

**BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL  
SOUTHERN ZONE AT CHENNAI**

**APPLICATION NO. 1 OF 2021 (SZ) (SUO MOTU)**

Tribunal on its own motion

Suo Motu proceedings

... Applicant

**VERSUS**

Union of India and Ors.

... Respondents

**JOINT COMMITTEE REPORT**

<b>Sl. No.</b>	<b>Date</b>	<b>Description</b>	<b>Page No</b>
1	-	Joint Committee Report as directed by the Tribunal by an order dated 06.01.2021.	<b>1</b>

Dated at Chennai on this 18<sup>th</sup> day of June, 2021

E-filing No. :

Filed On : 18.06.2021

Place : Chennai

**VIDYALAKSHMI VIPIN**

Standing Counsel for SEIAA, Kerala and KSBB

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**BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL  
SOUTHERN ZONE AT CHENNAI**

**APPLICATION NO. 1 OF 2021 (SZ) (SUO MOTU)**

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**MEMO FILED ON BEHALF OF THE 23<sup>RD</sup> RESPONDENT**

I am Advocate Vidyalakshmi, Standing Counsel for State Environmental Impact Assessment Authority, 19, Casa Major Road, Egmore, Chennai-600 006.

I state that I am filing this Memo along with the Joint Committee report as instructed by the 23<sup>rd</sup> Respondent herein.

**Brief Facts as follows:**

- 1.** That the above case has been Suo Motu registered by this Hon'ble Tribunal on the basis of the news paper report published in Mathrubhumi newspaper, Edition, dated 03.10.2020 in O.A. No. 01 of 2021.
- 2.** That the matter came up for admission on 06.01.2021 before this Hon'ble Tribunal, Southern Zone, Chennai and this Hon'ble Tribunal constituted a joint committee as SEIAA, Kerala as its nodal office and comprising the following officials and directed to inspect the area in question and submit a factual and action taken report:-

**(1)** *a Senior Officer from Ministry of Environment, Forests and Climate Change (MoEF & CC), Regional Office, Bangalore,*

**(2)** *the Principal Secretary or a nominee deputed by him, not below the rank of Joint Secretary of Department of Environment,*

**(3)** *the Principal Secretary or a nominee deputed by him, not below the rank of Joint Secretary of Department of Revenue and Disaster Management,*

**(4)** *The Principal Secretary or a nominee deputed by him of Department of Irrigation & Water Resources Department (WRD)*

**(5)** *The Director, Directorate of Mining and Geology, Thiruvananthapuram,*

**(6)** *a Senior Officer from the Kerala State Pollution Control Board (KSPCB) as designated by its Chairman,*

**(7)** *The Principal Chief Conservator of Forest & Head of Forest Force (HoFF) or his nominee, not below the rank of Chief Conservator of Forest, State of Kerala and*

**(8)** *a Senior Officer from State Environment Impact Assessment Authority, Kerala.*

**3.** That in compliance of the directions of this Hon'ble Tribunal, the joint committee is filing its report and it is annexed along with this Memo.

Under the above circumstances, it is respectfully prayed that this Hon'ble Tribunal may be pleased to take on file the Joint Committee Report and pass further or other orders as this Hon'ble Tribunal may deem fit and proper in the circumstances of the case and thus render justice.

Dated at Chennai on this 18<sup>th</sup> day of June, 2021

**COUNSEL FOR 23<sup>RD</sup> RESPONDENT**

LR K1-5370/21

Office of the Land Revenue Commissioner,  
Public Office Compound, Revenue Complex,  
Thiruvananthapuram, Dated: 27/05/21

To

The Standing Counsel,  
SEIAA

Sir,

Sub: NGT Interim Order dated 06.01.2021 in OA No. 01/2021 (SZ) - Sand mining in Bharathapuzha river- Joint Committee – Report - Reg

Ref: 1. Proceedings of Member Secretary, SEIAA Order No. 84/A1/2021/ SEIAA dated 29.01.2021.  
2. NGT, Southern Zone, Chennai Interim Order dated 06.01.2021 of in OA No. 01/2021 (SZ)  
3. Letter No. A3/71/2021-ENVT issued by Addl. Chief Secretary Environment (A) Department, Government of Kerala, Thiruvananthapuram dated 28/05/2021

Kind attention is invited to references cited.

A Joint Committee had been constituted by the Hon'ble NGT (SZ) Chennai to file a report before the NGT w.r.t. a news item carried in the Mathrubhoomi newspaper dated 3<sup>rd</sup> Oct. 2020 that "30 lakh cubic meters of sand can be taken from Bharathapuzha". Vide para 13 of the interim order, the SEIAA, Kerala is the nodal agency for co-ordination.

The Joint Committee examined the matter in detail and decided to take the inputs of all members of the Committee and to file a joint report before the Hon'ble Tribunal. The Joint Commissioner, Land Revenue (JCLR) was the representative of the Principal Secretary, Revenue and Disaster Management in the Joint Committee. The Principal Secretary, Revenue and Disaster Management is also the 5<sup>th</sup> Respondent in the case. The Committee directed the members to offer their inputs to the JCLR and directed the JCLR to draft the Committee report collating all the inputs. The Joint Committee met and finalized the report thereafter. The report was approved by all the members.

Vide ref 3 cited, the Additional Chief Secretary, Environment Department, Government of Kerala has directed me (JCLR) to file the report before the Hon. NGT (SZ) in OA no 01/2021 on behalf of the respondents.

Based on the above, the final report of the Joint Committee is enclosed herewith with a request to take steps to file the same before the Hon'ble NGT (SZ), Chennai.

Yours faithfully,

Sd/-

Dr A Kowsigan, IAS

Joint Commissioner,

Enclosure: Report of the Joint Committee

LR K1-5370/21

Office of the Land Revenue Commissioner,  
Public Office Compound, Revenue Complex,  
Thiruvananthapuram, Dated: 27/05/21

To

The Member Secretary,  
SEIAA

Sir,

Sub: NGT Interim Order dated 06.01.2021 in OA No. 01/2021 (SZ) - Sand mining in Bharathapuzha river- Joint Committee- Member from Revenue Department – Report - Reg

Ref: 1. Proceedings of Member Secretary, SEIAA Order No.84/A1/2021/SEIAA dated 29.01.2021.  
2. NGT, Southern Zone, Chennai Interim Order dated 06.01.2021 of in OA No. 01/2021 (SZ)

Kind attention is invited to references cited.

A Joint Committee had been constituted by the NGT to file a report before the NGT w.r.t. a news item carried in the Mathrubhoomi newspaper dated 3<sup>rd</sup> Oct, 2020 that “30 lakh cubic meters of sand can be taken from Bharathapuzha”. Vide para 13 of the interim order, the SEIAA, Kerala is the nodal agency for co-ordination. The Joint Committee is directed to file its report before the Tribunal.

The Joint Commissioner, Land Revenue (JCLR) is the representative of the Principal Secretary, Revenue and Disaster Management in the Joint Committee. The Principal Secretary, Revenue and Disaster Management is also the 5<sup>th</sup> Respondent in the case. The JCLR had submitted a draft report for consideration by the Joint Committee. There is no river sand mining approved anywhere in the State.

The draft report of the JCLR had been examined by the members and there is overall agreement on the response that may be filed before the NGT.

Based on the above, the final report of the Joint Committee is enclosed herewith for necessary action.

Yours faithfully,  
Dr A Kowsigan, IAS  
Joint Commissioner, LR

**Report of the Joint Committee constituted as directed by the Hon'ble National Green Tribunal, Southern Zone, Chennai in the Interim Order dated 6.1.2021 in Original Application No. 01 of 2021 (SZ) before the Hon'ble National Green Tribunal, Southern Zone, Chennai:**

The report in Mathrubhoomi newspaper dated 3<sup>rd</sup> Oct, 2020 that "30 lakh cubic meters of sand can be taken from Bharathapuzha" (in vernacular) pertains to only some findings of sand audit conducted in certain stretches of Barathapuzha River. (*The details of sand audit of Bharathapuzha River are annexed.*) The newspaper report has given a wrong impression that the State would commence sand mining forthwith without following the guidelines in vogue [Sustainable Sand Mining Guidelines (SSMG) 2016, Enforcement & Monitoring Guidelines for Sand Mining (EMGSM) 2020 and NGT Orders (Feb, 2021)] governing river sand mining, which is not at all the case. The Government holding natural resources in public trust is duty bound to protect the same in a sustainable manner and the Government is acting with full responsibility towards the same.

There is no river sand mining approved anywhere in the State of Kerala. As indicated in the newspaper report, Government have only approved the sand audit report in three stretches of the said Bharathapuzha river. This right away is not Government's permission / approval to mine river sand in the said river. The Government have only directed the District Collectors of Thrissur and Palakkad to take all necessary steps to strictly comply with all existing norms and instructions pertaining to sand mining so that 'no unauthorized mining of sand or environmental degradation is allowed to happen'. River Sand Mining cannot commence without Environmental Clearance from the competent authority. District Survey Reports (DSRs) and mining plans based on DSRs are necessary for seeking EC. The Hon'ble National Green Tribunal *vide* its order dated 14.10.2020 instructed that the DSR shall be prepared through consultants

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accredited by the National Accreditation Board of Education and Training/Quality Control Council of India in terms of the O.M of MoEFCC dated 16.03.2010. Hence, DSRs will be prepared accordingly in the State. Only on obtaining ECs based on DSRs and mining plans, river sand mining will be resorted to in the State. All environmental and sustainability guidelines issued by MoEFCC and the directives of the Hon'ble NGT with regard to river sand mining will be complied with by the State in the event of sand mining. As of now, there is no river sand mining approved in the State. The District Collectors have been directed to comply with all statutory requirements before river sand mining can be permitted. Hence, there is no violation of norms pertaining to river sand mining in the State as apprehended / made out in the said newspaper report.

The detailed para-wise reply is given below.

*NGT: "The manner in which the River bed sand mining is being done in the State of Kerala and whether they are complying with the Sand Mining Policy of the Central Government and also complying with all the environmental laws including obtaining of Environmental Clearance (EC) as required under EIA Notification 2006, as amended in 2016, in view of the directions issued by Hon'ble Apex Court in Deepak Kumar's case"*

**Response:** River sand mining in Kerala is regulated through the provisions of the Kerala Protection of River Banks and Regulation of Removal of Sand Act 2001 (amended in 2013) and Rules 2002, the binding guidelines of MoEFCC and the directives of the Hon'ble NGT and the Hon'ble Supreme Court. The Hon'ble Supreme Court's judgment in Deepak Kumar Vs State of Haryana in 2012 and the provisions of EIA Notification 2006 and amended notification 2016 are strictly followed in the State. Guidelines were also issued by the State Government for obtaining environmental clearance for river sand mining as per circular No. P3/248/18/RD dated 15.11.2018 in the context of the EIA notification 2006 and sustainable sand mining management guidelines of

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*[Signature]*  
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MoEFCC-2016. Sand mining is controlled, monitored and carried out solely by the Government. No portion of river in the State is given on lease for sand mining by private persons.

River bed sand mining from rivers is not being done in the State of Kerala since 2016 for want of Environmental Clearance.

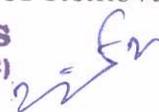
Sand mining was done till 2015 based on the sand audit reports prepared based on the Kerala Protection of River Banks and Regulation of Removal of Sand Act 2001(amended in 2013) and subsequent Environmental Clearance (EC) from SEIAA (EC No.571/SEIAA/K1/4230/2014 Dated. 20.04.2015 &17.12.2015). Whenever sand mining is resumed in the State after getting environmental clearance (EC), the Enforcement & Monitoring Guidelines for Sand Mining (EMGSM) issued by MoEFCC in January 2020 will be strictly followed along with the State Act 2001.

The State is following SSMG, 2016, EMGSM, 2020 and NGT Orders (Feb 2021) in the context of river sand mining. DSR preparation, appraisal and approval will be done as directed in the above guidelines. Mine plans based on approved DSR shall be prepared by Recognized Qualified Person (RQP). The Competent Authority shall consider the DSR and mine plans and accord EC for mining in eligible cases only. No mining shall be carried out without EC. There is no river sand mining in the State since 2016.

**NGT: "Whether the District Survey Reports are being prepared before conducting the mining and before according sanction for mining"**

**Response:** District Survey Report for river sand mining has not been prepared in the State so far. However, sand audit reports of 26 major rivers and three tributaries were prepared in the State by Revenue Department [Institute of Land and Disaster Management - guided by NCESS and CWDRM] following the provisions of Kerala Protection of River Banks and Regulation of Removal of

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Kerala Protection of River Banks and Regulation of Removal of Sand Act 2001, and Rules 2002. Depth of mining as 3 meter or water level whichever is less as decided by Hon'ble Supreme Court in Deepak Kumar Vs State of Haryana judgment and other EC norms will be strictly followed in the State. Sand mining will also be monitored by District Expert Committee, Tahsildar and the officers entrusted by District Collector as per the provisions of Kerala Protection of River Banks and Regulation of Removal of Sand Act 2001 and Rules 2002. When mining permission is granted, necessary safeguards recommended by Sustainable Sand Mining Guidelines (SSMG)-2016 and EMGSM-2020 will also be ensured to prevent illegal or excess mining. Sale and distribution of mined sand will be monitored through an e-governance tool [e-manal (e-sand)] developed by NIC, Thrissur. Vehicles transporting sand can be monitored through GPS tracking (Vehicle Location Tracking System) and enforcement agencies.

*NGT: "To report in the light of existing Rules and Guidelines whether sand mining in river bed passing through the forest areas and eco-sensitive zones like, National Park and Sanctuary etc., is going on and the status of such cases in the State of Kerala & whether permission is being granted in those areas/ buffer areas, whether the person to whom the permission is granted is obtaining necessary permission and sanction under the concerned forest and environmental laws for this purpose"*

**Response:** Sand mining from river bed is not being done in the State of Kerala since 2016. It will be done only after obtaining Environmental Clearance. Mine plan preparation by Recognized Qualified Persons (RQP) will progress based on approved DSRs. Sand mining in river beds through the forest areas and eco- sensitive Zones like, National Parks and Wild Life Sanctuaries etc, is not carried out in Kerala. Desilting in Pamba River as part of Disaster

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Management is being dealt with in OA No. 75/2020 before the Hon'ble NGT (SZ, Chennai Bench).

**NGT:** *“Whether they (the Districts) are following a uniform method and whether they are complying with the directions issued by the Ministry of Environment, Forests and Climate Change (MoEFCC) in maintaining the sustainable sand mining policy in the State”*

**Response:** As per section 9 (b) of the Kerala Protection of River Banks and Removal of Sand Act 2001, it is a function of the District Expert Committee (DEC) to fix the total quantity of sand that can be removed from a *Kadavu* or river bank giving due regard to the guidelines of expert agencies like the National Centre for Earth Science Studies (NCESS) and Centre for Water Resources Development and Management (CWRDM) or other agencies in the sector, as may be specified by the Government from time to time. As per section 29 of the Kerala Protection of River Banks and Regulation of Removal of Sand Act 2001 and Rule 30 of the Kerala Protection of River Banks and Regulation of Removal of Sand Rules 2002, sand auditing is to be carried out once in every three years. Thus, Government of Kerala is conducting sand auditing of rivers as per the standard guidelines of National Centre for Earth Science Studies (NCESS) since 2012 and the same was amended in 2017 based on the Supreme Court Order and orders issued by MoEFCC. An Expert Committee is constituted for this purpose by the Institute of Land and Disaster Management (ILDm), Thiruvananthapuram.

General conditions of sand removal in section 12 of the Kerala Protection of River Banks and Removal of Sand Act, 2001 and Sustainable Sand Mining Guidelines (SSMG) 2016 of MoEFCC are to be followed while implementing the sand removal operations and its transportation. Sand is collected by registered laborers under the supervision of *Kadavu* committees of Panchayaths / Urban local bodies. Depth of mining as 3 meter or water level whichever is less as decided by Hon'ble Supreme Court in Deepak Kumar Vs State of

  
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Haryana judgment is to be strictly followed in the State. Sand mining is also monitored by *kadavu* committees. A three-tier system consisting of State High Level Committee (SHLC), District Expert Committee (DEC) and Kadavu Committee (KC) is functioning to monitor the sand mining operations in the State as per The Kerala Protection of River Banks and Regulation of Removal of Sand Act, 2001. An IT enabled on-line system called '*e-Manal*' (e-Sand) was also developed (by NIC, Thrissur) and used (then when sand mining was in vogue) to ensure transparency in sand mining and distribution.

**NGT:** *“Whether any action has been taken by the authorities for conducting illegal mining in these areas, including excess mining than the permitted quantity and what are all the safeguards provided for preventing such illegal activities being done in the riverbed where mining is permitted by the Departments”*

**Response:** As such, no mining has been permitted by the Departments concerned. However, extensive powers are given to Revenue officials and Police to seize and confiscate vehicles, tools, implements used to illegally mine and transport river sand as per the provisions of Kerala Protection of River Banks and Regulation of Removal of Sand Act, 2001. According to the Sand Act, all the District Collectors and all the Tahsildars have their own squads which work 24x7 in order to check and prevent illegal sand mining across the State. By virtue of the section 20 of this act, if any person is found guilty and whoever contravenes the provisions of this act will be punishable with a fine up to a maximum of Rs. 25,000/- or imprisonment for 2 years or both. Additional penalty can also be imposed now based on NGT's orders when vehicles are seized. Moreover, as per section 23 of this Act the Revenue and Police officials have the power to confiscate the vehicles that are used to transport sand without complying with the provisions of this Act. With the introduction of this Act, illegal sand mining in the rivers could be checked to a large extent. Sand mining will also be monitored by District Expert Committee, Tahsildar and the officers

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entrusted by the District Collector as per the provisions of Kerala Protection of River Banks and Regulation of Removal of Sand Act 2001 and Rules 2002.

Necessary safeguards recommended by SSMG-2016 and EMGSM-2020 will also be ensured for preventing illegal mining when mining permission is granted after obtaining EC.

### Annexure: Sand Audit of Bharathapuzha River

#### Joint Committee Members

1. Dr. Prabhu,  
Scientist 'C',  
Ministry of Environment,  
Forest & Climate Change integrated Regional Office,  
Kendriya Sadan,  
17<sup>th</sup> Main Road, Koramangala, Bangalore-560034.
2. (a) Smt. Sheeba B,  
Joint Secretary, Environmental Department,  
Government of Kerala.
- (b) Dr. K. Kalaiarasan,  
Environmental Engineer,  
Directorate of Environment and Climate Change,  
Thiruvananthapuram.
3. Smt. Beena P S  
Deputy Secretary,  
Water Resources Department,  
Government of Kerala.
4. Dr. S. Sajikumar

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*Dr. A. Kowsigan*

Geologist

5. Sri Alexander George

Senior Environmental Engineer

Kerala State Pollution Control Board,

Head Office, Thiruvananthapuram.

6. Sri.Pramod P P, IFS

Chief Conservator of Forests (Eastern Circle)

Palakkad & Custodian of vested forests.

7. Dr A Kowsigan, IAS,

Joint Commissioner, Land Revenue

8. Dr Jayachandran K,

Member

State Environment Impact Assessment Authority,

Kerala.

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Annexure: Sand Audit of Bharatapuzha River

Government have entrusted following three selected agencies with the task of conducting Sand Auditing of Bharatapuzha River flowing through Palakkad, Thrissur and Malappuram District on behalf of Dept. of Revenue as per G.O (MS) No.730/2019/RD dated 01/03/2019 based on Section 9(b) of Kerala Protection of River Banks and Regulation of Removal of Sand Act, 2001 and Rule Number 30 of River Protection Rules - 2002. Sand Audit is carried out based on the Standard Guidelines of National Centre for Earth Science Studies (NCESS), Thiruvananthapuram developed in 2012 and the same is further amended in 2017 based on the Supreme Court order and orders issued by MoEF& CC on Sustainable Sand Mining Management Guidelines, 2016. Field survey for sand audit was carried out during summer months of 2019 and the report was finalized in September 2020. The sand audit (91 km river length) was carried out in three stretches as mentioned below:

Sand Auditing of Bharatapuzha River						
Sl No	River	Allotted Length (km)	Agency	Sand Auditing		G.O Approving Sand Audit Report
				Starting Point	End Point	
1	Bharatapuzha (Stretch-1)	33 km	Dept of Geology and Environmental Science, Christ College, Irinjalakuda	Parali Bridge	Vazhalippadam Checkdam near Mannannur Railway Station	G.O (Rt) No. 1906/2020/RD dtd 25.05.2020
2	Bharatapuzha (Stretch-2)	29 km	Agriculture and Ecosystem Management Group (AGES), Thiruvananthapuram	Vazhalippadam Check Dam	Thrithala Regulator Cum Bridge	G.O (Rt) No. 2882/2020/RD dtd 16.09.2020
3	Bharatapuzha (Stretch-3)	29 km	Uralungal Labour Contract Co-operative Society Limited, Vadakara, Kozhikode	Thrithala Regulator Cum Bridge	Chamravattom Regulator Cum Bridge	G.O (Rt) No. 874/2020/RD dtd 28.02.2020

Sand Audit of Bharatapuzha was monitored by Institute of Land and Disaster Management (ILDm), Thiruvananthapuram and the verification of data was done accordingly.

**Bharatapuzha River Stretch-1**

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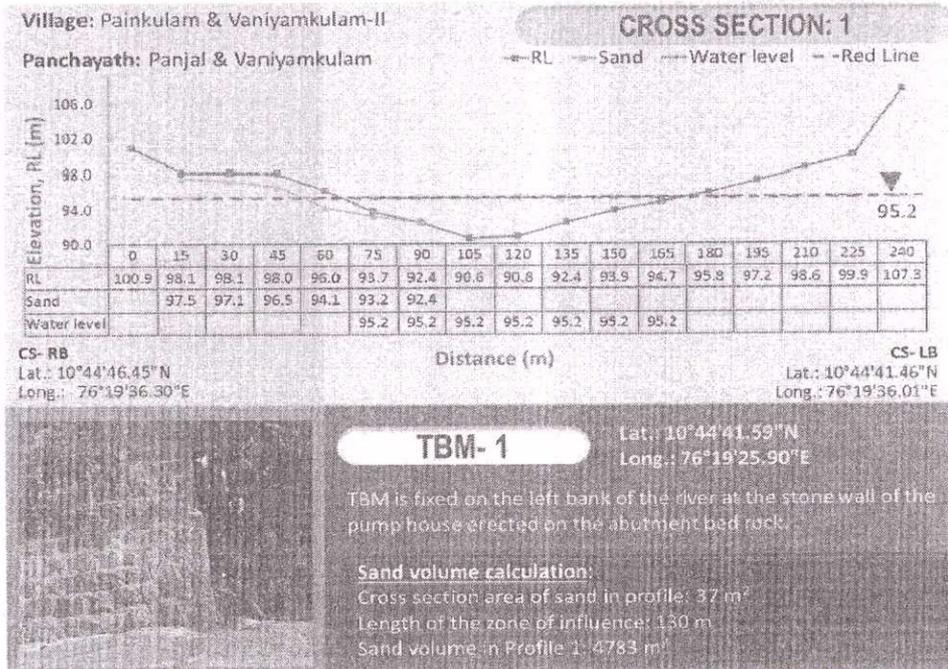
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Sand auditing of Bharatapuzha River Stretch-1 covered 33 km from Parli Bridge to Vazhalippadam Check Dam. As part of Sand auditing, cross sections are taken at 114 locations within the 33 km river stretch in Bharatapuzha River Stretch-1 with an average interval of 289.47 m. Lakkidi Peroor, Mankara, Parali, Peringottukurissi and Vaniyamkulam panchayats and Ottappalam Municipality of Palakkad District and Panjal, Thiruvillwamala and Kolazhy Panchayats of Thrissur District are located on either banks of the river within this stretch.

**Sand Availability in Bharatapuzha Stretch-1**

Sl No	Name of Panchayat	District	Volume of Total Sand (m <sup>3</sup> )	Volume of Mineable Sand (m <sup>3</sup> ) for three years
1	Lakkidi Peroor Panchayat	Palakkad	35352	26944
2	Mankara Panchayat	Palakkad	4094	4094
3	Ottappalam Municipality	Palakkad	419118	194542
4	Parali Panchayat	Palakkad	Nil	0
5	Peringottukurissi Panchayat	Palakkad	7476	5468
6	Vaniyamkulam Panchayat	Palakkad	719193	353380
7	Panjal Panchayat	Thrissur	483477	179707
8	Thiruvillwamala Panchayat	Thrissur	171313	104849
9	Kolazhy Panchayat	Thrissur	622047	357611
Total			<b>2462070</b>	<b>1226595</b>

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**Bharatapuzha River Stretch-2**

Sand auditing of Bharatapuzha River Stretch-2 covered 29 km from Vazhalippadam Check Dam to Thrithala Regulator Cum Bridge. As part of Sand auditing, cross-sections are taken at 161 locations within the 29 km river stretch in Bharatapuzha River Stretch-2 with an average interval of 180 m. Vaniyamkulam, Ongallur, Muthuthala, Paruthur, Thirumittacode, Thrithala, and Pattithara Panchayats, Pattambi Municipality, and Shornur Municipality of Palakkad District; and Panjal, Vallathol Nagar and Deshamangalam Panchayats of Thrissur District are the local bodies located on either bank of the river within this stretch.

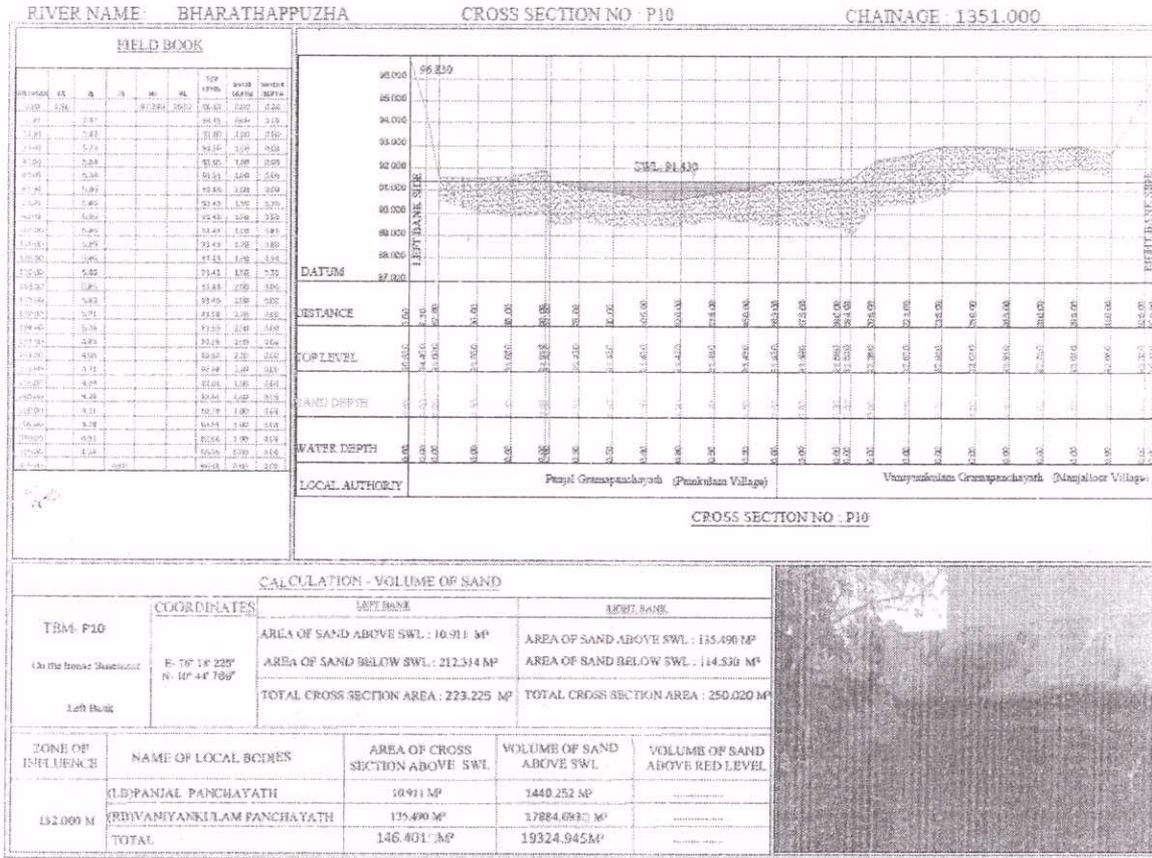
**Sand Availability in Bharatapuzha Stretch-2**

Sl No.	Name of Panchayat	District	Volume of Total Sand (m <sup>3</sup> )	Volume of Mineable Sand (m <sup>3</sup> ) for three years
1	Vaniyamkulam Panchayat	Palakkad	619782.06	301781.46
2	Ongallur Panchayat	Palakkad	795033.81	357621.77
3	Muthuthala Panchayat	Palakkad	374659.09	49607
4	Paruthur Panchayat	Palakkad	180370.15	Nil
5	Thirumittacode Panchayat	Palakkad	749594.69	152144.69
6	Thrithala Panchayat	Palakkad	194643.06	Nil
7	Pattithara Panchayat	Palakkad	71187.00	Nil
8	Pattambi Municipality	Palakkad	465627.20	250043.6
9	Shornur Municipality	Palakkad	1459295.25	678427.87
10	Panjal Panchayat	Thrissur	791759.6	341671.39
11	Vallathol Nagar Panchayat	Thrissur	755550.38	245807.6
12	Deshamangalam Panchayat	Thrissur	1687733.62	652964.23
<b>Total</b>			<b>8145235.91</b>	<b>3030069.61</b>

  
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Sample Cross Section

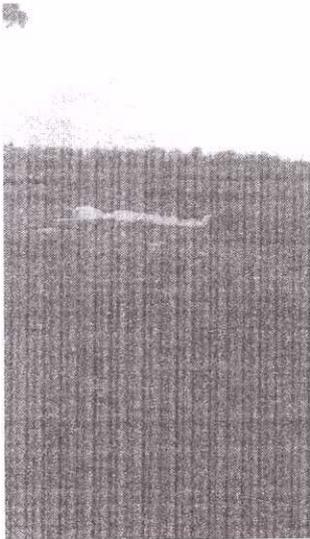


*(Signature)*  
**DR. A. KOWSIGAN IAS**  
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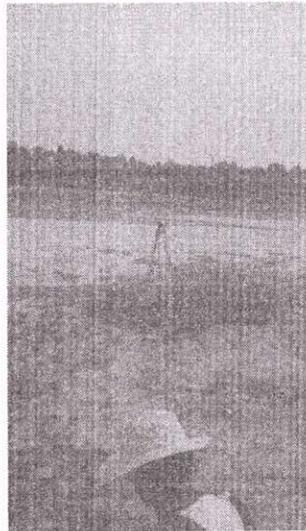
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Selected Field Photographs from Bharatapuzha Stretch-2 Sand Audit Report

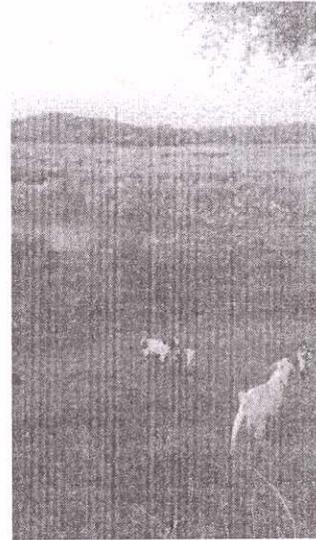
15 VIEWS OF BHARATHAPUZHA RIVER AT VARIOUS LOCATIONS



Near Pattambi



Kadhir Palam



Punya Theerani Kadavu



Cheruvuirthi



Shortoot Park

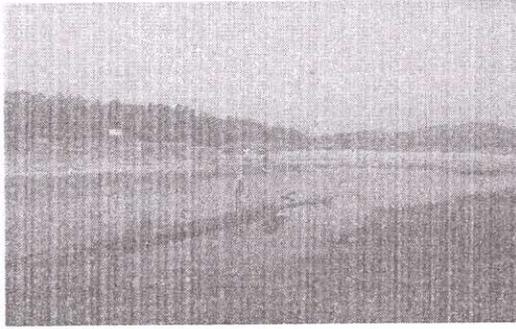


Near District Boundary(Thuvanna Kode)

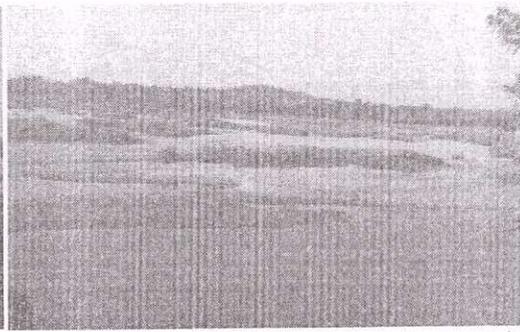
DR. A. KOWSIGAN IAS  
JOINT COMMISSIONER (I/C)  
LAND REVENUE  
THIRUVANANTHAPURAM

*[Handwritten signature]*

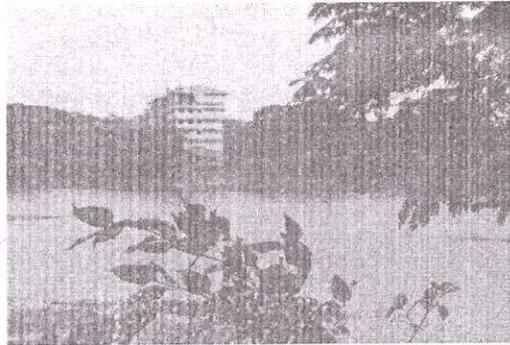
253



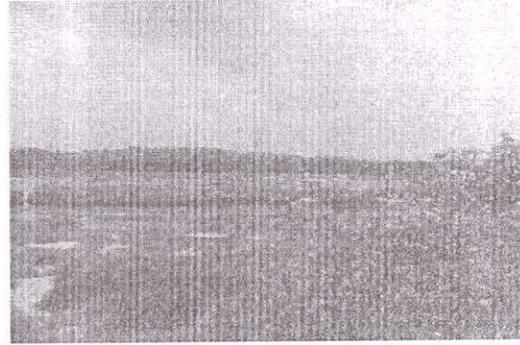
Vengalun Kadavu Shooting Location



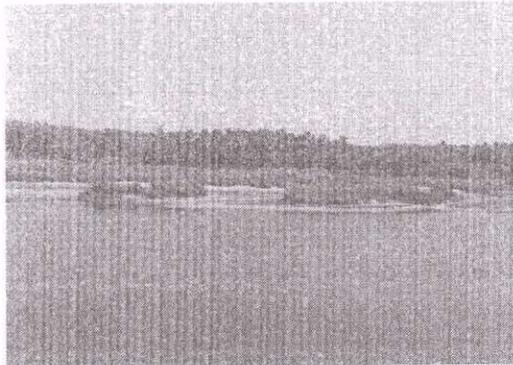
Near Chazhuthuufa



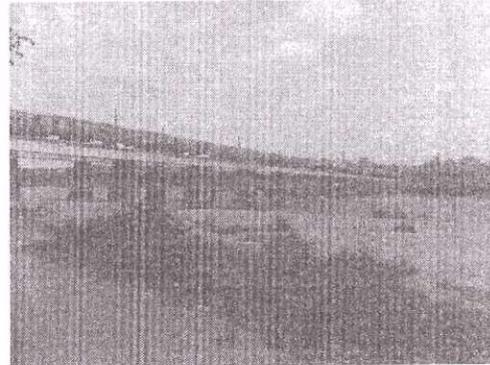
Near Pattanabi



Urethi Kadavu



Near Mithadevapuzha



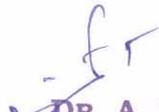
Shornoc Rail Bridge



Near Thirifala



Near Manmuppaadi Kadavu

  
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**LAND REVENUE**  
**THIRUVANANTHAPURAM**

### Bharatapuzha River Stretch-3

Sand auditing of Bharatapuzha River Stretch-3 covered 29 km from Thrithala Regulator Cum Bridge to Chamravattom Regulator Cum Bridge. As part of Sand auditing, cross sections are taken at 153 locations within the 29 km river stretch in Bharatapuzha River Stretch-3 with an average interval of 189.54 m. Pattithara, Parudur, and Anakkara panchayats of Palakkad District and Irimbilyam, Kuttippuram, Thirunavaya, Triprangode, and Tavanur panchayats of Palakkad District are located on either banks of the river.

#### Sand Availability in Bharatapuzha River Stretch-3

Sl No.	Name of Panchayat	District	Volume of Total Sand (m <sup>3</sup> )	Volume of Mineable Sand (m <sup>3</sup> ) for three years
1	Pattithara Panchayat	Palakkad	534744.72	332996.56
2	Paruthur Panchayat	Palakkad	698172.97	600110.57
3	Anakkara Panchayat	Palakkad	1623573.01	1086984.32
4	Irimbilyam Panchayat	Malappuram	329407.89	243653.59
5	Kuttippuram Panchayat	Malappuram	2883659.94	2029799.29
6	Thirunavaya Panchayat	Malappuram	382848.02	151915.01
7	Triprangode Panchayat	Malappuram	865722.06	20502.09
8	Tavanur Panchayat	Malappuram	3186376.26	1178870.24
<b>Total</b>			<b>10504504.86</b>	<b>5644831.67</b>

  
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**LAND REVENUE**  
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**CROSS SECTION PROFILE 3**

Paradur - Paltithara Panchayat  
Chainage 545m

FIELD BOOK			
Distance	RL	Sand	Water level
0	89.645		
34	91.585	90.915	
42	91.965	91.265	
52	90.545	89.945	
77	89.645	88.045	89.645
103	89.875	87.555	89.645
117	89.605	87.965	89.645
123	89.795	87.945	
137	90.365	88.365	
177	90.555	88.555	
197	90.855	89.855	
217	90.375	89.875	
230	92.715	91.415	
250	92.905	92.255	
270	93.665	92.715	
280	92.875	92.875	
310	92.025	91.825	
330	92.565	91.565	
350	92.635	92.135	
370	92.675	93.745	
380	92.475	91.075	
410	92.285	91.785	
430	92.035	91.235	
450	93.145	93.145	
470	93.395	92.645	
490	93.855	91.855	
510	93.065	92.765	
530	92.155		
550	93.085		
570	93.895		
590	94.175		
615	94.845		

**CROSS SECTION MAP**

Profile 3

**IDENTIFICATION OF TBM**

**TBM - 2**

TBM-2 is fixed on right side corner of the pump house,  
KSEB 116539-006691

**SAND VOLUME ESTIMATION**

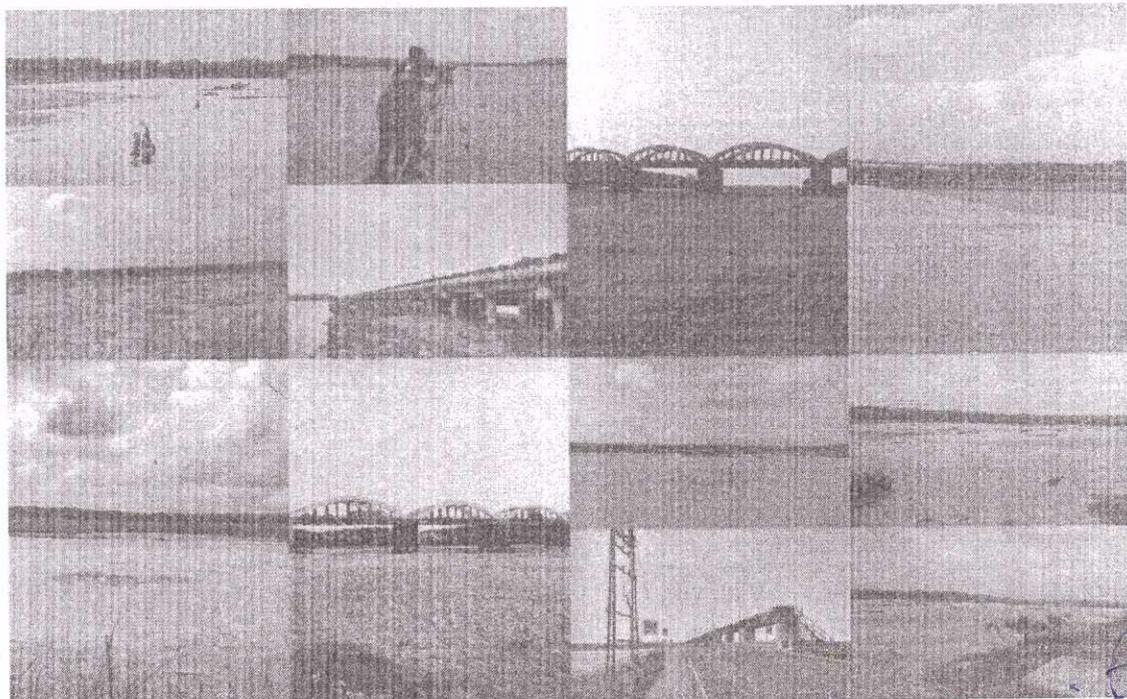
Cross section area of Sand in Profile = 560.72608 sq. m  
Width of the Zone of influence = 162.242 m  
Sand Volume in the Profile 3 = 90973.32067 cu. m

**MINEABLE SAND**

R. L. of TBM = 96.17 m  
R. L. of SWL = 89.645 m  
SWL is 6.525 m below the R. L. of TBM  
Mineable sand volume = 56776.55545 sq. m

**Selected field photographs from Bharatapuzha Stretch-3 Sand Audit Report**

**FIELD PHOTOS**



22/5/17