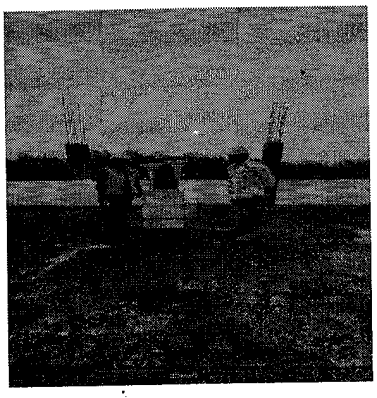










MOEF&CC CERTIFICATE

केन्द्रीय प्रदूषण नियंत्रण बोर्ड
CENTRAL POLLUTION CONTROL BOARD
Speed Post पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय, भारत सरकार
MINISTRY OF ENVIRONMENT, FOREST & CLIMATE CHANGE, GOVT. OF INDIA

F. No. LB/99/7/2021-INST LAB-HO-CPCB-HO/Pvt./11029 20th March 2024

Recognition Letter

To,

The Head of Laboratory,
M/s Vison Labs
16-11-23/37/A, Opp-RTA Office, Moosarambagh,
Malakpet, Hyderabad -500036,
Telangana, India.

Subject: Recognition of M/s Vison Labs 16-11-23/37/A, Opp-RTA Office, Moosarambagh, Malakpet, Hyderabad -500036, Telangana as Environmental laboratory under the Environmental (Protection) Act- 1986– reg.

Sir

With reference to your application dated 28/12/2023 along with acceptance of the terms & conditions of the guidelines for recognition of environmental laboratories under the Environmental (Protection) Act, 1986, submitted to Central Pollution Control Board (CPCB), the Competent Authority of CPCB has accorded approval for renewal of recognition of Environmental laboratory and Govt. Analysts. Subsequently, **M/s Vison Labs 16-11-23/37/A, Opp-RTA Office, Moosarambagh, Malakpet, Hyderabad -500036, Telangana** shall be notified considering the current requirement of mandatory accreditation / certifications of the laboratory **with a validity up to 22/07/2025** in the Gazette Notification of India.

2. The following analysts have been approved as Government Analysts:
   1. T. Laxmikanth Reddy
   2. L. Chandra Shekar Reddy
   3. K. Jitender Reddy

3. The laboratory should compulsorily follow the accepted terms and conditions and may undertake the following tests:
   a. **Physical Tests:** Conductivity, Colour, pH, Fixed & Volatile Solids, Total Solids, Total Dissolved Solids, Total Suspended Solids, Turbidity, Temperature, Velocity & Discharge Measurement of Industrial Effluent Stream, Odour, Salinity, Settleable Solids and Sludge Volume Index (SVI).
   b. **Inorganic (General and non-metallic):** Acidity, Alkalinity, Ammoniacal Nitrogen, Chloride, Chlorine Residual, Dissolved Oxygen, Fluoride, Total Hardness, Total Kjeldahl Nitrogen (TKN), Nitrite Nitrogen, Nitrate Nitrogen, Phosphate, Sulphate, Sulphite, Silica, and Cyanide.
   c. **Inorganic (Trace Metals):** Boron, Cadmium, Calcium, Total Chromium, Chromium Hexavalent, Copper, Iron, Lead, Magnesium, Mercury, Nickel, Potassium, Sodium, Sodium Absorption Ratio, Zinc, Arsenic, Aluminium, Beryllium, Barium, Lithium, Manganese, Selenium, Silver, Strontium, Tin, Antimony, Cobalt and Vanadium.
   d. **Organics (General) and Trace Organics:** Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Oil and Grease, Phenolic Compounds, Pesticides (each) (Organo-Chlorine and Organo Nitrogen-Phosphorus) Poly Chlorinated Biphenyl (PCBs) each, Polynuclear Aromatic Hydrocarbons (PAHs) each and Organic Carbon (in solid), Carbon/Nitrogen Ratio.
   e. **Microbiological Test:** Total Coliform, Faecal Coliform, *E. coli, Faecal Streptococci*, Total Plate Count and *Enterococcus*.

Contd.

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Parivesh Bhawan, East Arjun Nagar, New Delhi - 110032
दूरभाष/Tel: 43102030, 22305792, वेबसाईट/Website : www.cpbc.nic.in

f. **Toxicological Tests:** Bioassay method for evaluation of toxicity using fish and Measurement of toxicity factor using zebra fish (dimensionless toxicity test).

g. **Characterization of Hazardous waste:** Preparation of Leachate (TCLP extract/water extract), Ignibility (Flash point), and Measurement of Heavy Metals/ Pesticides in the waste and leachate.

h. **Soil/Sludge/Sediment and Solid Waste:** Boron, Cation Exchange Capacity (CEC), Electrical Conductivity, Nitrogen (Available), Organic Carbon/Matter (Chemical Method), pH, Phosphorous (Available), Phosphate (Ortho), Phosphate (Total), Potassium, SAR in Soil Extract, Sodium, Soil moisture, TKN, Calorific Value, Ammonia, Bicarbonate, Calcium, Calcium carbonate, Colour, Heavy metal, Magnesium, Nitrate, Nitrite, Pesticide, Sulphate, Sulphur, TOC, and Water holding capacity.

i. **Ambient Air/ Fugitive Emissions:** Nitrogen Dioxide (NO_2), Sulphur Dioxide (SO_2), Total Suspended Particulate Matter, Respirable Suspended Particulate Matter PM_{10}, Ammonia, Carbon Monoxide, Lead, Ozone, Benzene Toluene Xylene (BTX), Polycyclic Aromatic Hydrocarbon (PAH) Benzo-a-pyrine & others and $PM_{2.5}$.

j. **Stack Gases/ Source Emission:** Particulate Matter, Sulphur Dioxide, Velocity & Flow, Carbon Dioxide, Carbon Monoxide, Temperature, Oxygen, Oxides of Nitrogen, Acid mist, Ammonia, Chlorine, Hydrogen Sulphide and Carbon Disulphide.

k. **Noise Level:** Noise Level Measurement (20-140 dBa) and Ambient Noise and Source Specific Noise.

l. **Meteorological:** Ambient Temperature, Wind Direction, Wind Speed, Relative Humidity, Solar Radiation and Rainfall

4. The laboratory shall compulsorily participate in the Analytical Quality Control (AQC) Exercise conducted by the CPCB to ascertain the capability of the laboratory and analysts. The lab shall submit quarterly progress report on the sample analysis carried out to CPCB.

5. The surprise inspection / periodic surveillance of the recognized environment laboratory will be undertaken to assess its proper functioning systematic operation and reliability of data generated at the laboratory by a Joint Team as per the Notification.

6. The laboratory should have the mandatory requisite accreditation and certificate of the ISO: 17025 and ISO:45001 as per rules. This recognition is subject to such accreditations and renewals as applicable and in case of serious non-compliance of any of the terms and conditions, the laboratory may be black listed for a minimum period of two years and civil/criminal proceedings, as applicable, may be initiated for performing functions on behalf of the Government in an unauthorized manner.

7. **M/s Vison Labs, Hyderabad, Telanguna** is required to apply for further renewal of recognition through online using CPCB web portal (https://epcbepalab.in/epalab) before expiry of recognition with mandatory accreditation / certification concerned.

Yours faithfully,

K. R 2013 12 4

(Dr. K. Ranganathan)
Scientist-E & Divisional Head
Instrumentation laboratory

डॉ. के. रंगनाथन / Dr. K. Ranganathan
वैज्ञानिक 'ई' / Scientist 'E'
केंद्रीय प्रदूषण नियंत्रण बोर्ड
Central Pollution Control Board
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय, भारत सरकार
(M/o Environment, Forest & Climate Change, Govt. of India)
परिवेश भवन, पूर्वी अर्जुन नगर, दिल्ली-110032
Parivesh Bhawan, East Arjun Nagar, Delhi-110032

National Accreditation Board For Testing and Calibration Laboratories
Certificate of Accreditation

National Accreditation Board for Testing and Calibration Laboratories

CERTIFICATE OF ACCREDITATION

VISON LABS

has been assessed and accredited in accordance with the standard

ISO/IEC 17025:2017

"General Requirements for the Competence of Testing & Calibration Laboratories"

for its facilities at

16-11-23/37/A, FLAT NO. 205, 2ND FLOOR, MOOSARAMBAGH, MALAKPET, HYDERABAD, TELANGANA, INDIA

in the field of

TESTING

Certificate Number: TC-5064

Issue Date: 26/11/2023 Valid Until: 25/11/2025

This certificate remains valid for the Scope of Accreditation as specified in the annexure subject to continued satisfactory compliance to the above standard & the relevant requirements of NABL.
(To see the scope of accreditation of this laboratory, you may also visit NABL website www.nabl-india.org)

Name of Legal Entity: Vison Labs

Signed for and on behalf of NABL

N. Venkateswaran
Chief Executive Officer

OHSAS Certificate Of Registration



Scan this QR Code with smartphone to verify the certificate

CERTIFICATE OF REGISTRATION

This is to certify that:

M/S VISON LABS

H.NO. 16-11-23/37/A, FALT NO. 205, OPP: RTA OFFICE, MUSARAMBAGH, MALAKPET, HYDERABAD, TELANGANA - 500036, INDIA

the management system of the above organisation has been assessed and found to comply with the requirements of the management system standards detailed below

STANDARD

ISO 45001:2018

Occupational Health & Safety Management System

Certification Scope

Providing Environmental Consultancy and Analytical Services

Certification Calendar

Certificate Number **UAF2006455192**	Date of Registration 23-Jul-2022
Client ID VI2154	Valid From 20-Jun-2023
Revision No. 01	Valid Until 19-Jun-2024

*Note: Certification cycle expiry date of this certificate is - 22-Jul-2025

Note: Surveillance 02 will be due in the month of Jun-2024

Authorised Signatory

*The full duration validity of this certificate is subject to successful & timely completion of the surveillance audit(s). This certificate remains the property of SAGACI Certifications Private Limited and shall have to be returned back when demanded. Information about this certificate can be inquired at the official website of certification.

SAGACI Entrusted Recognition

SAGACI CERTIFICATIONS PRIVATE LIMITED

THIS CERTIFICATE IS ISSUED BY SAGACI CERTIFICATIONS PRIVATE LIMITED ACCREDITED BY UNITED ACCREDITATION FOUNDATION INC. - UAF, 400 NORTH CENTER DR STE 207 NORFOLK, VA 23502, USA. AND WILL REMAINS VALID SUBJECT TO MAINTAINING ITS SYSTEM TO THE REQUIRED STANDARD(S). THIS WILL BE MONITORED REGULARLY BY SAGACI.

ISO Certificate Of Registration

Scan the QR Code with smartphone to verify the certificate

CERTIFICATE OF REGISTRATION

This is to certify that:

M/S VISON LABS

H.NO. 16-11-23/37/A, FALT NO. 205, OPP: RTA OFFICE, MUSARAMBAGH, MALAKPET, HYDERABAD, TELANGANA - 500036, INDIA

the management system of the above organisation has been assessed and found to comply with the requirements of the management system standards detailed below

STANDARD

ISO 9001:2015

Quality Management System

Certification Scope

Providing Environmental Consultancy and Analytical Services

Certification Calendar

Certificate Number **UAF200695191**	Date of Registration 23-Jul-2022
Client ID VI2154	Valid From 20-Jun-2023
Revision No. 01	Valid Until 19-Jun-2024

*Note': Certification cycle expiry date of this certificate is - 22-Jul-2025.

Note': Surveillance 02 will be due in the month of Jun-2024

Authorised Signatory

UNITED ACCREDITATION FOUNDATION UAF

IAF

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