THE NATIONAL GREEN TRIBUNAL
SOUTHERN ZONE BENCH, CHENNAI

COMMON REPORT IN
ORIGINAL APPLICATION NO. 145/2023

IN THE MATTER OF:

Kiran …APPLICANT

Versus

State of Karnataka and Ors …RESPONDENTS

AND

ORIGINAL APPLICATION NO. 146/2023

IN THE MATTER OF:

U. Kiran …APPLICANT

Versus

State of Karnataka and Ors …RESPONDENTS

INDEX

S. No.	Document	Pages
1.	Common Report on Behalf of the Department of Mines And Geology, State of Karnataka	**1-8**
2.	**Annexure R-1** True copy of Bathymetric Survey conducted by National Institute of Technology, Surathkal (2022)	**9-41**
3.	**Annexure R-2** True Copy of Guidelines dated 24.02.2011, 09.06.2011 and 08.11.2011 issued by MoEF & CC for extraction of sand from the sand bars.	**42-50**
4.	**Annexure R-3** True Copy of the Details of Sand Bars identified in Coastal Regulation Zone (CRZ) and Removable Sand Quantity as per CRZ Clearances 2018-19 & 2019-20, 2020-21 & 2021-22 and 2022.	**51-54**

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Date: 17.07.2024

BEFORE THE NATIONAL GREEN TRIBUNAL
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COMMON REPORT ON BEHALF OF THE DEPARTMENT OF MINES AND GEOLOGY, STATE OF KARNATAKA

MOST RESPECTFULLY SHOWETH:

1. That the instant original applications were filed before the Hon'ble Principal Bench of this Hon'ble Tribunal by way of letter petitions wherein the Applicants have requested for protecting the alleged destruction of various fish species in the area and thereby protect the interest of the Traditional Poor Fishermen depending on fishing for their livelihood.

2. It is submitted that the 7-member District Committee headed by Deputy Commissioner carries out the Bathymetric Survey through the National Institute of Technology, Karnataka (NITK), Surathkal every year. Based on the survey reports, the sandbars formed in the river are identified and action is taken for removal of sandbars specifically by non-mechanised boats and through manual methods. The detailed procedure from sand bars identification, allocation followed by the removal of sand bars are stated below.

3. **A. Identification of Sand Bars:** A Minimum of 1m of water depth is necessary for the movement of the fishing boats. Wherever the depth of water at all tidal levels is less than 1m, it indicates sand bar formations which have to be removed so as to enable easy movements of fishing boats. These sand bars are identified based on Bathymetric Survey carried out by NITK Surathkal every year. In such places sand bars mapping is done. True copy of Bathymetric Survey conducted by National Institute of Technology, Karnataka is annexed herewith as Annexure R1.

4. **B. <u>Sand Bar Allocation</u>**: Once the Bathymetric study report is available, the Department will invite the applications for temporary permits for sand bar removal through Newspaper Notification. The applications received are then scrutinized and placed before a 7

Member Committee headed by the Deputy Commissioner to look into each application seeking temporary permits for sand bar removal. This committee, based on the scientific Bathymetric study and MoEF&CC Guidelines for Sand bar identification issued under Office Memorandum No. 11-83/2005-IA-III (Vol. III) dated 24.02.2011, 09.06.2011 and 08.11.2011, gives approval for issue of permits for sand bar removal specifically by non-mechanised boats through manual methods. True Copy of Guidelines dated 24.02.2011, 09.06.2011 and 08.11.2011 issued by MoEF & CC for extraction of sand from the sand bars are annexed herewith as **Annexure R-2(Colly)**.

5. Based on the proceedings of the 7 members Committee, the eligible applicants are issued with temporary permits for sand removal with conditions as per the 7 members committee. The applications which do not fulfil the criteria as per MOEF Guidelines are rejected.

6. Number of Sand bars identified in River Phalguni and River Nethravathi for past 3 years are tabulated below:

Sl No.	Year	Number of Sand bars Identified		Total Tonnage (MT)
		River Phalguni	River Nethravathi	
1	2019-2020	09	13	11,53,222.86
2	2020-2021	04	08	10,03,150.8
3	2021-2022	05	09	9,99,105.6
	Total	**17**	**30**	**32,10,926.76**

7. Number of temporary sand permits identified in River Phalguni and River Nethravathi for past 3 years are tabulated below:

Sl. No	Year	Number of Applications Received Permits	Number of Temporary Sand removal Permits Issued	Number of Applications Rejected
1	2019-2020	105	105	0
2	2020-2021	318	106	212
3	2021-2022	282	148	82
	Total	**705**	**359**	**294**

8. As can be seen from the above table, 294 applications are rejected since they did not meet the conditions set out in the guidelines. True Copy of Details of Sand Bars identified in Coastal Regulation Zone (CRZ) and Removable Sand Quantity as per CRZ Clearances 2018-19 & 2019-20, 2020-21 & 2021-22 and 2022 are attached herewith as **Annexure R3(Colly).**

9. **Identification and allocation of temporary sand storage points (Sand Dhakke) -** After allocation of sand bar to the applicant by the seven-member committee the applicant has to apply for the area for storage of sand temporarily nearest to the Identified sand bar till the completion of leased period. Sand temporary storage area (**Sand *Dhakke***) is a place where the temporary permit holder stores the

sand temporarily once he removes the sand from the allocated sand bar in the river.

10. The applicant applies for the Sand Dhakke to the Seven-member District Committee chaired by the Deputy Commissioner with all land details for temporary storage of sand.

11. Scrutiny of the application and relevant documents submitted by the applicants is done at the first stage followed by the field inspection.

12. During field inspection following criteria is followed for allocation of Dhakke area:

    - CRZ, Revenue and Mines & Geology Department officers jointly inspect the Sand Dhakke and submit the report to the Mines & Geology Department;

    - GPS co-ordinates are registered for the requested sand Dhakke, confirming the approach road to transport sand from the allocated sand Dhakke with the GPS fitted vehicle.

13. Based on the report the District CRZ 07-member committee issues the temporary permits for Dhakke for storage of sand with conditions to eligible applicants. The applications which do not fulfill the criteria are rejected. The validity of issued permit for Dhakke is synchronized with the validity of CRZ clearance for removal of sand.

14. **Monitoring System** – The lease holder of sand bar/Dhakke area has to transport the sand through the Sand Bazaar app in the GPS fitted vehicle linked to One State One GPS software OSOG monitored in District Control room. Further, the permit holder has to store the sand temporarily in the Dhakke with specified GPS co-ordinates.

15. **Constitution of Task Force for Removal/Transportations and Storage: to Control Illegal Sand Bar Removal/Transportation and Storage:** To control the illegal sand bar removal in the CRZ area, the District administration has constituted a 24/7 task force consisting of members from Revenue, Police, Forest, and Fisheries Departments; CRZ Zilla Panchayath, Department of Mines and Geology, order dated 19.08.2022. The Task force is engaged in surveillance of illegal sand bar removal, storage and transportation and works based on the public complaints. There is also a system of levying penalty for the violators/those involved in illegal sand bar removal/storage and transportation in the district. Department of Mines and Geology has been booking cases and penalizing the violators there are check post across the District to check the illegal transportation.

16. **With Respect to the Allegations in the Applications** – It is submitted that the allegations made in the applications have been dealt with by the Joint Committee Reports filed in both the matters.

Dhiraj

17. The Joint Committee in O.A. No. 219/2022 (PB) [Now O.A. No. 145/2023 (SZ)] has *inter alia* observed the following:

> ***Observations made during inspection by Joint Committee:***
>
> ...
>
> *2. As can be seen from the map-1 above, Committee started Gurupura river survey from Fathima church, Thanneerbhavi village, travelled via boat towards upstream of the river, went up to Nayar Kuduru and checked if there were ongoing sand bar removal activities in the river. At the time of inspection, no sand bar removal was observed.*
>
> *3. The Joint Committee found river to be quite wide and the possibility of sand bars emerging due to river action was likely.*
>
> ...
>
> *8. The Joint Committee interacted with the officers' present and it was learnt that due diligence was exercised by District Committee while permitting sand bars. Not all sand bars were permitted for removal. Local objections from traditional fishermen, and ecological sensitivities were also considered. In such instances, sand bar removal was not permitted.*
>
> *9. As informed by Deputy Director, Department of Mines and Geology there is also a task force to engage in surveillance of illegal sand bar removal, storage and transportation based on the public complaints and a system of levying penalty for the violators/those involved in illegal sand bar removal/storage and transportation in the district.*

18. Further, in O.A. No. 592/2022 (PB) [Now O.A. No. 146/2023 (SZ)], the Joint Committee has observed the following:

> ***3.0. Observations made during inspection by Joint Committee**:*
>
> ...
>
> *2. At the time of inspection, no sand bar removal was observed however the committee observed illegally stored fresh sand at two points on the banks of the river which wase about 10 tonnes quantity each.*

...

7. The allocation of sand bar/Dhakke were avoided nearer to the Mangrove plantation and Islands (Kudru) by the authorities during the allocation of the same.

...

9. The Joint Committee interacted with the concerned officers present and it was learnt that due diligence was exercised by District Committee while permitting sand bars. Not all sand bars were permitted for removal. Local objections from traditional fishermen, and ecological sensitivities were also considered. In such Instances, sand bar removal was not permitted.

10. As informed by Deputy Director, Department of Mines and Geology there is also a task force to engage in surveillance of illegal sand bar removal, storage and transportation based on the public complaints and a system of levying penalty for the violators/those involved in illegal sand bar removal/storage and transportation in the district.

11. Committee found that there were no records regarding the fish catch pattern in that area to find out whether there is any reduction of fish catch over the years.

19. Hence, in view of the above it is submitted that all measures are taken as per law by the answering Department to ensure that illegal sand mining does not place and that the same does not resultantly pose a problem for the fishing communities. The applications may be disposed of in light of the same.

Deputy Director
Dept. of Mines & Geology
Mangaluru

Deputy Director
Department of Mines & Geology.
Mangaluru

Date: 17/7/2024

ANNEXURE _ R-1

Identification of Sand Deposits / Sand bars in CRZ Areas of River Phalguni and Netravati Riverine systems in Dakshina Kannada District

Technical Report

By

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10

Contents

1. Summary **2**

2. Introduction **3**

2.1 Scope and Objective 3

2.2 MoEF Guidelines 3

2.3 Phalguni and Netravati Rivers 6

2.4 Survey Equipment and Softwares 7

3. Methodology **11**

4. Sand deposits identification **12**

4.1 River Bathymetry and Sand Deposits Identification of Phalguni River 12

4.2 Sand deposits identification integrated themes 18

4.3 Removable Sand Assessment in Phalguni River 20

4.4 River Bathymetry and Sand Deposits Identification of Netravati River 21

5. Recommendations for environmentally Sustainable Sandbar removal **32**

6. Acknowledgements **33**

11

List Of Images

Fig 1. Bathymetry survey setup
Fig 2. Single Beam Echosounder
Fig 3. Trimble GA830 GNSS system
Fig 4. Soil Auger
Fig 5.Bathymetry Map of Phalguni
Fig 6.Sandbar Locations(P1-P3)
Fig 7.Sandbar Locations(P4-P5)
Fig 8. Fish Potential Zone - sample 1
Fig 9. Soil sample collection and analysis- sample 2
Fig 10. Soil sample collection and analysis - sample 3
Fig 11.CRZ Map of Phalguni River
Fig 12. CRZ Zones in Phalguni River(Google Earth locations)
Fig 13. Bathymetry Map of Netravati Downstream
Fig 14. Bathymetry Map of Netravati Upstream
Fig 15. Sandbar Locations of Netravati downstream(N1-N2)
Fig 16. CRZ Map of Netravati
Fig 17. Sandbar Locations(N3-N5)
Fig 18. Sandbar Locations(N6-N9)
Fig 19. Sediment sample analysis - Sample 4
Fig 20.Sediment sample analysis -Sample 5
Fig 21. Sediment sample analysis-Sample 6
Fig 22. Sediment sample analysis-Sample 7
Fig 23. CRZ Zones of Netravati

1. Summary

The two major rivers of coastal Karnataka namely Nethravathi and Gurupura (Phalguni) are perennial rivers in Dakshina Kannada district of Karnataka and are flowing westward and finally joining in the Arabian Sea. Major parts of these rivers are covered under the Coastal Zone Regulation (CRZ). The local community who is residing on the banks of these rivers mainly depends upon the fishing, limestone shell collection etc. Hence there is a practice to remove the sandbars which creates hindrance for the free movement of fishing and public transport boats in the river channels. A field survey was carried out between 30th December 2021 and 31st December 2021 for Phalghuni and Netravati River stretches with official representatives from the Fisheries Department, Coastal Regulation Zones (CRZ), District sand mining association and coordinated by the Department of Mines and Geology. The survey was taken up by the Department of Water Resources and Ocean Engineering, NITK, Surathkal, on a priority basis as per the request letter (ಸಂಖ್ಯೆ:ಗಭೂಇ/ಉನಿ(ಮಂ)/ಕಗಗು/ಮರಳು/2021-22) dated 23-12-2021 received from the Department of Mines and Geology. The expert team from NITK has identified about 14 sand deposits/bars using a Bathymetric survey in the CRZ zones of Phalguni and Netravati River in Dakshina Kannada District, Karnataka. During the field visit, the sand from identified sandbars were taken using an auger at different points in a sandbar for physical verification. The extent of the sandbar was fixed using GPS by recording coordinates and the bathymetry data is recorded using single-beam sonar systems. The data collected were analyzed using GIS-based software. The survey and analysis were carried out as per CRZ and MoEF guidelines such as the distance of upstream and downstream of the bridge, distance from the bank, Critically Vulnerable Coastal Areas (CVCA) and other protected areas. The estimated quantity of sand in each sandbar is provided in the report.

2. Introduction

Sand bars have common morphological features in rivers, estuaries, and coastal seas. In the marine environment, they are situated in subtidal and/or intertidal zones. Sediment in the river accumulates across the mouth of the river, it builds up to eventually create a sandbar that has the potential to extend the entire length of the river mouth and block the flow. These sand bars could cause an obstruction to the movement of fisheries boats as fishing is the main activity of the local community. To make free movement of fisheries boats, sand removal is inevitable. So, MoEF has made certain guidelines to remove the sand bars without disturbing the environment. The local people are allowed to do these sand removal activities legally with state government authority by paying a royalty to the government. Bathymetry survey (depth along with classification of sediments etc.) of riverbeds in CRZ areas is extremely efficient to assess the quantum of excess sand that may be extracted to facilitate smooth movement of fishing boats. Only if it was found that sand was available in excess in identified areas, then permits would be issued for sand removal.

2.1 Scope and Objective

Identification of the sandbar locations in Phalguni and Netravati nearby with regard to the hindrance caused to maintain a draft of 1.25m for the free movement of country fishing boats in the riverbeds of the CRZ region.

2.2 MoEF Guidelines

Following considerations shall be kept in mind for sand/gravel mining while approving the mining plan:

1. Parts of the river that experience deposition or aggradation shall be identified. The Leaseholder/ Environmental Clearance holder may be allowed to extract the sand and gravel deposit in these locations to manage the aggradation problem.
2. The distance between sites for sand and gravel mining shall depend on the replenishment rate of the river. The sediment rating curve for the potential sites shall be developed and checked against the extracted volumes of sand and gravel.
3. Sand and gravel may be extracted across the entire active channel during the dry season.
4. Abandoned stream channels on the terrace and inactive floodplains are preferred rather than active channels and their deltas and floodplains. The stream should not be diverted to form the inactive channel.
5. Layers of sand and gravel which could be removed from the river bed shall depend on the width of the river and replenishment rate of the river.
6. Sand and gravel shall not be allowed to be extracted where erosion may occur, such as at the concave bank.
7. Segments of the braided river system should be used preferably falling within the lateral migration area of the river regime that enhances the feasibility of sediment replenishment.
8. Sand and gravel shall not be extracted up to a distance of 1 kilometer (1 km) from major bridges and highways on both sides, or five times (5x) of the span (x) of a bridge/public civil structure (including water intake points) on up-stream side and ten times (10x) the span of such bridge on the down-stream side, subjected to a minimum of 250 meters on the upstream side and 500 meters on the downstream side.
9. The sediment sampling should include the bed material and bed material load before, during, and after the extraction period. Develop a sediment rating curve at the upstream end of the potential reach using the surveyed cross-section. Using the historical or gauged flow rating curve, determine the suitable period of high flow that can replenish the extracted volume. Calculate the extraction volume based on the sediment rating curve and high flow period after determining the allowable mining depth. Enforcement & Monitoring Guidelines for Sand Mining are as follows:

10. Sand and gravel could be extracted from the downstream of the sand bar at river bends. Retaining the upstream one to two-thirds of the bar and riparian vegetation is accepted as a method to promote channel stability.
11. The flood discharge capacity of the river could be maintained in areas where there is a significant flood hazard to existing structures or infrastructure. Sand and gravel mining may be allowed to maintain the natural flow capacity based on surveyed cross-section history. Alternatively, off-channel or floodplain extraction is recommended to allow rivers to replenish the quantity taken out during mining.
12. The Piedmont Zone (Bhabhar area) particularly in the Himalayan foothills, where riverbed material is mined, this sandy-gravelly track constitutes excellent conduits and holds the greater potential for groundwater recharge. Mining in such areas should be preferred in locations selected away from the channel bank stretches.
13. Mining depth should be restricted to 3 meters and the distance from the bank should be ¼th or river width and should not be less than 7.5 meters.
14. The borrow area should preferably be located on the riverside of the proposed embankment because they get silted in the course of time. For a low embankment, less than 6 m in height, the borrow area should not be selected within 25 m from the toe/heel of the embankment. In the case of the higher embankment, the distance should not be less than 50 m. In order to obviate the development of flow parallels to the embankment, crossbars of width eight times the depth of borrow pits spaced 50 to 60-meter center-to-center should be left in the borrow pits

2.3 Phalguni and Netravati Rivers

Dakshina Kannada District is located N-W part of Karnataka State falls in between Latitude: N-12° 51' 45.00"and longitude of E-74° 55' 20.00"The District has two major estuaries viz. Nethravathi and Gurupura, The Netravati estuary is located in between the district, or south from Nethravathi river-mouth.The river is the lifeline to some 10 lakh people in the Dakshina Kannada district and supports the livelihoods of tens of thousand of people including fishermen on the coast of Dakshina Kannada. There are many dams built across this river for the generation of electricity. One of the important dams built across Nethravathi river is the Thumbe dam at Thumbe. Phalguni River lies at 12.9335° N, 74.9003° E. These two major rivers are perennial in nature and are flowing towards the west and joining the Arabian Sea. A large portion of these rivers are covered under the Coastal Regulation Zones (CRZ). The local community who is residing on the banks of these rivers mostly depends upon the fishing, sand collection, and limestone shell collection, etc. in these rivers for their livelihood. Traditionally, the local community collects the sand from the sandbars and sells it in the local market after paying royalty as per the state Government periodically. They also practice doing the removal of the sand from the sandbars to make easy movement for the fishermen and public transport boats.

In Phalguni river, the CRZ area covers 16 km from the river mouth to the location nearing Tumbe. The bathymetry survey was done on the entire CRZ zone in the river stretch and sediment sampling analysis was also carried out on 30th December 2021. For Netravati, a total of 9 km along the stretch which is categorized under the CRZ area in the river stretch was covered during the bathymetry survey on 31st December 2021 and the selected datasets have been shared.

2.4 Survey Equipment and Softwares

The following equipment/software was used for the survey. *Figure 1* shows the whole setup of the equipment used in the survey.

Fig 1 .Bathymetry survey setup

1) Single Beam Echosounder with 235KHz Active Transducer:

The active Transducer has a Beam Spread +/- 4 Degrees minimum and depth Ranges from 0.30m to 75.00m. Sound Velocity Ranges from 1400 to 1600 m/sec. Determine water depth by measuring the travel time of a short sonar pulse, or "ping". The sonar ping is emitted from a transducer positioned just below the water surface, and the SBES listens for the return echo from the bottom. In reality, the sonar energy will be reflected by anything that may be in the path of the sound – fish, debris, aquatic vegetation, and suspended sediment. Hydrographic survey-grade single beam echo sounders are able to provide accurate bottom depths by distinguishing the real bottom from any spurious signals in the returned echo. *Figure 2* shows the transducer used in the survey.

Fig 2. Single Beam Echosounder
(Source:http://www.ohmex.com/sonarmite.html)

2) Trimble GA830 GNSS system:

The Trimble GA830 GNSS antenna is designed to support centimeter-level accuracy for land and marine applications. The 5/8" x 11 female threaded mount and rugged enclosure allow the antenna to be used in the harshest conditions. *Figure 3* shows the GNSS antenna and receiver setup.

Fig 3. Trimble GA830 GNSS system

3) Soil Auger

It is a mechanical tool used to excavate the sand below water for testing based on its gravel size. *Figure 4* shows the soil auger used in the bathymetry survey.

Fig 4. Soil Auger

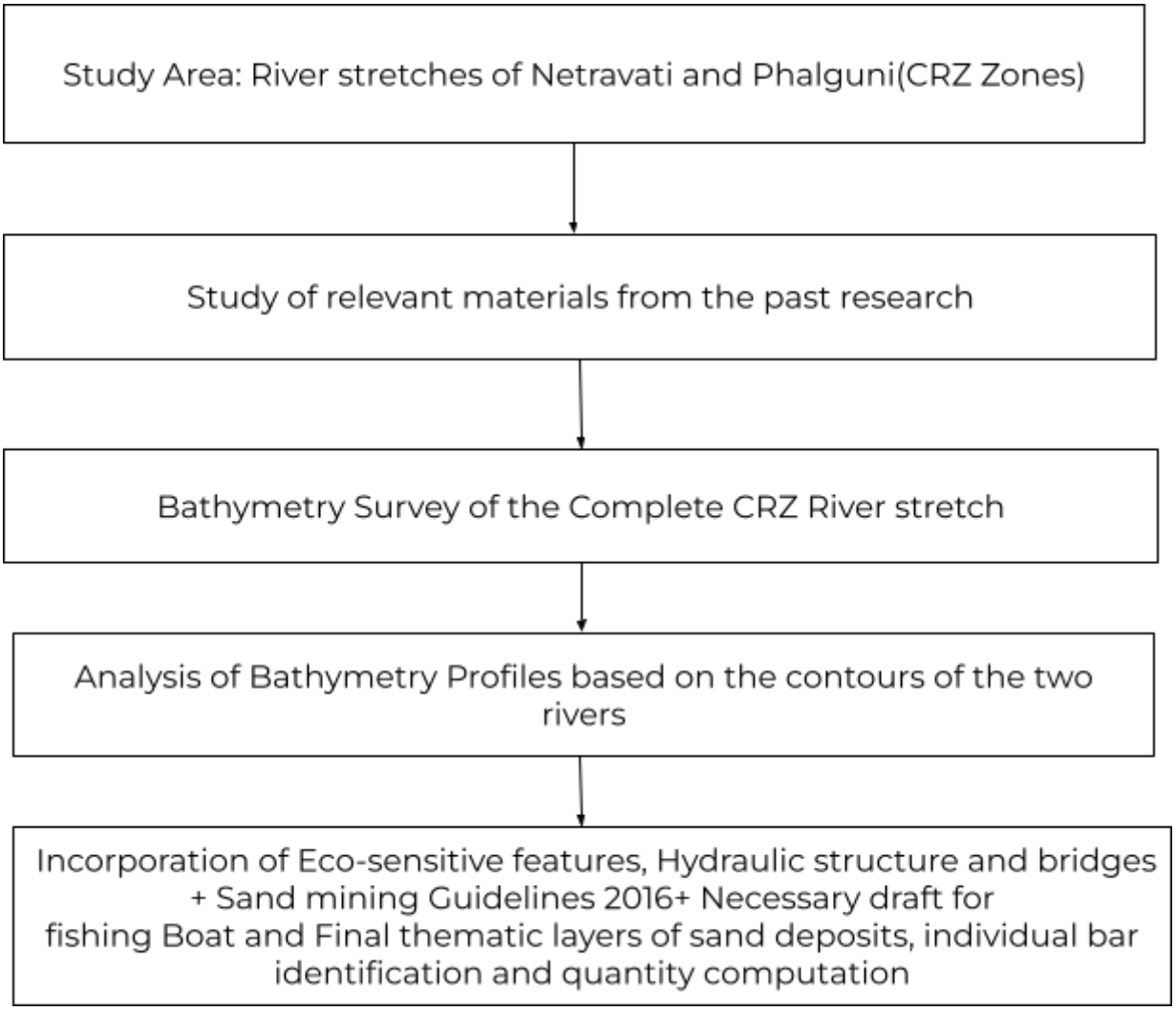
Software Used: Softwares used in the analysis and mapping of bathymetry data are given below in Table 1.

Software	***Purpose***
Google Earth	• *Is a computer program, formerly known as Keyhole EarthViewer, that renders a 3D representation of Earth-based primarily on satellite imagery.* • *It is used to extract the location details of sandbars.*
HydrasPro i & Sonarmite+	• *It is used in Data Acquisition* • *Tools for various Sensors Configuration, Survey Planning, Data Logging, and various textual & graphical displays for real-time visualization of the survey are provided.*
ArcGIS 10.8	• *Is used for creating maps, visualizing the sandbar locations and to prepare location maps, and conducting spatial analysis.*

Table 1. Software and Purposes

3. Methodology

The section to follow explains the broad methodology followed, to delineate sand deposits using state-of-the-art technology. The broad methodology adopted in the study is shown below.



4. Sand deposits identification

The raw data collected during the survey was subjected to data validation, quality check, and data processing. Sandbar locations are plotted on Google Earth. Field data superimposed are; locational data on Islands, Sand Islands, bridges, mangroves and high-tension lines if there is any.

4.1 River Bathymetry and Sand Deposits Identification of Phalguni River

In river Phalguni, about 5 sandbars were identified within the CRZ zone of the river.The sandbar location and the location of the data sampling has been given in Table 1. An eye sketch showing the location of these sand bars are shown in the below figures and the sandbars are marked as P1 to P5.

Bathymetry Map of Phalguni

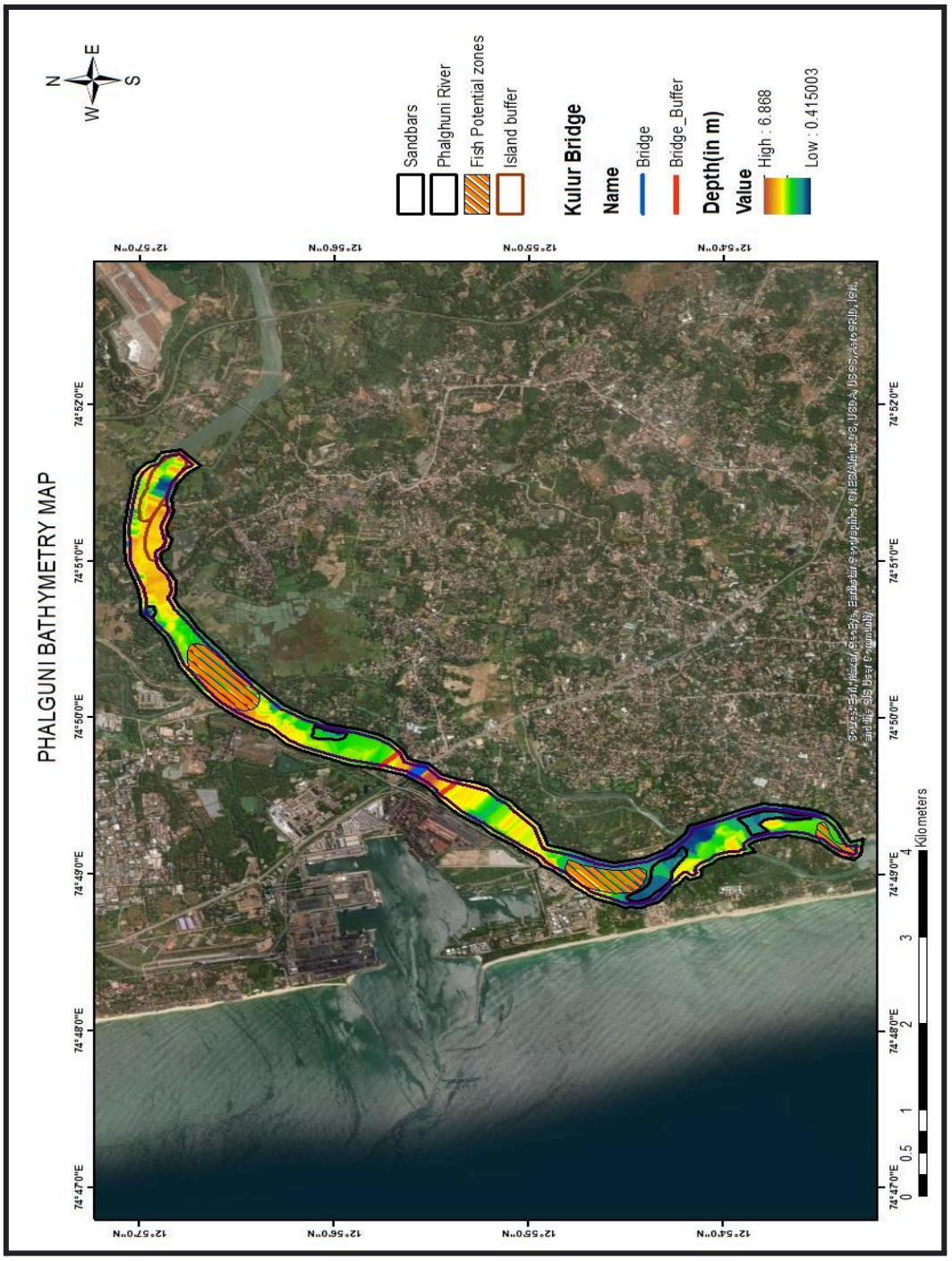


Fig 5.Bathymetry Map of Phalguni

Sandbar Locations in Phalguni River

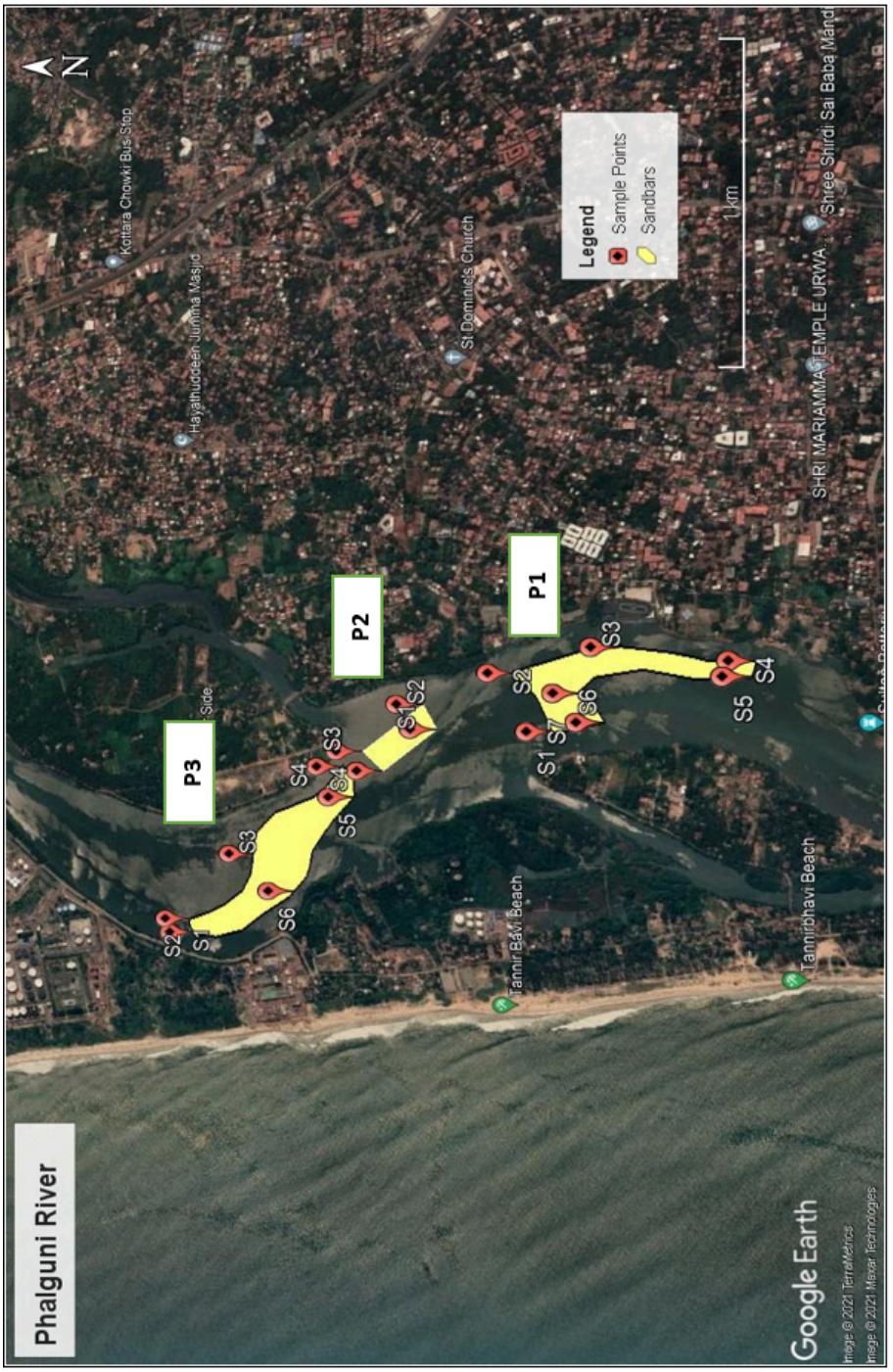


Fig 6.Sandbar Locations(P1-P3)

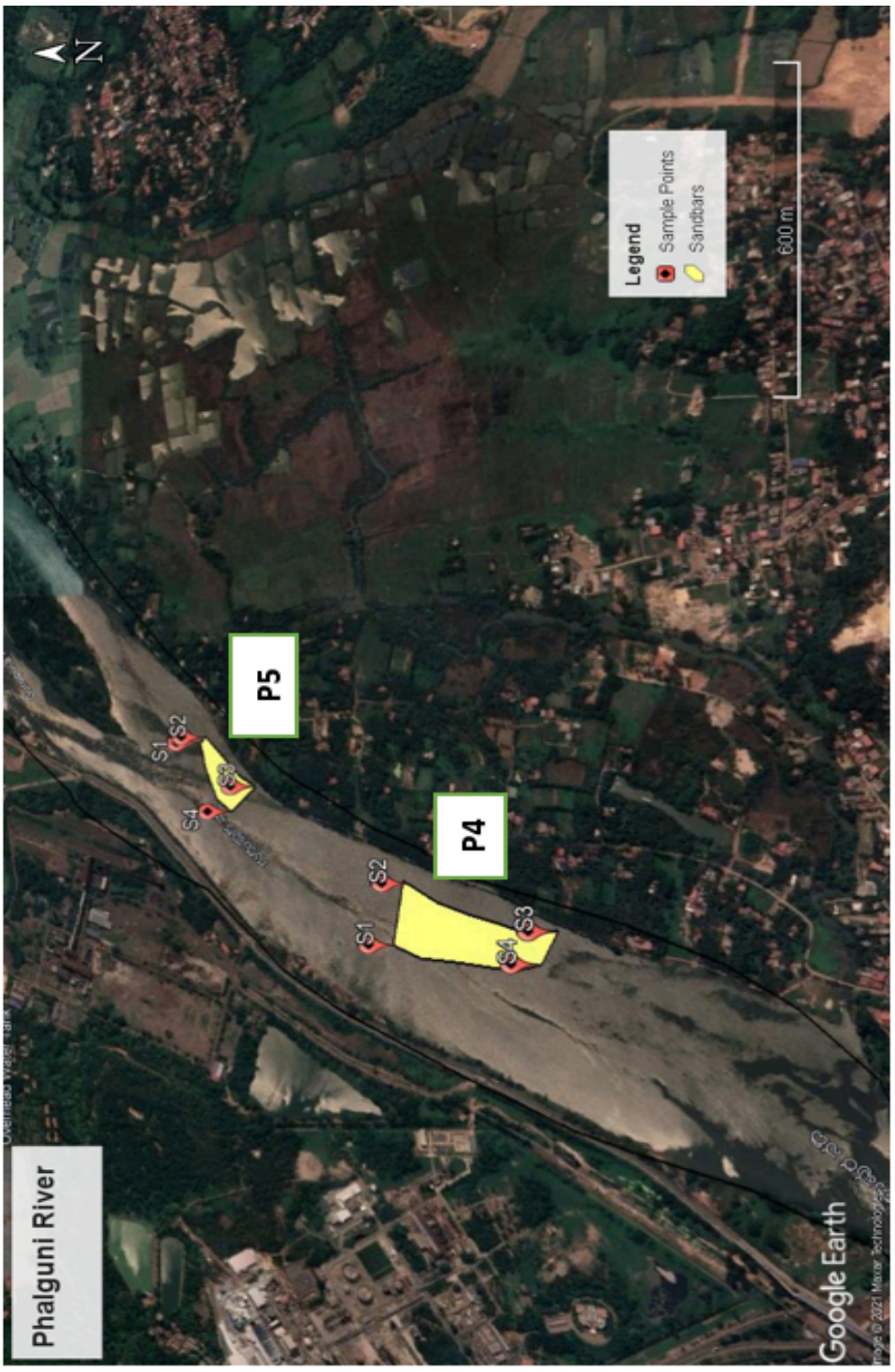


Fig 7.Sandbar Locations(P4-P5)

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Samples taken from the survey in Phalguni River stretch

Fig 8. Fish Potential Zone - sample 1

Fig 9. Soil sample collection and analysis- sample 2

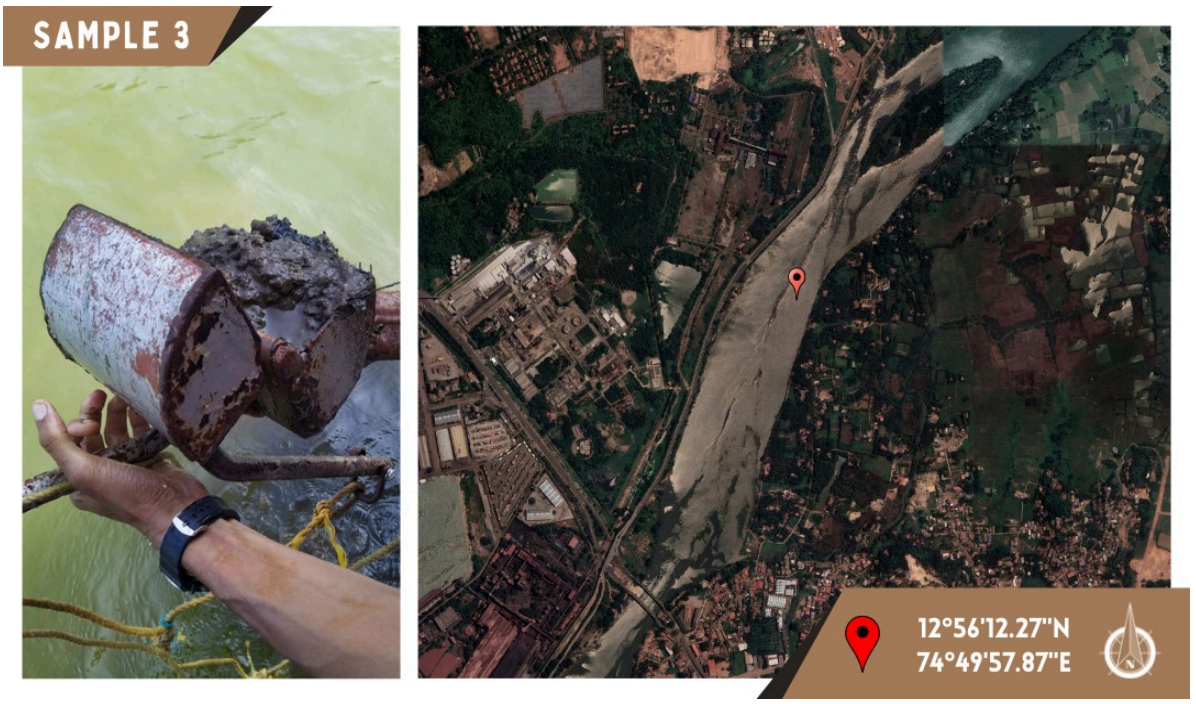

Fig 10. Soil sample collection and analysis - sample 3

The soil samples were collected using the soil auger during the bathymetric survey in Phalguni River stretch and sediments are verified accordingly. The particular sediment sample images with each latitude and longitude are provided in the above figures.*(Fig 8-10).* While identification of the sandbars, fish breeding zones were found and locations were marked and those areas were excluded.

4.2 Sand deposits identification integrated themes

In order to identify the sand deposited areas following themes were integrated into the respective river stretches of CRZ. The CRZ maps were georeferenced and the sand bar locations mapped were overlaid to identify the geological areas.

They being;

a) Fish breeding zones

b) Sand islands

c) Mangroves

d) Bridges

e) Sustainable Sand Mining Management Guidelines 2016

f) Textural analysis data

g) New construction such as bridges, vented dams, district boundary

While identifying sand bars, the mentioned CRZ zones like ecologically sensitive areas, fish breeding zones(CRZ-1) and bridge/ dam buffers were excluded. On analysis, the identified sand deposits are pictorially represented in maps.

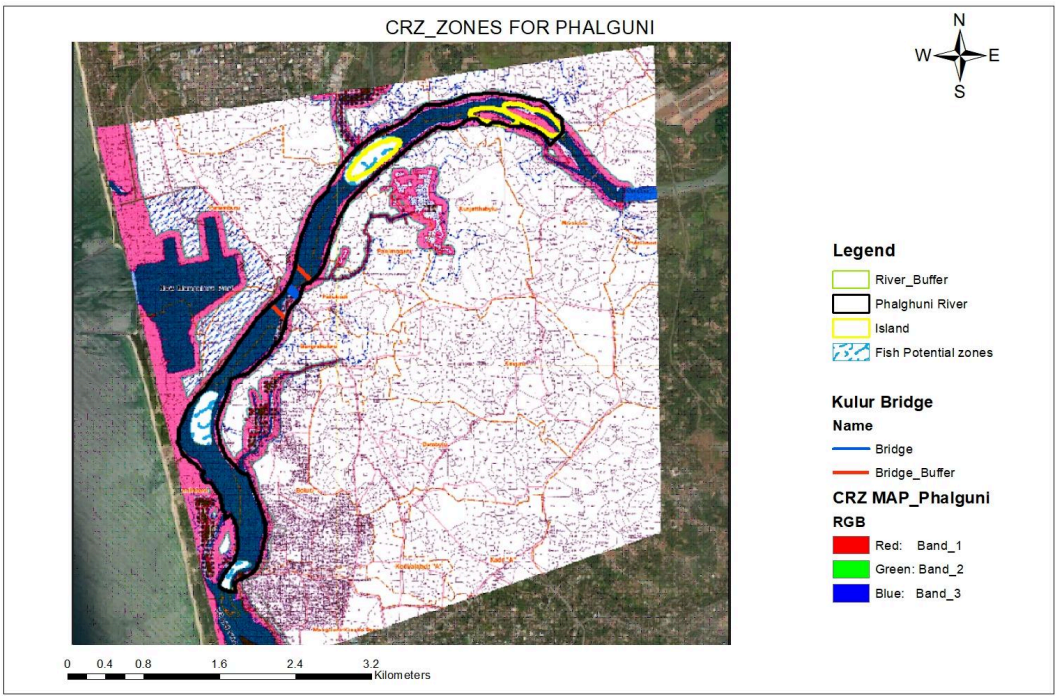

Fig 11.CRZ Map of Phalguni River

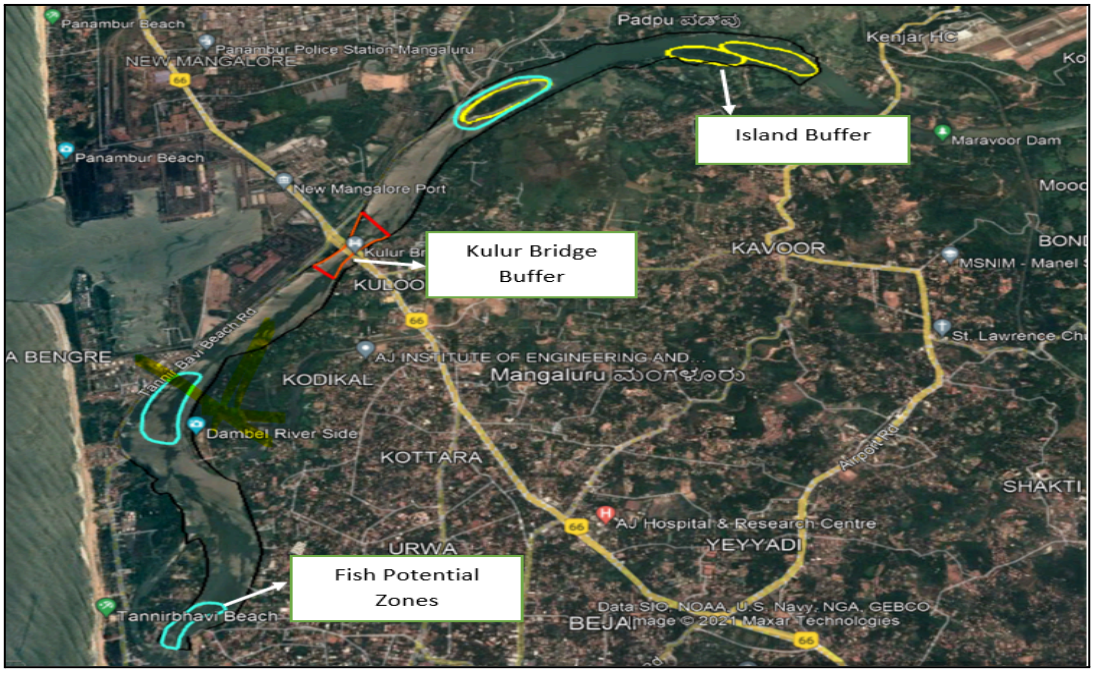

Fig 12. CRZ Zones in Phalguni River(Google Earth locations)

4.3 Removable Sand Assessment in Phalguni River

In River Phalguni , five sandbar locations were identified by excluding the CRZ zones like islands buffers, fish breeding zone, ecologically sensitive areas like mangroves, sand dunes, and intertidal zones, buffered zone of the river bank as per the norms and the locations have been marked in maps. To maintain a draft of 1.25m for the country fishing boats depending on the bathymetry of the river average depth of sand removal vary from 0.4 m to 1.25 m. The bulk density of sand is measured in the soil lab based on the sediment sample collected in the field and it is about 1.7 ton/m^3. Table 2 shows the areal extent, the latitude & longitude of the corner points of the identified sandbars and volume in tonnes of each sandbar location. The quantity of the sand deposit that can be removed from Sandbars of Phalguni is 3,72,114 Tons.

Name	Labels	Latitude	Longitude	Area(m^2)	Average Depth of sand(m)	Volume(m^3)	Bulk Density (Ton/m^3)	Volume (Ton)
P1	S1	12°53'51.39"N	74°49'14.83"E	67,132	1.15	77201.48	1.7	13124ā2.52
	S2	12°53'55.28"N	74°49'21.03"E					
	S3	12°53'45.46"N	74°49'23.90"E					
	S4	12°53'33.10"N	74°49'22.59"E					
	S5	12°53'33.59"N	74°49'20.99"E					
	S6	12°53'48.93"N	74°49'18.98"E					
	S7	12°53'46.70"N	74°49'15.95"E					
P2	S1	12°54'2.97"N	74°49'14.71"E	22,396.00	0.95	21276.2	1.7	36169.54
	S2	12°54'4.46"N	74°49'17.45"E					
	S3	12°54'10.73"N	74°49'11.99"E					
	S4	12°54'8.50"N	74°49'9.89"E					
P3	S1	12°54'29.02"N	74°48'49.65"E	76,822.04	0.95	72980.94	1.7	124067.6
	S2	12°54'30.04"N	74°48'51.34"E					
	S3	12°54'22.71"N	74°48'56.46"E					
	S4	12°54'13.08"N	74°49'9.66"E					
	S5	12°54'11.45"N	74°49'6.97"E					
	S6	12°54'18.51"N	74°48'55.13"E					
P4	S1	12°56'6.59"N	74°49'52.15"E	30,966.60	1.25	38708.25	1.7	65804.03
	S2	12°56'5.68"N	74°49'56.49"E					
	S3	12°55'56.15"N	74°49'54.17"E					
	S4	12°55'57.21"N	74°49'51.92"E					
	S5	12°54'49.71"N	74°49'2.45"E					
P5	S1	12°56'21.22"N	74°50'5.75"E	8,724.08	1	8,724.01	1.7	14830.94
	S2	12°56'20.80"N	74°50'6.22"E					
	S3	12°56'16.82"N	74°50'2.68"E					
	S4	12°56'18.68"N	74°50'0.73"E					

Table 2. Sand Tonnage estimation of Phalguni

Total volume estimation of Phalguni River sandbars is around 3,72,114 tonnes.

4.4 River Bathymetry and Sand Deposits Identification of Netravati River

Though Netravati and Gurupura(Palghuni) originate in the mountains of the Western Ghats, Netravati River has a larger catchment area and has high flows during monsoon. The amount of sand deposited in the CRZ Zone is fairly high. Further, the meandering river course facilitates the process of deposition in conducive locations. However the quantity of sand deposition that is carried by the river flow depends on the number of factors. Along with other factors, the flow rate and the volume of water that flow in the monsoon season are primarily influencing the sediment rate of flow.

The sand bars are normally formed at the inner side of the river bends at meanders and some of the islands are covered by mangroves which need to be protected. It is very essential to protect the river regime and not to exploit the situation by removing excess sand beyond the average river bed level. The traditional method of removing sand helps to maintain river regime safety.

In river Netravati, about 9 sandbars were identified within the CRZ zone of the river. The sandbar location and the location of the data sampling has been given. An eye sketch showing the location of these sandbars is shown in the below figures and the sandbars are marked as N1 to N9 . While identifying sand bars, the CRZ zones like ecologically sensitive areas, fish breeding zones(CRZ-1) and bridge/ dam buffers were excluded. Sand should not be removed to a distance of 50M from the river bank and sand removal can be engaged upto average bed level(1.25 m).

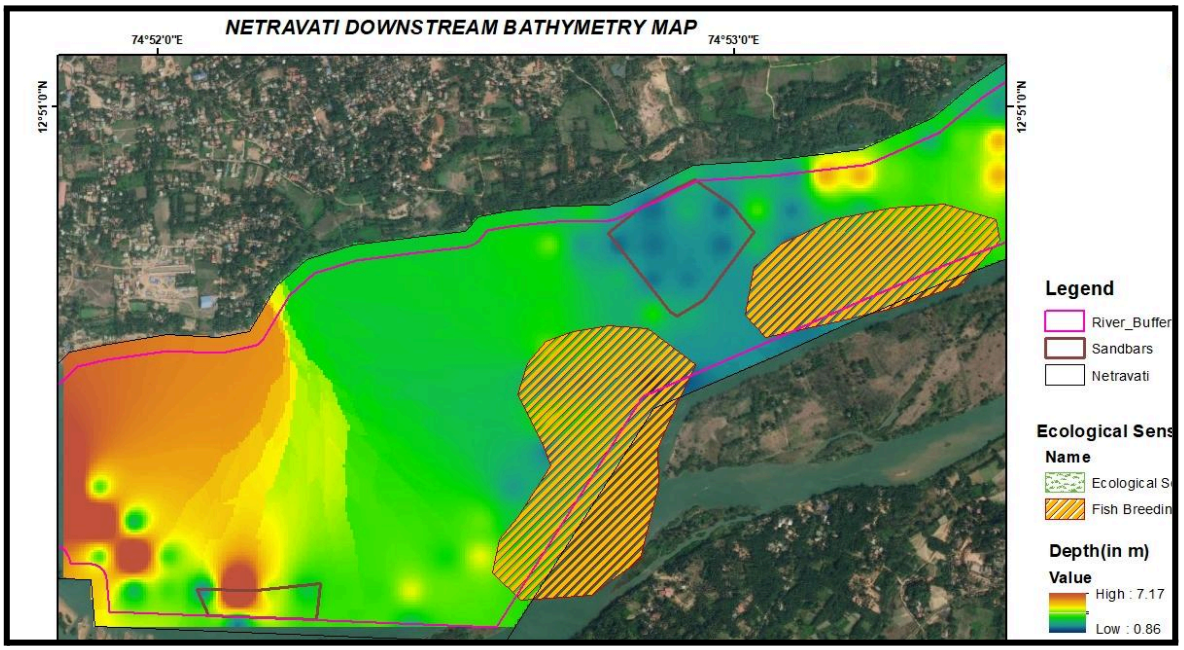

Fig 13. Bathymetry Map of Netravati Downstream

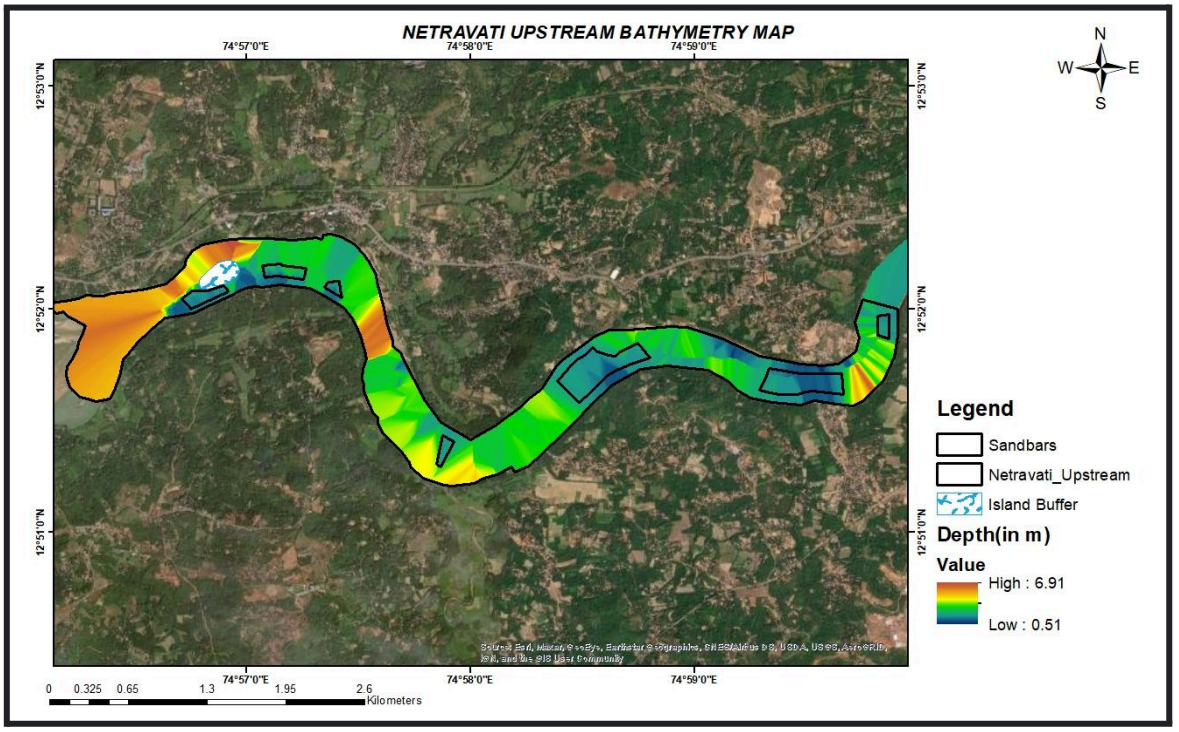

Fig 14. Bathymetry Map of Netravati Upstream

Sandbar Locations of Netravati Downstream

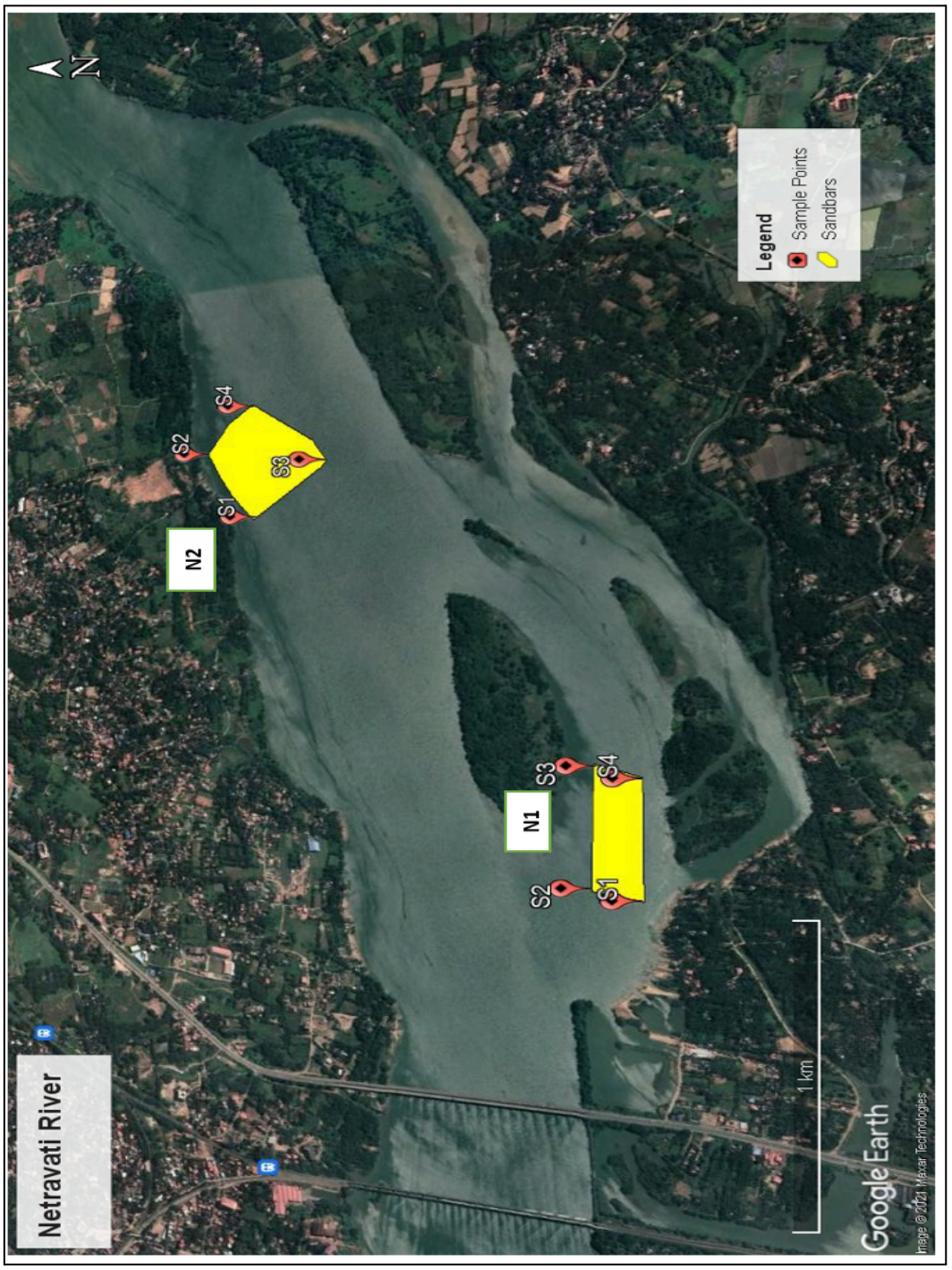

Fig 15. Sandbar Locations of Netravati downstream(N1-N2)

CRZ Zones of Netravati (Downstream)

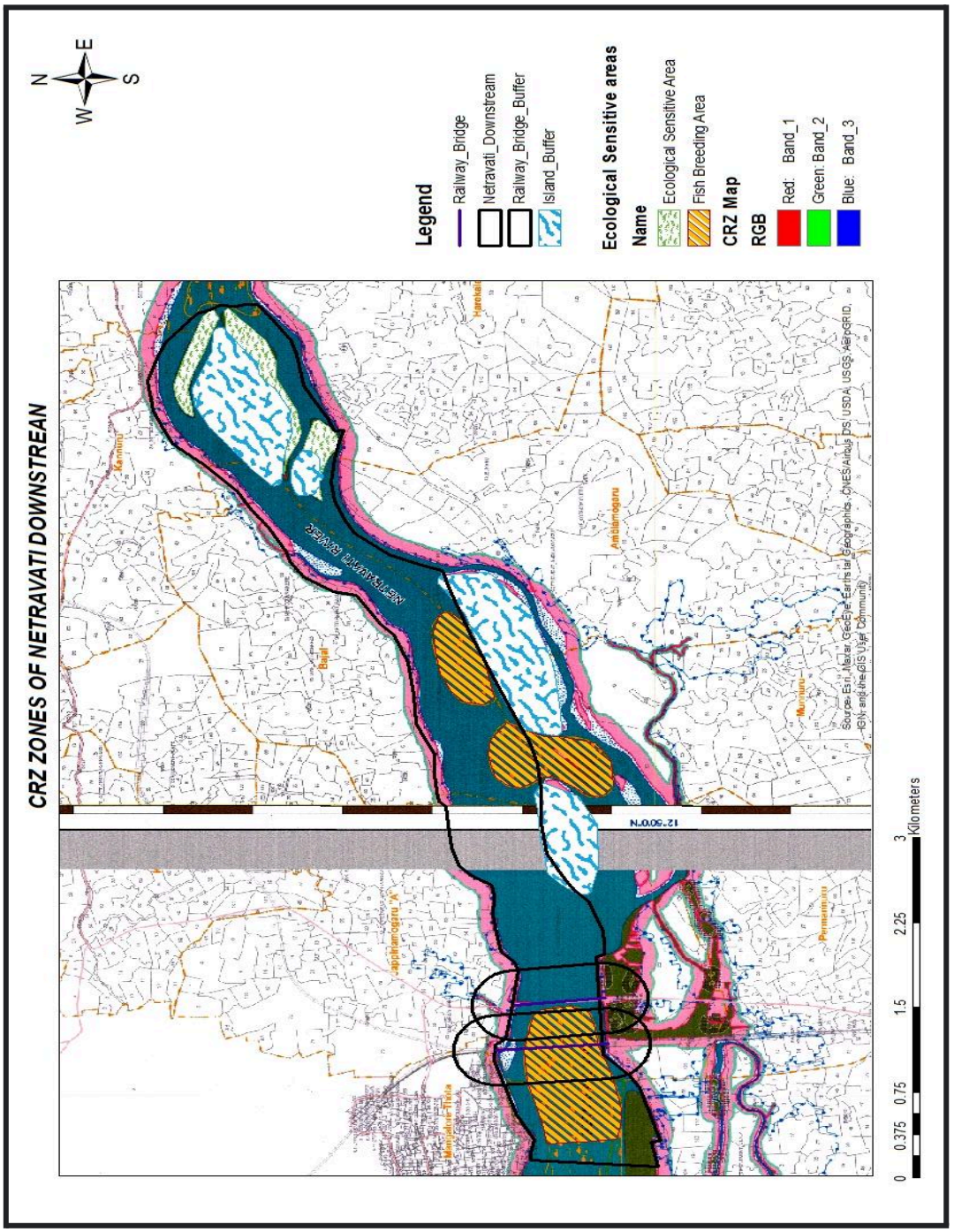

Fig 16. CRZ Map of Netravati

Sandbar locations of Netravati Upstream

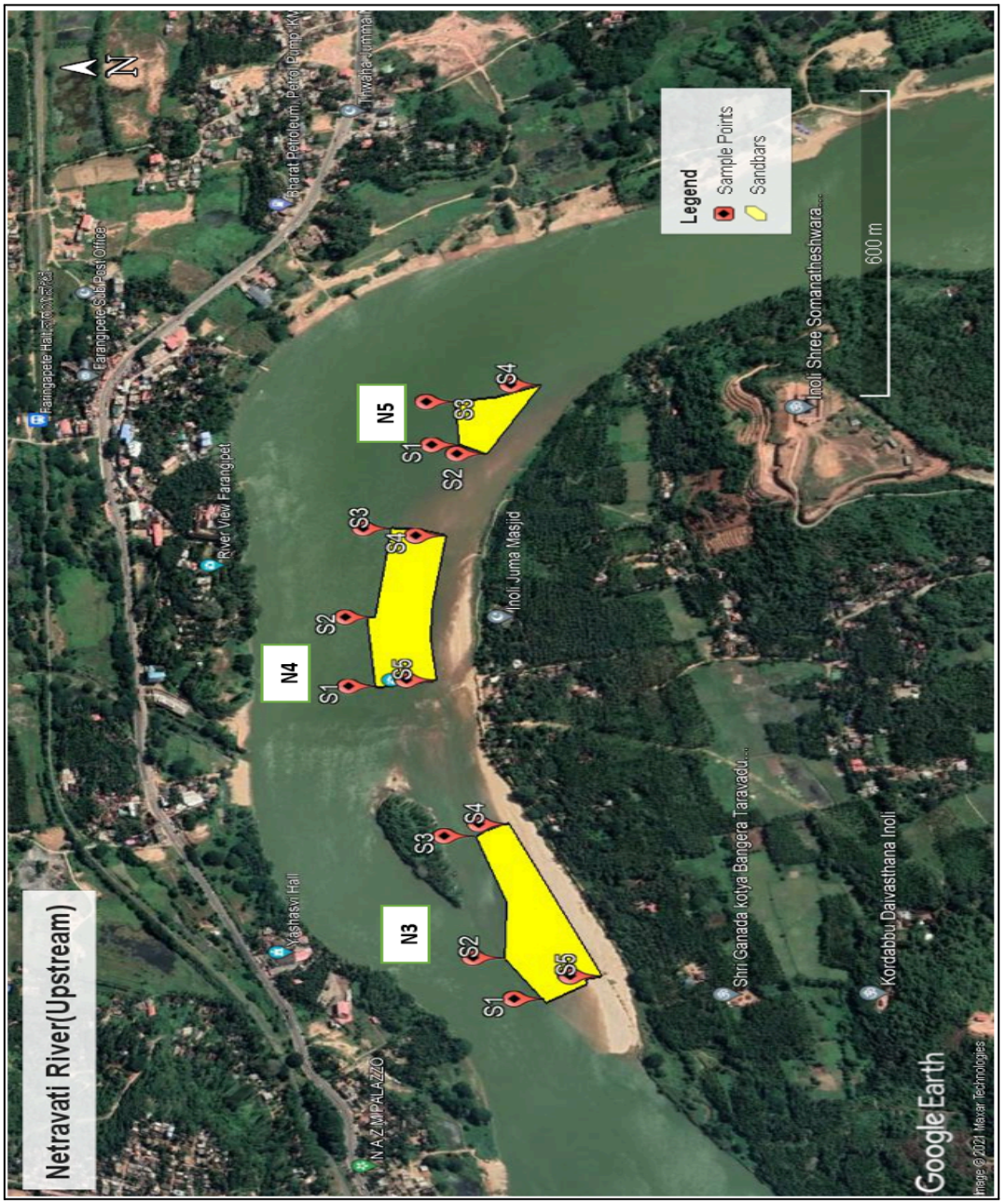

Fig 17. Sandbar Locations(N3-N5)

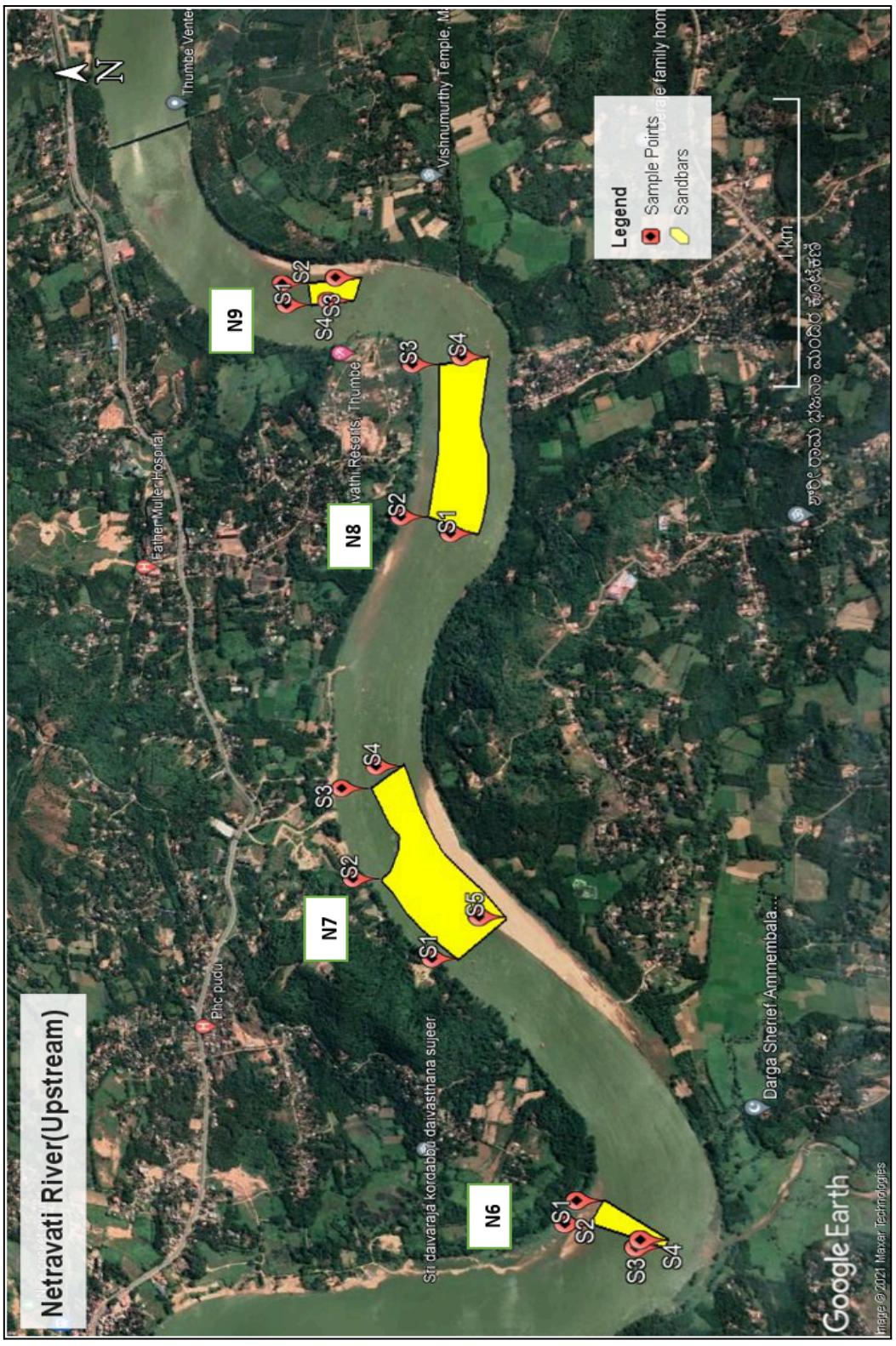

Fig 18. Sandbar Locations(N6-N9)

Samples taken from the survey in Netravati River stretch

Fig 19. Sediment sample analysis - Sample 4

Fig 20.Sediment sample analysis -Sample 5

Fig 21. Sediment sample analysis-Sample 6

Fig 22. Sediment sample analysis-Sample 7

The four soil samples were collected using the soil auger during the bathymetric survey in Netravati River stretch and sediments are verified accordingly. The sediment sample locations are mentioned in the above figures.*(Fig 19-22)*

CRZ Zones of Netravati (Upstream)

Fig 23. CRZ Zones of Netravati

Removable Sand Assessment in Netravati River

In River Netravati, 9 sandbar locations were identified by excluding the CRZ zones like islands buffers, fish breeding zone, ecologically sensitive areas like mangroves, sand dunes, and intertidal zones, buffered zone of the river bank as per the norms and the sandbar locations of Netravati Downstream are shown below. The areal extent, the latitude & longitude of the corner points of the identified sandbar are provided. To maintain a draft of 1.25m for the country fishing boats, depending on the bathymetry of the river, the average depth of sand removal varies according to the table(*Table 3 and Table 4*).

Name	Labels	Latitude	Longitude	Area(m^2)	Average Depth of sand(m)	Volume(m^3)	Bulk Density (Ton/m^3)	Volume (Ton)
N1	S1	12°50'6.17"N	74°52'1.82"E	61,134.08	0.7	42793.86	1.7	72749.56
	S2	12°50'10.90"N	74°52'2.70"E					
	S3	12°50'10.44"N	74°52'16.81"E					
	S4	12°50'6.13"N	74°52'15.68"E					
N2	S1	12°50'48.48"N	74°52'47.27"E	1,09,517.24	0.9	98565.52	1.7	167561.4
	S2	12°50'52.24"N	74°52'55.93"E					
	S3	12°50'38.27"N	74°52'54.14"E					
	S4	12°50'46.76"N	74°53'1.78"E					

Table 3. Sand Tonnage estimation of Netravati (Downstream)

Total volume estimation of Netravati River(Downstream)sandbars is around 2,40,310 tonnes

Name	Labels	Latitude	Longitude	Area(m^2)	Average Depth of sand(m)	Volume(m^3)	Bulk Density (Ton/m^3)	Volume (Ton)
N3	S1	12°52'2.94"N	74°56'43.04"E	31039.6	0.9	27935.7	1.7	47490.59
	S2	12°52'5.03"N	74°56'45.63"E					
	S3	12°52'6.53"N	74°56'54.05"E					
	S4	12°52'4.70"N	74°56'55.07"E					
	S5	12°52'0.14"N	74°56'45.05"E					
N4	S1	12°52'11.68"N	74°57'4.52"E	31583.33	0.85	26845.84	1.7	45637.92
	S2	12°52'11.85"N	74°57'9.55"E					
	S3	12°52'10.86"N	74°57'15.99"E					
	S4	12°52'8.03"N	74°57'15.40"E					
	S5	12°52'8.51"N	74°57'5.06"E					
N5	S1	12°52'5.75"N	74°57'21.17"E	9955.07	1.15	11448.34	1.7	19462.18
	S2	12°52'7.23"N	74°57'21.90"E					
	S3	12°52'7.44"N	74°57'24.87"E					
	S4	12°52'3.10"N	74°57'25.75"E					
N6	S1	12°51'25.60"N	74°57'52.51"E	16574.09	0.9	14916.71	1.7	25358.38
	S2	12°51'24.30"N	74°57'55.46"E					
	S3	12°51'17.70"N	74°57'52.10"E					
	S4	12°51'18.22"N	74°57'51.21"E					
N7	S1	12°51'40.40"N	12°51'49.80"N	124648.2	0.8	99718.53	1.7	169521.5
	S2	12°51'49.80"N	74°58'33.14"E					
	S3	12°51'51.21"N	74°58'44.91"E					
	S4	12°51'47.01"N	74°58'47.94"E					
	S5	12°51'34.99"N	74°58'29.39"E					
N8	S1	12°51'38.26"N	74°59'17.68"E	83199.22	0.7	58239.46	1.7	99007.07
	S2	12°51'44.03"N	74°59'20.34"E					
	S3	12°51'42.70"N	74°59'39.66"E					
	S4	12°51'36.92"N	74°59'40.11"E					
N9	S1	12°51'58.11"N	74°59'49.27"E	15448.24	0.9	13903.5	1.7	23635.81
	S2	12°51'58.44"N	74°59'52.17"E					
	S3	12°51'52.11"N	74°59'52.07"E					
	S4	12°51'52.89"N	74°59'49.22"E					

Table 4. Sand Tonnage estimation of Netravati (Upstream)

Total volume estimation of Netravati River(upstream)sandbars is around 4,06,477.62 tonnes

5. Recommendations for environmentally Sustainable Sandbar removal

- Integrating all eco-sensitive and other features of importance, areas for sand removal are scientifically identified. However, extraction of sand may be carried out only in a slice /layer wise pattern over the river bed.
- To maintain a draft of 1.25 m for the country fishing boats depending on the bathymetry of the river average depth of sand removal vary as mentioned in the tables
- No stream should be diverted while removing the deposited sand. No natural water course

and/or water resources are obstructed in the process.

- Sufficient spacing shall be ensured from one bar to another bar and sufficient time gap shall be provided for replenishment before undertaking sand deposit removal in the same bar.
- Appropriate safety zones (a distance of 200m – 500m) shall be maintained in proximity to any bridge/and/or embankment and other permanent structures. No sand removal shall be undertaken in such safe/buffer zones. The guidelines issued by the Ministry of Mines in this regard shall be adhered to.
- All the bars are identified at 50m away from the river bank.
- Flood capacity in the river should be maintained in areas where there are significant flood hazards to existing structures or infrastructure.
- Sand deposit removal shall be undertaken only by manual method without the use of earthmoving equipment such as JCB etc. Use of mechanized boats for sucking sand from in stream areas shall be strictly prohibited.
- Demarcation of sand bars with suitable boundary marks and geo-referencing should be done with the coordinates provided in the Report.
- The transparency in the entire process of sand deposit removal to be maintained while issuing the permission
- Sand deposit removal to be carried out during the day i.e., 6 AM to 6 PM.
- Sand removal activity to a distance of a minimum of 50m is not permitted around islands, mangroves, kudrus and also from both the river banks. Materials used for removing the sand should not be left back in the river
- No damage should be caused to the environment, to the river banks and the ecological system.if any damage is observed, sand removal should be stopped.
- An important recommendation is that Fish breeding zones, unlike other eco-sensitive features, are not explicitly seen on the ground. While removing the sand deposits, measures should be ensured to protect them by the appropriate authorities
- The above suggestions would address most of the technical issues related to sand bar removal in the CRZ zone. The final decision on this rests with the State Coastal Zone Management Authority and the Environmental Department of the State.

6. Acknowledgements

At the outset, we would like to acknowledge the Deputy Commissioner for giving us the task of scientifically identifying the sand deposited area in the CRZ stretches of Phalguni and Netravati Rivers in Dakshina Kannada District. We wish to thank the **Office of the Deputy Director Mines and Geology** Section for providing all the official assistance required in the study. Officials of CRZ, Pollution Control Board, Fisheries, and representatives of the fishing community for providing constructive criticism on the draft report presentation.

MOST URGENT
BY SPEED POST
OUT TODAY

No.11-83/2005-IA-III
Government of India
Ministry of Environment and Forests
(IA-III Division)

Paryavaran Bhawan,
CGO Complex, Lodhi Road,
New Delhi – 110003.

Dated, the 24th February, 2011

OFFICE MEMORANDUM

Sub: Implementation of provisions of Coastal Regulation Zone Notification, 2011 issued vide S.O.No.19(E), dated 6th January, 2011- regarding.

****

This has reference to the issue of the Coastal Regulation Zone (CRZ) Notification, 2011 vide S.O.No.19(E), dated 6th January, 2011. As per para 3(iv)(d), "*measures to prevent sand bars, installation of tidal regulators, laying of storm water drains or for structures for prevention of salinity ingress and freshwater recharge based on carried out by any agency to be specified by MoEF.*". In this regard, the Ministry specifies the following institutions who will be involved for the above activities:-

(i) Central Water and Power Research Station
(ii) IIT Chennai, IIT Bombay
(iii) Department of Erosion Directorate, Ministry of Water Resources
(iv) ICMAM
(v) National Centre for Sustainable Coastal Management
(vi) NIT, Suratkal

2. All proposals relating to the projects indicated in the above para of the Notification shall be examined by the Institutions from technical angle and based on the recommendations made by these Institutions the project would be considered for clearance by the concerned authorities indicated in the Notification.

This issues with the approval of Competent Authority.

(Dr. A. Senthil Vel)
Director

To,

As per list enclosed.

LIST

1. Chairman, West Bengal Coastal Zone Management Authority, Government of West Bengal, Writer's Building, G – Block, 2nd Floor, Kolkatta – 700 001.
2. Chairman, Gujarat State Coastal Zone Management Authority & Principal Secretary, Forests and Environment Department, Block No. 14, 8th Floor, Sachivalaya, Gandhinagar – 382010, Gujarat.
3. Chairman, Karnataka State Coastal Zone Management Authority & Principal Secretary, Department of Forest, Ecology and Environment, Government of Karnataka, Multistoried Building, K.G. Road, Bangalore – 560 001.
4. Chairman, Orissa State Coastal Zone Management Authority & Principal Secretary, Science, Technology & Environment and Forests Wing, Orissa Secretariat, Bhubaneshwar – 751001.
5. Chairman, Andhra Pradesh State Coastal Zone Management Authority & Additional Chief Secretary, Government of Andhra Pradesh, Environment Forests Science and Technology Department, Secretariat, Hyderabad – 500 022.
6. Chairman, Daman & Diu Coastal Zone Management Authority & Administrator, Daman and Diu, Daman – 396210.
7. Chairman, Pondicherry Coastal Zone Management Authority & Principal Secretary, Department of Science, Technology and Environment and Housing Board, Pondicherry – 605001.
8. The Chairman, Tamil Nadu State Coastal Zone Management Authority & Principal Secretary, Department of Environment and Forests, First Floor, Panagal Building, Saidapet, Chennai – 600015, Tamil Nadu.
9. The Chairman, Maharashtra Coastal Zone Authority, Environment Department, 15th Floor, New Administrative Building Opposite Mantralaya, Madam Cama Road, Bombay – 400 020.
10. Chairman, Goa State Coastal Zone Management Authority & Chief Secretary, Secretariat, Alto Porvorim, Panjim, Goa. 2419626
11. Chairman, Kerala State Coastal Zone Management Authority, Sasthra Bhawan, Pattom, Thiruvananthapuram – 4.

Member Secretary, State/Ut Coastal Zone Management Authority

12. Member Secretary, West Bengal Coastal Zone Management Authority, West Bengal Pollution Control Board, Paribesh Bhavan,10A, Block-L.A, Sector III, Salt Lake City, Kolkata - 700 098.
13. Member Secretary, Gujarat Coastal Zone Management Authority, & Director, Forests and Environment Department, Forests & Environment Department, Block No.14, 8th Floor, Sachivalaya, Gandhinagar – 382010.
14. Member Secretary, Karnataka State Coastal Zone Management Authority, & Director, Environment Technical Cell, Department of Forest, Ecology and Environment, Government of Karnataka, Multistoreyed Building, K.G. Road, Bangalore - 560 001.
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16. Member Secretary, Andhra Pradesh State Coastal Zone Management Authority, Government of Andhra Pradesh, Environment Forests Science and Technology Department, Secretariat, Hyderabad – 500022.
17. The Deputy Conservator of Forests, Administration of Daman & Diu, Office of the Deputy Conservator of Forests, Daman and Diu, Daman-396210.
18. Member Secretary, Pondicherry Coastal Zone Management Authority, & Director, Department of Science, Technology and Environment and Housing Board, Pondicherry – 605001.
19. Member Secretary, Tamil Nadu State Coastal Zone Management Authority, & Director, Department of Environment, Government of Tamil Nadu, Ground Floor, Panagal Building, Saidapet, Chennai-600015.

20. Member Secretary, Kerala Coastal Zone Management Authority & The Director, Science, Technology & Environment Council, Government of Kerala, Sasthra Bhavan, Pattom, Thiruvananthapuram-4.
21. Member Secretary, Maharashtra Coastal Zone Management Authority, Environment Department, Deputy Secretary, Mantralaya, New Administrative Building, 15th Floor, Madam Cama Marg, Mumbai – 400032.
22. The Member Secretary, Goa Coastal Zone Management Authority, Government of Goa, Department of Science, Technology and Environment, Opp. Saligao Seminary, Saligao, Goa-403511.

****

No.11-83/2005-IA-III(Pt.III)
Government of India
Ministry of Environment and Forests
(IA-III Division)

Paryawaran Bhawan
CGO Complex, Lodhi Road
New Delhi-110003

Dated, the 9th June, 2011

OFFICE MEMORANDUM

Sub: Implementation of provisions of Coastal Regulation Zone Notification, 2011 vide S.O.No.19(E), dated 6th January, 2011 – regarding.

****

This is in continuation to our earlier Office Memorandum of even number dated 24th February, 2011 regarding removal of sand bar as indicated in para 3(iv)(d) of Coastal Regulation Zone Notification, 2011 dated 6th January, 2011, a copy of same is enclosed.

2. A guideline for management of the sand bars including its removal which are as follows:-

(a) Sand bars which pose danger to navigation of fishing boats and vessels shall be identified by the concerned Department in the State Government.

(b) The State Government in consultation with the State agencies such as PWD, Water Resources Department, Fisheries Department, etc., may formulate a proposal for management of the sand bars including its removal.

(c) The proposal shall be examined by any of the six institutions identified in the above Office Memorandum dated 24th February, 2011, namely, (a) Central Water and Power Research Station, Pune; (b) IIT, Chennai, IIT, Bombay; (c) Department of Erosion Directorate, Ministry of Water Resources; (d) Integrated Coastal and Marine Area Management, Chennai; (e) National Centre for Sustainable Coastal Management; and (f) National Institute of Technology, Surathkal.

(d) Based on the suggestions/recommendations received from these institutions the concerned State Government agency(s) shall obtain necessary recommendations from the State/Union Territory (Ut) Coastal Zone Management Authority.

(e) Based on the recommendations of the State/Ut Coastal Zone Management Authority the Environment Department of the State/Ut shall take final decision on the proposal with valid justification.

(f) The decision shall be put on the website of the concerned agency undertaking the project and also on the website of the State/Ut Coastal Zone Management Authority.

Encl: As above

(Dr. A. Senthil Vel)
Director

To,

As per list enclosed

LIST

1. Chairman, West Bengal Coastal Zone Management Authority, Government of West Bengal, Writer's Building, G – Block, 2nd Floor, Kolkatta – 700 001.
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4. Chairman, Orissa State Coastal Zone Management Authority & Principal Secretary, Science, Technology & Environment and Forests Wing, Orissa Secretariat, Bhubaneshwar – 751001.
5. Chairman, Andhra Pradesh State Coastal Zone Management Authority & Additional Chief Secretary, Government of Andhra Pradesh, Environment Forests Science and Technology Department, Secretariat, Hyderabad – 500 022.
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7. Chairman, Pondicherry Coastal Zone Management Authority & Principal Secretary, Department of Science, Technology and Environment and Housing Board, Pondicherry – 605001.
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11. Chairman, Kerala State Coastal Zone Management Authority, Sasthra Bhawan, Pattom, Thiruvananthapuram – 4.

Member Secretary, State/Ut Coastal Zone Management Authority

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****

No.11-83/2005-IA-III(Vol.III)
Government of India
Ministry of Environment and Forests
(IA-III Division)

Paryavaran Bhawan,
CGO Complex, Lodhi Road,
New Delhi – 110003.

Dated, the 8th November, 2011

OFFICE MEMORANDUM

Sub: Removal of sand in the Coastal Regulation Zone area of rivers/estuaries by manual methods by traditional communities - regarding.

****

This is in continuation to the Ministry's Office Memorandum (OM) dated 24th February, 2011 and 9th June, 2011 with regard to guidelines for management of the sand bars including its removal.

2. The Ministry had now received request from State Government of Karnataka with regard to removal of the sand bars by manual methods by traditional communities.

3. After examining the proposal and the provisions of the Coastal Regulation Zone Notification, 2011 the Ministry hereby stipulates the following conditions for removal of sand bar by traditional coastal communities only by manual method (i.e., sand collection in non-mechanised dinghies or small boats using baskets/buckets by human beings) in various coastal States:-

(a) The District Collector shall chair a seven-member Committee consisting of, concerned officials as also atleast one representative of each from a scientific or technical Institute, the local communities, like fisher folk and the local civil society.
(b) Based on the recommendations of the above Committee, the District Collector may permit such removal of sand in the specified time period in a particular area alongwith specific quantity subject to such conditions, such as registration of local community persons permitted to remove the sand manually.
(c) The Environmental Official at district level shall monitor the removal of sand and submit report to the Collector, as may be specified, say quantity of sand removed in the period concerned.
(d) The above permit shall be renewed on yearly basis.
(e) The agenda and the minutes of the aforesaid Committee, permits issued by Collector and monitoring reports of the removal of sand would be uploaded on the website of the Collectorate and also made available hard copy to Zila Parishad etc., as may be directed b the Collector.
(f) The accumulation of sand bar, its removal the process etc., shall be studied by the State Government with the help of satellite imageries, GPS, etc. It shall be ensured that the permits are not accorded in such areas which are identified as eco-sensitive zones, fish migratory and breeding grounds. The permits shall be given taking into consideration the local circumstances and ecological settings.

(E. Thirunavukkarsu)
Deputy Director

To,

As per list enclosed.

LIST

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4. Chairman, Orissa State Coastal Zone Management Authority & Principal Secretary, Science, Technology & Environment and Forests Wing, Orissa Secretariat, Bhubaneshwar – 751001.
5. Chairman, Andhra Pradesh State Coastal Zone Management Authority & Additional Chief Secretary, Government of Andhra Pradesh, Environment Forests Science and Technology Department, Secretariat, Hyderabad – 500 022.
6. Chairman, Daman & Diu Coastal Zone Management Authority & Administrator, Daman and Diu, Daman – 396210.
7. Chairman, Pondicherry Coastal Zone Management Authority & Principal Secretary, Department of Science, Technology and Environment and Housing Board, Pondicherry – 605001.
8. The Chairman, Tamil Nadu State Coastal Zone Management Authority & Principal Secretary, Department of Environment and Forests, First Floor, Panagal Building, Saidapet, Chennai – 600015, Tamil Nadu.
9. The Chairman, Maharashtra Coastal Zone Authority, Environment Department, 15th Floor, New Administrative Building Opposite Mantralaya, Madam Cama Road, Bombay – 400 020.
10. Chairman, Goa State Coastal Zone Management Authority & Chief Secretary, Secretariat, Alto Porvorim, Panjim, Goa. 2419626
11. Chairman, Kerala State Coastal Zone Management Authority, Sasthra Bhawan, Pattom, Thiruvananthapuram – 4.

Member Secretary, State/Ut Coastal Zone Management Authority

12. Member Secretary, West Bengal Coastal Zone Management Authority, West Bengal Pollution Control Board, Paribesh Bhavan,10A, Block-L.A, Sector III, Salt Lake City, Kolkata - 700 098.
13. Member Secretary, Gujarat Coastal Zone Management Authority, & Director, Forests and Environment Department, Forests & Environment Department, Block No.14, 8th Floor, Sachivalaya, Gandhinagar – 382010.
14. Member Secretary, Karnataka State Coastal Zone Management Authority, & Director, Environment Technical Cell, Department of Forest, Ecology and Environment, Government of Karnataka, Multistoreyed Building, K.G. Road, Bangalore - 560 001.
15. Member Secretary, Orissa Coastal Zone Management Authority, & Director, Science, Technology and Environment and Forests Wing, Orissa Secretariat, Bhubaneshwar-751001.
16. Member Secretary, Andhra Pradesh State Coastal Zone Management Authority, Government of Andhra Pradesh, Environment Forests Science and Technology Department, Secretariat, Hyderabad – 500022.
17. The Deputy Conservator of Forests, Administration of Daman & Diu, Office of the Deputy Conservator of Forests, Daman and Diu, Daman-396210.
18. Member Secretary, Pondicherry Coastal Zone Management Authority, & Director, Department of Science, Technology and Environment and Housing Board, Pondicherry – 605001.

19. Member Secretary, Tamil Nadu State Coastal Zone Management Authority, & Director, Department of Environment, Government of Tamil Nadu, Ground Floor, Panagal Building, Saidapet, Chennai-600015.
20. Member Secretary, Kerala Coastal Zone Management Authority & The Director, Science, Technology & Environment Council, Government of Kerala, Sasthra Bhavan, Pattom, Thiruvananthapuram-4.
21. Member Secretary, Maharashtra Coastal Zone Management Authority, Environment Department, Deputy Secretary, Mantralaya, New Administrative Building, 15th Floor, Madam Cama Marg, Mumbai – 400032.
22. The Member Secretary, Goa Coastal Zone Management Authority, Government of Goa, Department of Science, Technology and Environment, Opp. Saligao Seminary, Saligao, Goa-403511.

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ANNEXURE-R-3

Details of Sand Bars identified in Coastal Regulation Zone (CRZ) and Removable Sand Quantity as per CRZ Clearances 2018-19 & 2019-20, 2020-21 & 2021-22 and 2022 enclosed as Annexure-8.

Details of Sand Bars identified in Coastal Regulation Zone (CRZ) and Removable Sand Quantity as per CRZ Clearance (2018-19 & 2019-20)							
Sl. No.	**Sand Bar**	**River**	**Taluk**	**Village**	**Extent (in Acres)**	**No. of TP's issued**	**Sand Quantity as per CRZ Clearance(in MT)**
1	**2**	**3**	**4**	**5**	**6**	**7**	**9**
1	N-1	Nethravathi	Mangalore	Jappinamogaru	3.786	4	26353.63
2	N-2	Nethravathi	Mangalore	Jappinamogaru	3.873	4	26959.09
3	N-3	Nethravathi	Mangalore	Harekala	4.025	0	28019.86
4	N-4	Nethravathi	Mangalore	Arkula	7.222	0	50275.52
5	N-5	Nethravathi	Mangalore	Arkula	13.109	14	91246.68
6	N-6	Nethravathi	Bantwal	Pudu	7.54	10	52528.09
7	N-7	Nethravathi	Bantwal	Pudu	6.01	8	41891.84
8	N-8	Nethravathi	Bantwal	Pudu	3.80	6	26477.43
9	N-9	Nethravathi	Bantwal	Thumbe	2.98	5	20769.97
10	N-10	Nethravathi	Bantwal	Thumbe	1.73	4	12075.22
11	N-11	Nethravathi	Bantwal	Thumbe	2.82	5	19666.04
12	N-12	Nethravathi	Bantwal	Sajipamunnur	2.31	4	16103.71
13	N-13	Nethravathi	Bantwal	Sajipamunnur	2.58	4	17990.56
Total					**61.785**	**68**	**430357.64**
14	P-1	Phalguni	Mangalore	Kasaba Bengre	13.13	0	91442.25
15	P-2	Phalguni	Mangalore	Kasaba Bengre	40.39	4	281168.40
16	P-3	Phalguni	Mangalore	Bolur	8.21	2	57185.70
17	P-4	Phalguni	Mangalore	Bengre	5.87	0	40910.02

18	P-5	Phalguni	Mangalore	Bengre	3.48	1	24255.78
19	P-6	Phalguni	Mangalore	Bolur	2.84	5	19781.54
20	P-7	Phalguni	Mangalore	Padukode	8.30	5	57813.84
21	P-8	Phalguni	Mangalore	Kunjathbail-Padukode	15.15	8	105484.84
22	P-9	Phalguni	Mangalore	Kenjar-Kunjathbail	6.43	12	44822.85
Total					**103.8**	**37**	**722865.22**
Grand Total					**165.585**	**105**	**1153222.86**

Details of Sand Bars identified in Coastal Regulation Zone (CRZ) and No. of TP's issued in Dakshina Kannada (2020-21 & 2021-22)

1. Details of Sand Bars identified and Sand Quantity in Nethravathi River

Sand Bar	Taluk	River	Village	Extent (in Acres)	Sand Quantity (in MT's)	No. of TP's issued
N1	Mangalore	Nethravathi	Jeppinamogaru	12.52	65408.6	27
N2	Bantwal	Nethravathi	Pudu-Devarapalu	6.85	47701.7	15
N3	Bantwal	Nethravathi	Pudu	15.72	54720.4	11
N4	Bantwal	Nethravathi	Sajipanadu	16.62	57848	6
N5	Bantwal	Nethravathi	Sajipanadu-Thalemogru	6.98	36443	3
N6	Bantwal	Nethravathi	Sajipanadu-Thalemogru	19.14	99963.9	8
N7	Bantwal	Nethravathi	Thumbe	16.16	84382.7	5
N8	Bantwal	Nethravathi	Sajipamunnur	21.56	112568	2
Total				**115.55**	**559036.3**	**77**

2. Details of Sand Bars identified and Sand Quantity in Phalguni River

Sand Bar	Taluk	River	Village	Extent (in Acres)	Sand Quantity (in MT's)	No. of TP's issued
P1	Mangalore	Phalguni	Bengre	42.04	292640	5
P2	Mangalore	Phalguni	Gandhinagara-Kudroli	13.45	93658	0

P3	Mangalore	Phalguni	Kasaba Bengre-Ashoknagara	12.04	41904.9	11
P4	Mangalore	Phalguni	Kenjar	3.26	15911.6	10
Total				**70.79**	**444114.5**	**26**

•Total Sand Bars Identified – 12

•Total Sand Quantity as per CRZ Clearance – 1,003,150.8 MT

• Total TP's issued - 103

Details of Sand Bars identified in Coastal Regulation Zone (CRZ) 2022					
1. Details of Sand Bars identified and Sand Quantity in Nethravathi River					
Sand Bar	**Taluk**	**Village**	**Grama Panchayath**	**Removable Sand Quantity as per CRZ Clearance(in MT)**	**No. of TP's issued**
N1	Mangalore	Kadekaru-Jappinamogaru	City Corporation	72749.56	56
N2	Mangalore	Kadekaru-Jappinamogaru	City Corporation	167561.4	13
N3	Mangalore	Arkula	Adyar	47490.59	7
N4	Bantwal	Farangipete	Pudu	45637.92	6
N5	Bantwal	Pudu-Devarapalu	Pudu	16923.62	7
N6	Bantwal	Pudu	Pudu	25358.38	5
N7	Bantwal	Thumbe	Thumbe	169521.5	14
N8	Bantwal	Thumbe	Thumbe	99007.07	3
N9	Bantwal	Thumbe	Thumbe	23635.81	0
Total				**667885.85**	**111**
2. Details of Sand Bars identified and Sand Quantity in Phalguni River					
Sand Bar	**Taluk**	**Village**	**Grama Panchayath**	**Removable Sand Quantity as per CRZ Clearance(in MT)**	**No. of TP's issued**
P1	Mangalore	Hoigebailu-Bolur	City Corporation	114124.4	12
P2	Mangalore	Dambel-Ashoknagar	City Corporation	36169.54	0
P3	Mangalore	Bangrakulur	City Corporation	113451.65	9
P4	Mangalore	Panjimogaru-Padukodi	City Corporation	52643.22	3
P5	Mangalore	Kunjathbail	City Corporation	14830.94	13
Total				**331219.75**	**37**

- **Total Sand Bars – 14**
- **Total Sand Quantity as per CRZ Clearance– 999105.6 MT**