BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL

PRINCIPAL BENCH, NEW DELHI

ORIGINAL APPLICATION NO.606 OF 2018

IN THE MATTER OF:

Compliance of Municipal Solid Waste Management Rules, 2016.

AFFIDAVIT/ACTION TAKEN REPORT FILED ON BEHALF OF RESPONDENT (ANDAMAN AND NICOBAR ADMINISTRATION) IN COMPLIANCE OF ORDER DATED 25/04/2024.

I, Keshav Chandra, S/o. Shri. Vindeshwari Rai aged about 54 years, holding the post of Chief Secretary, Andaman and Nicobar Administration having office at Secretariat, Sri Vijaya Puram, Andaman and Nicobar Islands do hereby solemnly affirm and state that :

1. I am conversant with the facts and circumstances from the records of the case. Thus, I am competent to swear to this affidavit.

2. This Hon'ble Tribunal by order dated 25.04.2024 in OA No. 606 of 2018 directed the Chief Secretary of Andaman & Nicobar Islands Union Territory to furnish a comprehensive report including in respect of observations made by this Hon'ble Tribunal pertaining to the Status Report filed on 08.12.2023. A true copy of the Order dated 25.04.2024 passed by this Hon'ble Tribunal in O.A No.606 of 2018 is annexed and marked hereto as **Annexure-R-1 (Pg Nos 1 to 4).**

NOTARY PUBLIC
Date 15/4/2024
C. SIVA BALAN, ADVOCATE

3. I state that further to the aforesaid, steps have been taken to comply with the directions passed by this Hon'ble Tribunal in letter and spirit.

4. I state that the action taken by the Andaman & Nicobar Administration as set out in tabulated statement providing justification/clarification in respect of each of the points indicated by this Hon'ble Tribunal is annexed and marked hereto as **Annexure R-2 (Pg nos 5 to 1379).**

5. In addition to the aforesaid, I state that the Andaman & Nicobar Administration has adopted various best practices and has undertaken various programmes to achieve the objective of effective waste management in the Andaman & Nicobar Islands in accordance with the applicable rules under the Environment Protection Act, 1986. A summary in this regard is annexed and marked hereto as **Annexure R-3 (Pg nos 1380 to 1435).**

6. In the premises aforesaid I state that the Andaman & Nicobar Administration is taking steps in compliance with the directions passed by this Hon'ble Tribunal. The Administration will take further steps to ensure there is effective compliance in future.

7. In the light of the factual circumstances stated above, this Hon'ble Tribunal may be pleased to kindly take on record the present affidavit and pass appropriate orders as deemed fit and proper.

NOTARY PUBLIC
Date 15/11/2024
D. SIVA BALAN, ADVOCATE

DEPONENT

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VERIFICATION

Verified at Sri Vijaya Puram on this the 15th day of November 2024 that the contents of the above affidavit are true and correct to the best of my knowledge and belief. No part of it is false and nothing material has been concealed there from.

DEPONENT

Identified by me:

SUVADRA CHAKRABORTY
15/11/2024



Affirmed before me after the contents were read over and explained in simple Hindi / English language, on this 15th day of November 2024.

D. SIVA BALAN
ADVOCATE & NOTARY PUBLIC
A & N Administration
Port Blair, A & N Islands
Enrl. No. WB/1212A/2000

Notary Serial No. 232
Date 15/11/2024

ANNEXURE-R1

Item No. 10 Court No. 1

BEFORE THE NATIONAL GREEN TRIBUNAL
PRINCIPAL BENCH, NEW DELHI

Original Application No. 606/2018
(IA No. 163/2021)
(In respect of UT of Andaman and Nicobar)

Compliance of Municipal Solid Waste Management Rules, 2016 and other environmental issues

Date of hearing: 25.04.2024

CORAM: HON'BLE MR. JUSTICE PRAKASH SHRIVASTAVA, CHAIRPERSON
HON'BLE DR. A. SENTHIL VEL, EXPERT MEMBER

Respondent: Shri Keshav Chandra, Chief Secretary, Smt. Dilraj Kaur, Comm -cum-Secy (S & T),Shri Senthil Kumar, APCCF (CRZ & FC),Shri A.S.P.S. Ravi Prakash, Secretary (Urban Development),Smt. Purva Garg, Secretary (APWD), Shiv Singh Meena, Director (Rural Development & Panchayat),Shri Abhishek Bhukal, Member Secretary, ANPCC, Mr. Gigi. C. George, Adv. for Andaman & Nicobar Islands

ORDER

1. In this Original Application, Tribunal is examining the issue of solid as well as liquid waste management, State-wise, as per orders of the Hon'ble Supreme Court dated 02.09.2014 in *Writ Petition No. 888/1996* in the matter of *Almitra H. Patel vs. Union of India & Ors.,* with regard to solid waste management and order dated 22.02.2017 in *W.P. No. 375/2012, reported in (2017) 5 SCC 326* in the matter of *Paryavaran Suraksha vs. Union of India*, with regard to liquid waste management.

2. Today, matter has been taken up for examining the compliance by the UT of Andaman and Nicobar.

3. Shri Keshav Chandra, Chief Secretary, Smt. Dilraj Kaur, Comm -cum-Secy (S & T),Shri Senthil Kumar, APCCF (CRZ & FC),Shri A.S.P.S. Ravi Prakash, Secretary (Urban Development),Smt. Purva Garg, Secretary (APWD), Shiv Singh Meena, Director (Rural Development & Panchayat),Shri Abhishek Bhukal, Member Secretary, ANPCC, Andaman

& Nicobar Islands are present virtually, who have been heard on the issue of compliance.

4. We have referred the report filed on 8.12.2023 and followed by updated Presentation made today by Chief Secretary. We find that there is no significant progress made in last one year to bridge the gap in solid waste management and in sewage management. The specific observations and deficiencies noticed are as under :-

[A] Solid waste management-

(i) There has been a variation in reporting data on waste generation for Port Blair when compared with the data of the year 2022. Current waste generation is 51.67 TPD whereas one year back it was 60 TPD. Similarly, there appears to be increasing quantity of waste generation in 70 Gram Panchayat from 3.2 to 17.3 TPD.

(ii) On waste processing through Composting, no information has been disclosed on adequacy of composting facilities to cope up with daily waste generation and management during rainy season. Further, no information has been furnished on utilisation of compost and management of rejects.

(iii) There is a gap of 5.16 TPD in processing of dry waste for which processing facilities will be commissioned by October 2024.

(iv) It has been disclosed that, one lakh MT of legacy waste at Brookshabad (Blair) and 18.84 MT at 10 locations in Panchayats has been remediated but, no data is furnished on reject management.

(v) We find that plastic, glass, paper/cardboard and waste tyres are transported to mainland for processing. In this regard, factum of due authorization of Transporter and Processing

facilities at mainland and possessing Authorization under the relevant Rules need to be clarified.

[B] Sewage management-

(i) Out of 29.9 MLD of sewage generation, 8.7 MLD is reported to be treated through septic tanks and 5.0 MLD sewage is reused. The resultant gap in treatment is 16.1 MLD. Thus, sewage is ultimately entering coastal water or seeping to ground. PCC should give details of locations where sewage is being discharged in coastal waters.

(ii) It is noted that to bridge the gap, decentralized STPs and FSTPs are proposed. In this context each inhabited island need to have proper sewage management facilities and all households connected to such system. For setting up of decentralized /Packaged - Modular STPs be explored for quick commissioning.

(iii) Considering influx of tourists and operation of Hotels, etc, next report should disclose the system adopted for solid and liquid waste management and performance evaluated by PCC. Further, PCC should give status of monitoring of ground water quality.

5. Chief Secretary, UT of Andaman and Nicobar may file comprehensive report in light of the observations made above.

6. Let fresh action taken report be filed by UT of Andaman and Nicobar at least one week before the next date of hearing by e-mail at judicial-ngt@gov.in preferably in the form of searchable PDF/ OCR Support PDF and not in the form of Image PDF covering the aspects noted above.

7. List the matter on 21.11.2024 for consideration of report in respect of UT of Andaman and Nicobar.

8. For State of Karnataka, matter be listed on 02.05.2024 as per earlier direction.

Prakash Shrivastava, CP

Dr. A. Senthil Vel, EM

April 25, 2024
Original Application No. 606/2018
(IA No. 163/2021)

ACTION TAKEN REPORT CUM STATUS REPORT IN-COMPLIANCE OF ORDER DATED 25.4.2024 PASSED BY THE HON'BLE NATIONAL GREEN TRIBUNAL

Directions/Observations and Deficiencies mentioned in the Order of this Hon'ble Tribunal	Issues to be addressed	Clarification and Current Status	Tentative Timelines
[A] Solid waste management-			
(i) There has been a variation in reporting data on waste generation for Port Blair when compared with the data of the year 2022. Current waste generation is 51.67 TPD whereas one year back it was 60 TPD. Similarly, there appears to be increasing quantity of waste generation in 70 Gram Panchayat from 3.2 to 17.3 TPD.	• Justification for variation of Solid Waste generation data by SVPMC • The dry, wet, DHW & Sanitary and inert/ rejects wastes are 27.86, 32.77,0.13 & 5.64 TPD respectively for the month of September, 2024. The total values for the month of May, June, July, august & October, are 57.7, 49.5, 60.70, 73.77 & 67.75 respectively. Based on the total value, fill the dry, wet, Domestic Hazardous waste (DHW) & Sanitary and inert values corresponding to each month with reference to the month of September, 2024.	**Urban area** To address the concern raised by the Hon'ble NGT about the variation in the reported data on waste generation compared to the year 2022 and 2023, an elaborate verification of waste generated in the Sri Vijaya Puram Municipal Council (SVPMC) limits has been done. Starting from the month of May 2024, up to October 2024 every day waste generated household wise were studied by a team of officials headed by the Secretary, Sri Vijaya Puram Municipal Council (SVPMC). The data that was collected was presented to the Chief Secretary, A&N Administration, in the weekly review meetings, The Chief Secretary, A&N Admin., has ordered field verification of data by all the Senior IAS Officers as per the roaster issued to them to surprise check at various level the accuracy of the data. As many as twenty-four IAS/DANICS Officials over a period of six months submitted reports on the verifications as well as other aspects on the field level realities. (The inspection reports of the senior IAS officers and the minutes of the weekly meetings of the Chief Secretary are enclosed in **Annexure-AA**). After elaborate fresh survey of waste collection and verification of the data and addressing all short comings there is significant improvement in the waste collection, segregation & processing in these Islands. After analyzing the data for May to Oct 2024, the Average per day waste generation is 62.60 Tons. Even though there are monthly fluctuations due to vacations, festive seasons, monsoon, etc. more or less the trend in the waste collection is seen	N/A

to be not decreasing, so the concern of the Hon'ble NGT that there is variation in the data and the waste generation is reducing found to be addressed.

Summarized Daily Waste generation data from May 2024 to September 2024 as **Annexure-I A**.

	May 2024 (TPD)	June 2024 (TPD)	July 2024 (TPD)	Aug 2024 (TPD)	Sept 2024 (TPD)	Oct 2024 (TPD)	6monthly Avg., 2024 (TPD)
Dry	25.23	22.05	23.54	29.89	27.83	30.78	26.55
Wet	30.38	24.7	31.6	37.96	32.56	33.51	31.79
DHW & sanitary	0.11	0.14	0.12	0.14	0.13	0.16	0.13
Inerts/ Rejects	2.03	2.61	5.44	5.78	5.64	3.3	4.13
Total waste	57.75	49.5	60.7	73.77	66.16	67.75	62.60

Average waste generation per month = 62.60 TPD

- Justification for variation of Solid Waste generation data by RD&P

Rural Area

To address the concern raised by the Hon'ble NGT about the variation in the reported data on waste generation compared to the year 2022 and 2023, an elaborate verification of waste generated in the Rural area limits has been done.

Door to door collection of waste is implemented for all rural households across the Islands, along with the regular repair and maintenance of Bailing & shredding machines equipped in the 26 Solid Waste Management Clusters that resulted in the increase of percentage of Solid Waste Collection. The Rural department prepared and issued a Standard Operation Procedure (SOP) on 06-08-2024 for proper management and effective monitoring of SWM. (Copy of SOP enclosed) Rural Development Department which is the Nodal department for coordinating Solid waste Management Operations started collecting details of solid waste regularly from all 26 SWM Clusters. The work of SWM clusters was supervised and

N/A

closely watched by Seven Block Development Officers (BDO) After analyzing the monthly data received from BDOs for May2024 to Oct 2024, the Average per day waste generation from all the 70 GPs is 11.83 TPD. The increase from 3.2 TPD to 11.83 TPD is attributed to the fact that earlier regular house to house collection was not done which is now significantly improved to 100 percent door to door collection. Also, now dry waste is segregated and bailed. Authorized vendors are appointed to transport and finally dispose the waste in a scientific manner. As per the reports of BDO s entire dry waste and wet waste processing is taking place. Dry waste 10.8 TPD is bailed and transported. Wet waste in rural areas is composted in the house holds for own use. Only 0.68 TPD collected and composted by SWM clusters (Composting capacity 130 TPD) Whatever compost so generated is freely distributed to households. As per this it is crystal clear that Rural areas are having robust waste collection and processing capacities in place. Hence the concern of the Hon'ble NGT that there is variation in the data and the waste generation has been addressed fully.

- Average Monthly data of waste generation from the month of May to October2024 has been enclosed. The report is in line with the report submitted by the Block Development Officer every month of their respective blocks-**Annexure-I B**

	May 2024 (TPD)	**June2024 (TPD)**	**July 2024 (TPD)**	**Aug 2024 (TPD)**	**Sept 2024 (TPD)**	**Oct 2024 (TPD)**
Dry	14.96	10.3	15.6	10.6	9.54	4.3
Wet	1.16	0.62	0.56	0.58	0.61	0.58
Mixed	0.21	0.22	1.29	0.13	0.18	0.10
Total	16.34	11.1	17.5	11.36	10.32	4.98

Average Waste generation= **11.83 TPD**

	• Characterization of solid waste generation of in Urban Area:	• Out of 62.60 TPD (Avg. of 06 months, from May to Oct., 24), average dry waste consists of 26.55 TPD, Wet waste consists of 31.79 TPD and DHW & sanitary waste consist of 0.13 TPD & 4.13 TPD of inert/reject. Out of which processing 54.92 TPD through the available dry waste, wet waste, domestic hazardous waste including sanitary waste facilities. • According to the waste characterization study conducted by GIZ-India in Sri Vijaya Puram City, the total dry waste accounts for 44.55%, wet waste for 52.10%, domestic hazardous and sanitary waste for 1.85%, and inert materials and fines make up 1.5% of total waste. (Copy of report is enclosed as **Annexure-II.)** • For dry waste, 18 Dry Resource Centers (DRC)& Material recovery Facilities (MRFs) are setup, mostly operated by Private players (authorized dealers) collect the dry waste from designated wards for segregation, bailing and transportation of waste to mainland by for scientific disposal of waste at mainland.	N/A
	• Characterization of solid waste generation of Rural Area:	• Out of 11.83 TPD (Average of 06 months May to Oct 24) solid waste generated in rural area, Dry waste consists of 10.8 TPD, wet waste consists of 0.68 TPD and 0.35TPD of mixed waste. 26 Solid waste Management clusters collect the dry waste from designated wards for segregation, bailing and transportation of waste to mainland by authorized dealers for scientific disposal of waste at mainland.	N/A

	Generated (TPD)	**Capacity (TPD)**	**Processed (TPD)**	**Gap (TPD)**
Dry	26.55	23.00	23.00	3.55
Wet	31.79	32.50	31.79	-
DHW & Sanitary	0.13	0.50	0.13	-
Inert/ rejects	4.13	-	-	4.13
Total	62.60	56.0	54.92	7.68

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	Generated (TPD)	Capacity (TPD)	Processed (TPD)	Gap (TPD)
Dry	10.8	13	10.8	0
Wet	0.68	130	0.68	0
Mixed	0.35	0	0	0.35
Total	11.83	25	11.48	0.35

(ii) On waste processing through Composting, no information has been disclosed on adequacy of composting facilities to cope up with daily waste generation and management during rainy season. Further, no information has been furnished on utilization of compost and management of rejects.	• Location wise Compositing facilities along with the Capacity of processing facility and quantity of waste processed in TPD	**Urban Area:** The concern expressed by the Hon'ble NGT on the waste processing through composting, has also been substantially addressed. The percentage of wet waste in SVPMC is found to be 52.10% as per the waste characterization studies conducted by GIZ in 2021-22. There is a wet waste generation of 31.79 TPD out of which wet waste processing facilities of 32.50 TPD has been created/ activated in current operation, these facilities include composting units at Garacharma (5 TPD and 3 TPD) and Anarkali (3 TPD and 2 TPD), as well as a 2 TPD fish processing unit at Junglighat, which has been fully operational since October 2024. Additionally, the coconut waste shredding facility at Brookshabad, with a capacity of 4 TPD, became operational in July 2024 (the list of the composting facilities & photographs are enclosed at **Annexure-III A**). The compost generated is being distributed to all Govt. Departments, govt. Quarters, Govt. parks, schools, etc. Also, a proposal is already processed it will be sold to Agriculture department for distribution to farmers at mutually agreed price. Currently as such there is no gap of wet waste facility. Hence it is found the concern of the Hon'ble NGT is fully addressed. To cater to future needs, RFP was floated for 60 TPD Integrated (30 TPD wet waste & 30TPD dry waste) processing plant with latest technology at a cost of Rs.5.5Cr. of SBM(U) 2.0 funds, at Brookshabad (the design for the plant is given by the start-up M/s EMERGY Enviro incubated by SINE-IIT Bombay). This will be ready by July, 2025. The concern of Hon'ble NGT that there was no information on the adequacy of compost facilities and utilization of the compost has been fully addressed.	N/A

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- Details of Existing Wet waste Facility

Capacity of Existing Wet Waste facilities consists of 32.5 TPD which comprises of 5TPD pit compositing facility at Brookshabad, 5TPD pit composting facility at Gandi Park, 3TPD windrow composting facility at Anarkali-1 & 2TPD pit composting at Anarkali-2, 2TPD windrow compost facility at Brichgunj & 1TPD bin composting at Junglighat, 5TPD windrow compost unit-1 at Garacharama & 3TPD windrow compost unit-2 at Garacharama, 4TPD Coconut waste shredding facility cum co-composting at Brookshabad, 2TPD Fish waste processing unit at Junglighat and 0.5TPD Electric composting unit at Junglighat & Mohanpura modern fish market, Sri Vijaya Puram.

S.No	Composting facility	Capacity
1.	At Brookshabad	5 TPD
2.	At Gandhi Park	5 TPD
3.	At Anarkali-1	3 TPD
4.	At Anarkali-2	2 TPD
5.	At Brichgunj	2 TPD
6.	At Junglighat	1 TPD
7.	At Garacharama-1	5 TPD
8.	At Garacharama-2	3 TPD
9.	Coconut waste shredding facility at Brookshabad	4 TPD
10.	Junglighat Fish waste processing Unit	2 TPD
11.	Electric composting unit at Junglighat &Mohanpura	0.5 TPD
TOTAL		**32.5 TPD**

- The compost facilities with capacities of 5 TPD and 3 TPD at **Garacharma**, and 3 TPD and 2 TPD at **Anarkali,** have been operational since October 2024.
- **The fish processing unit** at Junglighat has become operational with its full capacity from October 2024.

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- **The coconut waste shredding facility** at Brookshabad, with a capacity of 4 TPD, became operational in July 2024.
- (Details along with photographs of existing facilities in SVPMC area is enclosed **Annexure-III A**).

- Location wise Compositing facilities along with the Capacity of processing facility and quantity of waste processed in rural area

As stated in Point No 1 total waste generation in Rural areas is 11.83 TPD. The wet waste produced at households are mostly vermi composted and consumed in rural house holds for agricultural and allied purposes . There is a wet waste collection of only 0.68 TPD out of which wet waste processing facilities of 130 TPD has been created/ functional will be used for future use. (the list of the composting facilities & photographs are enclosed at **Annexure-IIIB**). Thus, the concern of Hon'ble NGT that there was no information on the adequacy of compost facilities and utilization of the compost has been fully addressed.

Rural Area:

- Out of 0.68 TPD of wet waste in rural area 0.68 TPD wet waste is being processed through existing compost facilities.

- Details of Existing Wet waste Facility in Rural Area:

S.No.	Location	Capacity in TPD
1.	Shivapuram	5
2.	Rangat	5
3.	Kadamtala	5
4.	Nilambur	5
5	Neil Kendra	5
6	Bakultala	5
7	Rampur	5
8	Pahalgaon	5
9	Basantipur	5
10	Madhupur	5
11	Nabagram	5
12	Kishori Nagar	5
13	Radha Nagar	5
14	Kerlapuram	5
15	Beodnabad	5

16	Shyam Nagar	5
17	Neil Kendra	5
18	Netaji Nagar	5
19	Rabindra Nagar	5
20	Shore Point	5
21	Manarghat	5
22	Collinpur	5
23	Brindaban	5
24	Chouldari	5
25	Wandoor	5
26	Laxmi Nagar	5
TOTAL		**130 TPD**

Details of existing wet waste facilities enclosed **Annexure-III B**

Information on utilization of compost and management of rejects.

In Urban Area:

In response to the query regarding the specific challenges posed during the rainy season, we would like to provide the following clarifications:

- Currently, SVPMC's collection vehicles are semi-open, which can result in waste getting wet during rainfall. However, as part of our integrated waste management system under implementation, we have planned measures to address rainwater-related challenges comprehensively. This includes ensuring that all door-to-door waste collection equipment are covered. The transportation fleet is upgraded to fully covered vehicles to prevent any exposure to rain, ensuring that waste remains protected until it reaches the processing/disposal points. Additionally, the entire composting and waste processing facility will be housed in a fully covered shed to facilitate continuous and efficient processing irrespective of weather conditions.
- Currently, SVPMC is distributing whatever compost made out of organic waste and shredded tender coconut is being supplied to all

		the Government departments, schools and SVPMC's parks and green patches. (Photographs are enclosed as **Annexure-III C.** • As per the direction issued by the Chief Secretary, A&N Administration the organic compost prepared from the wet waste is utilized in the parks/ gardens of the department. • In absence of reject waste disposal facility, the rejected waste generated out of Dry waste processing centers & Material recovery facility (i.e., from DRCs & MRF) and after screening of compost is being disposed at dump yard at Brookshabad. **In Rural Area:** • Vermi composting is being practiced by each and every household using earthworms which convert the organic waste into manure rich in high nutritional content and further used in Kitchen/terrace gardening. (Photographs of household vermicomposting units are enclosed as **Annexure- III D** • Compost was further provided to the households for using in kitchen/terrace gardening etc. • The rejected waste generated out of screening of compost and solid waste management clusters are being disposed in landfills.	

iii) There is a gap of 5.16 TPD in processing of dry waste for which processing facilities will be commissioned by October 2024.	• Details of existing dry waste facilities along with the Capacity of processing facility in Urban Area. • Details of proposed MRF Facility, for processing of dry waste, proposed fish waste processing unit, proposed Coconut processing unit provided with achievable timelines for completion. • Details of Dry waste Facility proposed by SVPMC in Urban Area	**Urban Area:** As per the characterization of the waste 44.55% is dry waste. 26.55 TPD of dry waste is generated in Sri Vijaya Puram city. A state of the art of 5 TPD Material Recovery Facility at Brookshabad for dry waste with German technology with the help of GIZ has been installed Rs. 1.5Cr. on 23rd July, 2024. The plant is converting the dry waste into shredded plastic which is being sold to Public Works Department (PWD) for laying of roads. The same plant has a facility of 3 TPD glass pre-processing (shredding) unit. 60 TPD plant which was mentioned in the pre-para will cater to 30 TPD of dry waste processing will be ready by July, 2025 as stated above. Once this plant is ready the entire dry waste will be processed in Sri Vijaya Puram. At present, decentralized dry resource centres operated by private vendors at 16 locations (stated at **Annexure-IVA)** having a capacity of 15 TPD are segregating the dry waste collected from the urban area into various categories and having forward contract with authorized dealers for selling & transporting the segregated waste out of the Islands for final processing & disposal. These arrangements will be dispensed once 60 TPD (out of which 30 TPD dry waste) plant completed by July, 2025. The gap of 3.55 TPD also will be addressed by the same time. Also, an additional capacity of 12 TPD will be available for future needs. With respect to the Hon'ble NGT concern on the processing of dry waste of 5.16 TPD is addressed completely by the above stated actions. • Existing dry waste facilities	

S.No.	Name of DRC	Capacity in TPD
1.	Anarkali-1	1.0
2.	Anarkali-2	1.0
3.	Anarkali-3	0.8
4.	Mohanpura	1.0
5	VIP Road	1.0
6	Junglighat	1.0
7	Brookshabad-1	0.8
8	Brookshabad-2	1.0
	Brookshabad-3	1.0

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10	New Pahargaon	1.0
11	School Line	0.8
12	Dollygunj-1	1.0
13	Dollygunj-2	1.0
14	Garacharama-1	1.0
15	Bathubasti	0.8
16	MRF Glass	3.0
17	MRF-Plastic waste processing unit	5.0
18	Birdline	0.8
TOTAL		**23 TPD**

- **5 TPD Material Recovery Facility** installed at Brookshabad, Sri Vijaya Puram is being operational from July 2024 with a concept of waste-to-wealth concept, having processing units such as the phatka machine/ de-dusting unit, plastic shredder, aglo maker, gatta/ extruder machine and glass shredder units. The shredded materials are being supplied to road construction (Andaman Public Works Department) and self-utilized (SVPMC) in the road construction works.
  (Details of Existing dry waste facilities along with photographs for SVPMC area-**Annexure-IVA)**

- In order to meet & cater the future waste management demand i.e., for next 15years, keeping in view of expansion/ delimitation of jurisdiction of urban areas/ Sri Vijaya Puram city, proposal was submitted and approved for **an integrated/ centralised 60 TPD capacity Municipal Solid Waste Processing,** Treatment, and Management Facility for Dry (30 MTPD) and Wet (30 MTPD) waste at the Brookshabad site for Sri Vijaya Puram Municipal Council. The tender was floated, the technical bid has been opened & finalised. The process for financial bids will be completed by the 1st week of December, 2024.

- **A manual paper recycling unit** with a capacity of 0.1TPD is set to be installed with the support of GIZ-India. Procurement process has been completed; installation will be completed by the end of December, 2024.

Project completion by July 2025

		1273 This unit will enable the efficient recycling of wastepaper, transforming it into reusable office products and enhancing waste minimization and resource optimization within the council's operations. (Details of paper recycling plant layout is enclosed at **Annexure-IVB**).	

	• Details of existing dry waste facilities along with the Capacity of processing facility in Rural Area. Details of Dry waste Facility proposed in Rural Area	**Rural Area** In rural areas, 10.8 TPD of dry waste is generated, all of which is processed through 26 SWM Clusters having capacity to segregate and bail upto 13 TPD for transportation to mainland for scientific disposal/recycling of waste. Gram Panchayats create waste collection calendars for rural households, commercial and government institutions; ensuring timely pickups of segregated waste across 70 GPs. Designated collection points are established, where waste personnel follow the schedules to collect only dry waste, which is taken to 26 SWM clusters mapped to these Gram Panchayats. (Details of existing facilities along with photographs are enclosed as **Annexure-IVC**) From the above details, it is clear that Rural areas are now having sound Waste collection and disposal practices. • Existing dry waste facilities	N/A

S.No.	Name of SWM Cluster	Capacity in TPD
1.	Shivapuram	0.5
2.	Rangat	0.5
3.	Kadamtala	0.5
4.	Nilambur	0.5
5	VIP Road	0.5
6	Bakultala	0.5
7	Rampur	0.5
8	Pahalgaon	0.5
9	Basantipur	0.5
10	Madhupur	0.5
11	Nabagram	0.5
12	Kishori Nagar	0.5
13	Radha Nagar	0.5
14	Kerlapuram	0.5
15	Beodnabad	0.5
16	Shyam Nagar	0.5
17	Neil Kendra	0.5
18	Netaji Nagar	0.5
19	Rabindra Nagar	0.5

20	Shore Point	0.5
21	Manarghat	0.5
22	Collinpur	0.5
23	Brindaban	0.5
24	Chouldari	0.5
25	Wandoor	0.5
26	Laxmi Nagar	0.5
TOTAL		13 TPD

- Gram Panchayats create waste collection calendars for rural households, commercial and government institutions; ensuring timely pickups of segregated waste across 70 GPs. Designated collection points are established, where waste personnel follow the schedules to collect only dry waste, which is taken to 26 SWM clusters mapped to these Gram Panchayats. After initial segregation from various sources, dry waste is sorted from wet waste according to a standard operating procedure. This dry waste is then categorized into specific materials—like plastics, paper, metals, and e-waste—by trained personnel, enhancing recycling and waste management efficiency.
  (Details of existing facilities along with photographs are enclosed **Annexure-IVC)**

- The Rural Development Department has now tasked 02 dedicated authorized agency for collection, management and transportation of solid waste from rural areas to mainland.

iv) It has been disclosed that, one lakh MT of legacy waste at Brookshabad (Blair) and 18.84 MT at 10 locations in Panchayats has been remediated but, no data is furnished on reject management.

- Bioremediation of 1 Lakh MT of legacy waste at Brookshabad, Sri Vijaya puram was completed. Details of methodology followed for bioremediation including Waste compaction, drainage and Reject management,

All the required data regarding 1Lakh MT legacy waste remediated at Brookshabad, the required data along with photographs have been provided as below- Various fractions generated during the Bioremediation process involves

- Bio-Earth/ Compost (Tons)- 21932.02,
- Inert & Stone Debris (Tons)- 74642.370
- RDF and others (Tons)- 2119.04Tons and
- Lost Fraction-1052Tons.

N/A

1276

		• The rejects especially (Refused Derived fuel) RDF was sent to M/s Chettinad Cement, Tamil Nadu, factory for its final disposal, the documentary proof for sending the same is enclosed at **Annexure-IV-D**)	
	• Bioremediation of 18.84 MT of legacy waste at 10 locations in Panchayats was completed. Details of methodology followed for bioremediation including Waste compaction, drainage and Reject management	Also, the details of the remediation of 18.84MT of legacy waste at 10 locations in rural areas has been enclosed in **Annexure-IV E**. • Composting methodology has been adopted by all Gram Panchayats because most household wastes are organic, non-toxic and environment friendly. • Details of the remediation of 18.84 MT of legacy waste at 10 locations in Panchayats has been enclosed in **Annexure-IV-E.** • The rejects especially RDF was sent to M/s Chettinad Cement, Tamil Nadu, factory for its disposal. Accordingly, the directions of the Hon'ble NGT are complied	
(v) We find that plastic, glass, paper/cardboard and waste tyres are transported to mainland for processing. In this regard, factum of due authorization of Transporter and Processing facilities at mainland and possessing Authorization under the relevant Rules need to be clarified.	• Details of the quantity of waste transported to mainland on monthly basis for plastic, glass, paper/cardboard and waste tyres by the authorized vendors Copies of Consent to Operate under Water (Prevention and Control of Pollution) Act 1974, Air (Prevention and Control of Pollution) Act 1981 and Authorization under Solid Waste Management Rules-2016 of the each of the end disposal facilities at mainland.	**In Urban Area** The average waste generated in urban area of ANI come to 62.60 TPD out of this, dry waste generated works out to be 25.85 TPD. Currently, as mentioned in the previous paragraph, a state of the art of 5 TPD Material Recovery Facility at Brookshabad for dry waste with German technology with the help of GIZ has been installed Rs. 2.0Cr. on 23rd July, 2024. The plant is converting the dry waste into shredded plastic which is being sold to Public Works Department (PWD) for laying of roads. The same plant has a facility of 3 TPD glass pre-processing (shredding) unit. 60 TPD plant which was mentioned in the pre-para will cater to 30 TPD of dry waste processing will be ready by July, 2025 as stated above. Once this plant is ready the entire dry waste will be processed in Sri Vijaya Puram. At present, decentralized dry resource centres operated by private vendors at 16 locations (stated at annexure-) having a capacity of 15 TPD are segregating the dry waste collected from the urban area into various categories and having forward contract with authorized dealers for selling & transporting the segregated waste out of the Islands for final processing & disposal.	N/A

		1277 These arrangements will be dispensed once 60 TPD (out of which 30 TPD dry waste) plant completed by July, 2025. The gap of 3.55 TPD also will be addressed by the same time. Also, an additional capacity of 12 TPD will be available for future needs. With respect to the Hon'ble NGT concern on the processing of dry waste of 5.16 TPD is addressed completely by the above stated actions. Hence it is reiterated that the Plastic Waste Management & Solid Waste Management Rules, 2016 as are being complied in toto by this UT. Accordingly as directed by the Hon'ble NGT the authorization letters submitted by the transporters/ vendors who are transporting segregated dry waste out of this UT to mainland for final processing & disposal at mainland are enclosed in the Annexure-VA. From the above it is very clear that the Hon'ble NGT directions in this regard are fully complied with. • For processing and recycling, the waste is being sent to the End disposal units situated at mainland which are authorized by concerned State Pollution Control Boards under relevant Waste management rules, i.e. Solid Waste Management Rules-2016, Plastic waste management Rules-2016(amended) and Hazardous and other waste (Management and transboundary) Rules-2016. (Details of quantity of waste transported through Dry Resource Centres and Details of authorization of end disposal facilities is enclosed as **Annexure-V A)**	

		In Rural Area 1278 • Rural Department has now tasked 02 dedicated agencies for collection, management and transportation of Solid waste from rural areas to Mainland in both the district. • Legacy Glass waste of 140 MT has been cleared by Ms. C.M. Scrap as per the order allotted to the firm and sent to cement factories in mainland). • Details of quantity of waste transported through Dry Resource Centres and Details of authorization of end disposal facilities is enclosed as **Annexure-V B)**	N/A

[B] Sewage management

Directions/Observations and Deficiencies mentioned in the order of this Hon'ble Tribunal	Issues to be addressed	Clarification and Current Status	Tentative Timelines
vi) Out of 29.9 MLD of sewage generation, 8.7 MLD is reported to be treated through septic tanks and 5.0 MLD sewage is reused. The resultant gap in treatment is 16.1 MLD. Thus, sewage is ultimately entering coastal water or seeping to ground. PCC should give details of locations where sewage is being discharged in coastal waters.	Details on re-usage of 5.0 MLD sewage as reported in the compliance report provided by SVPMC.	**Urban Area** • SVPMC having a population of 108,058 (2011 census), as per the methodology prescribed in the CPHEEO manual, 2013 is having a liquid waste generation of 23.6 MLD. At present 7.78 MLD is being catered through on-site sanitation systems (septic tanks attached with soak pits). 2.303 MLD sewage treatment plants are available with private units (Hotels and other industrial units). Sewage of 13.517 MLD, primarily greywater from urban area, is discharged through 20 major drains situated across SVPMC area. • A fresh survey was conducted by a team from a start-up incubated by IIT Bombay who are experts in the field have assessed the outfalls of 20 major drains in SVPMC area, which are carrying almost entire sewage water of the city. Further, to assess the environmental impact of wastewater discharge, SVPMC conducted a comprehensive analysis of 20 major drain outfalls in May 2024, during the peak dry season. Testing was carried out by the National institute of Ocean Technology (NIOT) and the results revealed that Biochemical Oxygen Demand (BOD) levels in the drains were well within the permissible limit (<30 mg/L) as stipulated in Schedule-VI of the Environment (Protection) Rules, 1986. (Details of the drains and analysis report shared by NIOT are enclosed as **Annexure-VI**). • To address the gap of 13.517 MLD and to cater to future needs, a 25 MLD in-situ end treatment wetland technology by phytoremediation across 20 major drains to cover the whole city of Sri Vijaya Puram is proposed at a cost of Rs. 32.8Cr. (with funds identified under smart city program), tenders for all the drains have been floated. These projects are identified instead of the earlier construction of STP under smart city project. The project completion is expected by December, 2025. • Once all the actions stated above are completed, the concerns of the Hon'ble NGT that the sewage/ waste water 16.1 MLD entering into coastal water will be completely addressed. Also, additional capacity is also be created to cater to the future needs.	

Rural Area

1280

- At present, 9.65 MLD of sewage generated in rural area is fully treated as it is captured by the septic tanks which are installed in all households. Given the difficult terrain of the Islands and the facts that 31 Islands are inhabitant, there is a logical requirement of having Faecal Sludge Treatment Plant (FSTP) in all the inhabitant Islands. Given the financial and technical constraints, the ANI Administration is proposing for having five FSTPs under SBM (Grameen) funds. In the 1st phase at the most densely populated region of the Islands (Shyamnagar, Chouldari, Shorepoint, Rangat, Madhupur) having a total capacity of 40 KLD. These will be executed by Andaman Public Works Department. They are expected to be completed by Dec 2025. As soon as additional funds are received, process for the remaining FSTPs in the Islands will be initiated.

Name of the concerned body	Sewage Generation (MLD)	Sewage Treated (MLD)	Gap in Treatment (MLD)	Action Plan	
Urban area	23.6	7.78 through Onsite Sanitation System (septic tanks attached with soak pits)	15.82	• 20 major drains across whole city are proposed for In-situ end treatment wetland technology by Phytoremediation for 25 MLD at a cost of 32.8 crores. Tenders for all the drains have been floated, Project completion by Dec 2025 Fecal Sludge Treatment Plants (FSTP)s: • 42 KLD FSTP installed at Brookshabad by SVPMC for treatment of Faecal sludge • 60 KLD FSTP work has already been awarded and commenced the work, which will be completed by Dec 2025.	Dec 2025

		Rural	9.656	9.656 through septic tanks	0	• 9.65 MLD of sewage generated in rural area is fully treated as it is captured by the septic tanks which are installed in all households. Given the difficult terrain of the Islands and the facts that 31 Islands are inhabitant, there is a logical requirement of having Feacal Sludge Treatment Plant (FSTP) in all the inhabitant Islands. • Given the financial and technical constraints, the ANI Administration is processing for having 05 FSTPs of capacity 40KLD in the 1st phase at the most densely populated region of the Islands. Further, for management of Black water, there are soak pits in most of the households in the rural areas. ANI Administration is also making soak pits under MGNREGA, we have 237 soak post for households and 210 community soak pits. (Photos attached). For management of grey water, it is ensured that the water is discharged in the local gardens, farms, fields etc. as per the SBM guidelines.	Dec 2025
			*2.303 MLD sewage treated through STPs of private units (both rural and urban)				
		TOTAL	33.256	19.739*	13.517		

1282

<table>
<tr>
<td>vii) It is noted that to bridge the gap, decentralized STPs and FSTPs are proposed. In this context each inhabited Island need to have proper sewage management facilities and all households connected to such system. For setting up of decentralized /Packaged -Modular STPs be explored for quick commissioning</td>
<td>Setting up of decentralized /Packaged - Modular STPs be explored for quick commissioning. Detailed island-wise timelines for addressing sewage management in rural areas.</td>
<td>
<u>In Urban Area</u>
• In SVPMC area, 23.6 MLD sewage is generated, which has been calculated as per methodology prescribed in CPHEEO Manual 2013.
• <u>Current Processing</u>
▪ Out of 23.6 MLD, 7.78 MLD sewage is treated by pre-captive Treatment through Onsite Sanitation System (septic tanks attached with soak pits).
▪ 139 STPs of Hotel Industry having a Total treatment capacity of 2.303MLD.

<u>Existing FSTP details</u>
<table>
<tr><th>S No.</th><th>Location</th><th>Capacity</th><th>Status</th></tr>
<tr><td>1.</td><td>01 Faecal Sludge Treatment Plant (FSTP) in Sri Vijaya puram City</td><td>42 KLD</td><td>• All household has individual on-site pre-captive Treatment Plant established as septic tanks.
• The Faecal Sludge from houses is de-sludged on call basis and will be updated on scheduled basis.
• 05 KLD treated wastewater is been reused in Urban area</td></tr>
</table>
<u>Proposed FSTP details</u>
<table>
<tr><th>S No.</th><th>Location</th><th>Capacity</th><th>Status</th></tr>
<tr><td>1.</td><td>01 Faecal Sludge Treatment Plant (FSTP) at Brookshabad, Sri Vijaya puram</td><td>60 KLD</td><td>• Work is in progress
• Project Completion by Dec 2025</td></tr>
</table>
• For management of gap in treatment of sewage, 20 major drains across whole city are been proposed for In-situ end treatment wetland technology by Phytoremediation for 25 MLD is proposed at a cost of 32.8 crores. Tender for all the drains have been floated & project completion by December 2025. (Details of Project proposal and other documents enclosed as <u>Annexure-VII)</u>
</td>
<td>Dec 2025</td>
</tr>
</table>

		In Rural Area: • 9.65 MLD of sewage generated in rural area is fully treated as it is captured by the septic tanks which are installed in all households. Given the difficult terrain of the Islands and the facts that 31 Islands are inhabitant, there is a logical requirement of having Feacal Sludge Treatment Plant (FSTP) in all the inhabitant Islands. • 100 percent Sewage treatment has been done in rural area through septic tank. • Proposal for the 05 FSTP project having a total capacity of 40 KLD has been undertaken by the APWD. Project completion by Dec 2025. • Given the financial and technical constraints, the ANI Administration is processing for having 05 FSTPs of capacity 40KLD in the 1st phase at the most densely populated region of the Islands. Details of The Proposed FSTP are as follows: **S.No** / **Location** / **Capacity(KLD)** 1 / Shyamnagar / 5 2 / Chouldari / 5 3 / Shore Point / 10 4 / Rangat / 10 5 / Madhupur / 10 **Total** / **40 KLD** Further, for management of Black water, there are soak pits in most of the households in the rural areas. ANI Administration is also making soak pits under MGNREGA, we have 237 soak post for households and 210 community soak pits. For management of grey water, it is ensured that the water is discharged in the local gardens, farms, fields etc. as per the SBM guidelines	Dec 2025
iii) Considering influx of tourists and operation of hotels, etc., next report should disclose the system adopted for solid and liquid waste management and performance evaluated by PCC. Further, PCC should give status of	Status of monitoring of ground water quality.	Ground Water Quality With respect to the Hon'ble NGT concern to give status of monitoring of ground water quality by Andaman & Nicobar Pollution Control Committee (ANPCC), the department has requested Central Ground Water Authority to monitor the ground water quality in Andaman and Nicobar Islands. The Central Ground Water Authority conducted multiple groundwater quality studies during 2022 and 2024, across the Andaman and Nicobar Islands, including specific assessments in Sri Vijaya Puram City and Great Nicobar. Analyses revealed that overall chemical parameters of groundwater largely fall within permissible drinking water standards (IS 10500:2012). Additionally, feasibility studies identified potential sites in Sri Vijaya Puram City for bore wells and pond renovations, estimating an annual increase of 771 million liters in water supply through these enhancements. From the reports of the CGWA it is proved beyond doubt that the status of Ground water quality is not adversely affected.	N/A

monitoring of ground water quality.

Hence, the directions of the Hon'ble NGT are fully complied with. The inference related to groundwater quality as per studies conducted by the Central Ground Water Authority are tabulated below-

S No	Year	Sample Collection	Inference related to groundwater quality
1	2022-23	• The Central Ground Water Authority collected 110 representative groundwater samples from various locations across the Andaman and Nicobar Islands during the pre-monsoon season of 2022.	The chemical analysis indicates that water quality parameters fall within the permissible limits of drinking water standards (IS 10500:2012). (Report on Hydrochemistry Groundwater Quality Scenario in Andaman & Nicobar Islands (2022-23) enclosed as **Annexure-VIIIA**)
2	2022-23	• The Central Ground Water Authority collected water samples from 46 key wells and springs from various locations across Great Nicobar Islands during 2022-23	Groundwater quality found generally under acceptable limits of BIS, 2012 except iron, which is within permissible limits. Overall, groundwater found suitable for domestic, irrigation, and industrial use. (Report on National Aquifer Mapping and Management Plan Nicobar District, A&N Islands (2023) enclosed as **Annexure-VIII B]**
3	2023-24	• The Central Ground Water Authority collected water samples from open dug wells and piped sources during pre-monsoon (June 2023) and post-monsoon (December 2023) periods in Sri Vijaya Puram City. • A total of 252 samples were analysed in the NABL accredited Regional Chemical Lab, including 153	Pre-monsoon analysis showed variability in TDS and hardness, with most parameters meeting drinking water standards. However, bacteriological testing indicated that water from these sources requires proper disinfection for safe consumption. (Report on Sustainable management of water resources in Portblair urban area, South Andaman district, Andaman & Nicobar Islands (June 2024) enclosed as **Annexure-VIII C]**

		from 51 sampling points in pre-monsoon and 49 from monitoring stations post-monsoon.	
4	2023-24	• The Central Ground Water Board conducted hydrogeological, geophysical, and terrain analyses at 11 locations in Sri Vijaya Puram City.	Feasible sites for bore wells, ponds, and check weirs were identified, with ponds in Dollygunj and Bathu Basti showing substantial storage potential. The existing water supply could be increased by up to 771 million liters annually through pond renovations and check weir construction. (Report on Measures to Solve Water Scarcity Problem in Port Blair Urban Area, South Andaman District, Andaman and Nicobar Islands (2024) enclosed as **Annexure VIII D)**
5	2023-24	• The Central Ground Water Authority collected 113 representative groundwater samples from various locations across the Andaman and Nicobar Islands during the pre-monsoon season of 2023-24.	The chemical analysis indicates that water quality parameters fall within the permissible limits of drinking water standards (IS 10500:2012). (Report on Hydrochemistry Groundwater Quality Scenario in Andaman & Nicobar Islands AAP: 2023-24 enclosed as **Annexure-VIII E**)

Performance evaluation by ANPCC

- In a proactive measure to protect public health, the District Administration, South Andaman has sealed one drinking water well and one bore well in Beodnabad village. This action was followed by an alert raised by Central Ground Water Authority, Eastern Region, Kolkata, on August 17, 2024 concerning elevated nitrate levels in groundwater. The Revenue Officials of Sri Vijaya puram Tehsil carried out the sealing to address concerns about groundwater contamination and to prevent any potential health hazards associated with using affected water sources.





- 12 teams of Senior Officers constituted vide Order dated 18-06-2024 to inspect all existing Solid Waste Management facilities in SVPMC Area i.e. DRCs, Landfill site and to inspect door to door collection mechanism as well as to identify vulnerable points and public dumping points. Weekly Reports were compiled, and identified short coming were addressed by Municipal Authorities.

- ANPCC has computed Environmental Compensation as per the methodology formulated by CPCB and issued notices to total 61 hotels in Sri Vijaya puram, 17 hotels in Swaraj Dweep and 06 hotels in Shaheed Dweep for levy of Environmental Compensation under "Polluter Pay principle" vide No 7-36/PCC/NGT (06&09)/2017/EZ/2022(Vol-V) dated 08-09-2024.

- Out of 31 inhabited islands in the region, tourism in the Andaman and Nicobar Islands is primarily concentrated on two islands: Sri Vijaya Puram and Swaraj Dweep. These islands attract the majority of visitors due to their scenic beaches, vibrant marine life, and recreational facilities. Meanwhile, other islands remain less frequented, preserving their natural ecosystems and cultural heritage with limited tourist influence. Sri Vijaya puram has 266 hotels and Swaraj Dweep has 98 hotels. ANPCC inspected 103 industrial units that included 18 Number of hotels in Swaraj Dweep, 07 hotels in Shaheed and 61 hotels in Sri Vijaya puram to ensure compliance with environmental rules and regulations. A list of the inspected industries is enclosed as Annexure-VIII, Furthermore, ANPCC has prepared an inspection schedule for all hotels in the A&N Islands in compliance with CPCB's directions. The inspection is scheduled and will get completed by February 2025. (Details enclosed as **Annexure- IX**)

		• ANPCC has evaluated reports sent by local bodies and realized that Producer, Importer Brand Owners fail to properly implement Extended Producer Responsibility in Andaman & Nicobar Islands due to geographically isolation and low waste generation. To address these issues, ANPCC requested for UT specific EPR targets for plastic packaging to MoEF&CC and CPCB vide letter no.2-13/PCC/PWM/2016/2023/807 dated 12.12. 2023.Further, ANPCC has extended Andaman and Nicobar Islands Scheme for exemption of Freight Charges for Transportation of Plastic, Glass and E-Waste" notified vide A & N Gazette Notification No. 109 dated 28/06/2016 up to 31 August, 2025. 77.248 MT plastic waste sent for processing to mainland by availing the freight exemption. • ANPCC has evaluated the monthly reports sent by local bodies and there by directed RD&P and SVPMC to address the gaps and short comings observed in solid waste and sewage management vide letter No. 7-41/PCC /2024/18/19 dated 10.04.2024 • Out of 139 hotels required to install STP, 136 hotels have installed STP, ANPCC issued closure orders to remaining 03 hotels for operating without sewage treatment plants 09.05.2024. • Out of 40 industries including automobile service centers required to install ETP, 36 industries have installed ETP, Closure orders issued to remaining 04 industrial units for failing to install effluent treatment plants.	

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F.No. CS/PS/06/2024

अण्डमान तथा निकोबार प्रशासन

ANDAMAN AND NICOBAR ADMINISTRATION

सचिवालय/SECRETARIAT

****

Port Blair, dated the 18th June, 2024

ORDER

1. With a view to ensure effective implementation of collection, processing and disposal of Solid Waste in PBMC area, teams of senior officers are hereby formed and assigned the duty of conducting inspections at designated Solid Waste Management Sites (Dry Resource Centers/Collection Routes/Landfill Site). The composition of teams alongwith their respective areas of inspection is mentioned in **Annexure-IV.**

2. The teams shall conduct inspection ***once in a fortnight as per schedule*** in morning hours and access the effectiveness of collection, transportation and segregation operations, as applicable.

3. The teams shall also identify areas for improvement for ensuring proper waste handling at each site.

4. The teams shall document findings accurately using the designated inspection checklist as mentioned below

A. Inspection format for DRCs	:	**Annexure-I**
B. Inspection format for Collection Routes	:	**Annexure-II**
C. Inspection format for Landfill Site	:	**Annexure- III**

5. All teams shall submit report to Science & Technology, Department on or before every Saturday without fail. Secretary (S&T) shall compile the reports and submit a consolidated report to undersigned **every Monday @11 AM without fail.**

(Shri Keshav Chandra, IAS)
Chief Secretary, A&N Administration

To

1. **All Officers as per the Annexure-IV.**

ISSUED
20/06/24.

Annexure-I

Inspection format for *Dry Resource Centers (DRCs)*

Dry Waste Resource Centre (DRC) Inspection Checklist

DRC Name/Location _____

Date of Inspection _____

INSTRUCTIONS:
Carefully review each item and mark the corresponding checkbox to indicate compliance or note any observations and areas for improvement. Use the "Notes/Observations" section to provide additional details, corrective actions, and any required follow-up.

1. WASTE STORAGE AND HANDLING (AT DRC)

1.1 Designated Areas: Check that space is designated and properly demarcated for receiving

(A) Unsegregated waste (New waste collection point) Yes ☐ No ☐ NA ☐

(B) Bailed dry waste Yes ☐ No ☐ NA ☐

(C) Segregated waste including wet waste (Segregated) Yes ☐ No ☐ NA ☐

1.2 Weighing equipment: Check availability of weighing balance at DRC Yes ☐ No ☐ NA ☐

1.3 Waste Transportation: Inspect that the outgoing transportation is being done in segregated manner. Yes ☐ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

2. SEGREGATION EFFICIENCY (AT DRC)

2.1 Segregation Table: Verify that the segregation table is in good condition and is being used for segregation. Yes ☐ No ☐ NA ☐

2.2 Proper Segregation: Verify that waste is segregated in respective Bins (Wet Waste, Dry Waste, Inert etc.). Yes ☐ No ☐ NA ☐

2.3 Waste Containers: Check that waste is stored in proper and labeled containers/bins. Yes ☐ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

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3. SAFETY MEASURES(AT DRC)

3.1 Protective Gears: Please check whether the workers have appropriate protection equipment/gears like Gloves, safety boots and mask etc. Yes ☐ No ☐ NA ☐

3.2 CCTV coverage: Check whether CCTV is operational or not. Yes ☐ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

4. COMPOSTING EFFICIENCY (APPLICABLE AT BROOKSHABAD, DRC)

4.1 Composting: Please check whether all the compositing capacity is being put to use Yes ☐ No ☐ NA ☐

If no, then please mention details for idle capacity:

1291

Annexure-II

Inspection format for *Collection Route*

Ward No.	Collection Route (Please provide detail of location)	Collection is done in segregated manner or mostly mixed waste is being collected?	Whether any vulnerable points exists nearby where unsegregated waste is being dumped/ noticed?	Are the vehicles used for waste transportation from the collection point have separate dry or wet waste compartment?	Overall efficiency of the collection point in terms of coverage of households, collection of segregated waste etc.	Remarks (If Any)
		1.Segregated waste 2.Unsegregated waste 3.Mostly segregated waste	(Yes/No) (If Yes, then please specify location)	1. Separate compartments exists 2. No Separate Compartments (Please specify vehicle number also)	(Excellent/Good/Fair /Poor/Very Poor)	

Any general suggestion about improvement that can be done on collection route:

Annexure-III

Inspection format for *Landfill Site*

1. WASTE HANDLING AT LANDFILL SITE

INSTRUCTIONS: PBMC has designated areas for dumping different types of waste as mentioned below at landfill site:

i) Mix Waste
ii) Domestic Hazardous Waste
iii) Medical Waste
iv) Green Waste
v) Coconut Waste

The team has to refer to the designate site and make an assessment on following parameters

(A) Waste Dumping: Inspect that the waste is being dumped at designated place in landfill site. Yes ☐ No ☐ NA ☐

If No, then please explain the deviation in detail:

(B) Polythene/Plastic Waste: Inspect whether polythene waste is being dumped at the landfill site? Yes ☐ No ☐ NA ☐

(C) Composting: Inspect whether Pit Composting is being done or not at designated place in landfill site? Yes ☐ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

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Annexure: IV

Sl No	Name of Officer	Day on which inspection is to be carried out	Name of DRC	Sanitary Inspector's Name, Ward No. and Contact Number	All Collection Routes of
1	Shri Kumar L, IAS Shri Nitin Shakya, DANICS	**24/06/2024 (Monday)**	M/s Greenworms Anarkali, Near MP Theater, Port Blair	Shri. Sudeep Singh Ward No - 1 and 2 Mob: **9434289509** Shri. Lalit Kr. Ekka Ward No - 3 Mob: **9531873755**	Ward No. 1,2,3
2	Shri Balwan Singh Jaglan, IAS Ms.Sapna Priya, DANICS	**25/06/2024 (Tuesday)**	M/s Rapidue Technologies, Mohanpura Bus Stand, Port Blair	Shri. Satish Kumar Ward No - 5 Mob: **9434260152** Shri. Deepak Behari Ward No – 11 Mob:**9434282714**	Ward No. 5,11
3	Ms.Purva Garg, IAS Shri Aditya Kumar Jha, DANICS	**26/06/2024 (Wednesday)**	M/s Paperman Environmental Solution, Near Kaithan Kalyan Mandappan, Junglighat, Port Blair	Shri. Vijay Kumar Ward No – 6 Mob: **9734481765** Shri. B.Rudraiah Ward No – 7 Mob: **9474204001**	Ward No. 6,7
4	Ms.Smitha R, IAS Shri Shiv Singh Meena, DANICS	**27/06/2024 (Thursday)**	M/s Shakti Plastic, VIP Road, Port Blair	Shri. Salamat Khan Ward No – 4 Mob:**9434278916** Shri. B.Rudraiah Ward No – 7 Mob: **9474204001**	Ward No. 4,7

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Sl No	Name of Officer	Day on which inspection is to be carried out	Name of DRC	Sanitary Inspector's Name, Ward No. and Contact Number	All Collection Routes of
5	Dr. Anil Agarwal, DANICS Shri Abhishek Bhukkal, DANICS	**28/06/2024 (Friday)**	M/s Shakti Plastic, VIP Road, Port Blair	Shri. Lalit Kr. Ekka Ward No – 8 Mob: **9531873755** Shri. L.Karuppaiah Ward No - 9 Mob:**9933250181** Shri. S Shailendra Behari Ward No – 13 Mob:**9474252171**	Ward No. 8,9,13
6	Shri A.S.P.S Raviprakash, IAS Shri Anand Vardhan Mishra, DANICS	**29/06/2024 (Saturday)**	M/s ATR Venture School Line, Near Ranchi Basthi, Port Blair.	Shri. B.Rudraiah Ward No – 14 Mob: **9474204001** Shri. Thomas Varghese Ward No - 15 Mob: **9434285993**	Ward No. 14,15
7	Dr Satyendra Singh Dursawat, IAS Shri Anuj Kumar Bharti, DANICS	**01/07/2024 (Monday)**	M/s Emerald Recycling Unit Dollygunj, Near ITI College, Port Blair	Shri. Thomas Varghese Ward No - 16 Mob: **9434285993** Shri. Amit Bhattacharaya Ward No – 17 Mob: **9933214316**	Ward No. 16,17
8	Shri Vishwendra, DANICS Shri Jatinder Sohal, DANICS	**02/07/2024 (Tuesday)**	M/s KSR Scarp & Traders, Bhatubasthi Parking, Port Blair	Shri. Jatan Lall Ward No - 19 Mob: **9933257824** Shri. Satyajit Naskar Ward No – 23 and 24 Mob: **9679531286**	Ward No. 19,23,24

Sl No	Name of Officer	Day on which inspection is to be carried out	Name of DRC	Sanitary Inspector's Name, Ward No. and Contact Number	All Collection Routes of
9	Shri Arjun Sharma, IAS Shri Vinayak Chamadia, IAS	**03/07/2024 (Wednesday)**	M/s Andamans 3R Solution, Garacharma, Port Blair	Shri. Sameer Ch.Das Ward No – 20 Mob:**7063903921** Shri. Umarn Ali Ward No – 21 and 22 Mob:**9679516100** Shri. Amit Bhattacharaya Ward No – 18 Mob: **9933214316**	Ward No. 20,21,22,18
10	Shri. Azharuddin Zahiruddin Quazi, IAS Shri Vasant Dabholkar, IAS Probationer	**04/07/2024 (Thursday)**	M/s CM Scrap Trader, Brookshabad, Port Blair	Shri. Sanjeev Kumar Ward No – 10 Mob:**9434266734**	Ward No. 10
11	Ms Ranjana Deswal, DANICS Shri Vikram Singh, DANICS	**05/07/2024 (Friday)**	M/s Sankla Enterprises, Brookshabad, Port Blair	Shri. S Shailendra Behari Ward No – 12 Mob:**9474252171**	Ward No. 12
12	Shri Kale Amit Marutirao, IAS Smti Anuja Trivedi, IAS Probationer	**06/07/2024 (Saturday)**	Landfill site	---	All wards

1296

F.No. CS/PS/06/2024

अण्डमान तथा निकोबार प्रशासन

ANDAMAN AND NICOBAR ADMINISTRATION

सचिवालय/SECRETARIAT

****

Port Blair, dated the 18th June, 2024

ORDER

1. With a view to ensure effective implementation of collection, processing and disposal of Solid Waste in PBMC area, teams of senior officers are hereby formed and assigned the duty of conducting inspections at designated Solid Waste Management Sites (Dry Resource Centers/Collection Routes/Landfill Site). The composition of teams alongwith their respective areas of inspection is mentioned in **Annexure-IV.**

2. The teams shall conduct inspection ***once in a fortnight as per schedule*** in morning hours and access the effectiveness of collection, transportation and segregation operations, as applicable.

3. The teams shall also identify areas for improvement for ensuring proper waste handling at each site.

4. The teams shall document findings accurately using the designated inspection checklist as mentioned below

A. Inspection format for DRCs	:	**Annexure-I**
B. Inspection format for Collection Routes	:	**Annexure-II**
C. Inspection format for Landfill Site	:	**Annexure- III**

5. All teams shall submit report to Science & Technology, Department on or before every Saturday without fail. Secretary (S&T) shall compile the reports and submit a consolidated report to undersigned **every Monday @11 AM without fail.**

(Shri Keshav Chandra, IAS)
Chief Secretary, A&N Administration

To

1. **All Officers as per the Annexure-IV.**

Annexure-I

Inspection format for *Dry Resource Centers (DRCs)*

Dry Waste Resource Centre (DRC) Inspection Checklist

DRC Name/Location

Date of Inspection

INSTRUCTIONS:
Carefully review each item and mark the corresponding checkbox to indicate compliance or note any observations and areas for improvement. Use the "Notes/Observations" section to provide additional details, corrective actions, and any required follow-up.

1. WASTE STORAGE AND HANDLING (AT DRC)

1.1 Designated Areas: Check that space is designated and properly demarcated for receiving

(A) Unsegregated waste (New waste collection point) Yes ☐ No ☐ NA ☐

(B) Bailed dry waste Yes ☐ No ☐ NA ☐

(C) Segregated waste including wet waste (Segregated) Yes ☐ No ☐ NA ☐

1.2 Weighing equipment: Check availability of weighing balance at DRC Yes ☐ No ☐ NA ☐

1.3 Waste Transportation: Inspect that the outgoing transportation is being done in segregated manner. Yes ☐ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

2. SEGREGATION EFFICIENCY (AT DRC)

2.1 Segregation Table: Verify that the segregation table is in good condition and is being used for segregation. Yes ☐ No ☐ NA ☐

2.2 Proper Segregation: Verify that waste is segregated in respective Bins (Wet Waste, Dry Waste, Inert etc.). Yes ☐ No ☐ NA ☐

2.3 Waste Containers: Check that waste is stored in proper and labeled containers/bins. Yes ☐ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

1298

3. SAFETY MEASURES(AT DRC)

3.1 Protective Gears: Please check whether the workers have appropriate protection equipment/gears like Gloves, safety boots and mask etc. Yes ☐ No ☐ NA ☐

3.2 CCTV coverage: Check whether CCTV is operational or not. Yes ☐ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

4. COMPOSTING EFFICIENCY (APPLICABLE AT BROOKSHABAD, DRC)

4.1 Composting: Please check whether all the compositing capacity is being put to use Yes ☐ No ☐ NA ☐

If no, then please mention details for idle capacity:

1299

Annexure-II

Inspection format for *Collection Route*

Ward No.	Collection Route (Please provide detail of location)	Collection is done in segregated manner or mostly mixed waste is being collected?	Whether any vulnerable points exists nearby where unsegregated waste is being dumped/ noticed?	Are the vehicles used for waste transportation from the collection point have separate dry or wet waste compartment?	Overall efficiency of the collection point in terms of coverage of households, collection of segregated waste etc.	Remarks (If Any)
		1.Segregated waste 2.Unsegregated waste 3.Mostly segregated waste	(Yes/No) (If Yes, then please specify location)	1. Separate compartments exists 2. No Separate Compartments (Please specify vehicle number also)	(Excellent/Good/Fair /Poor/Very Poor)	

Any general suggestion about improvement that can be done on collection route:

1300

Annexure-III

Inspection format for *Landfill Site*

1. WASTE HANDLING AT LANDFILL SITE

INSTRUCTIONS: PBMC has designated areas for dumping different types of waste as mentioned below at landfill site:

i) Mix Waste
ii) Domestic Hazardous Waste
iii) Medical Waste
iv) Green Waste
v) Coconut Waste

The team has to refer to the designate site and make an assessment on following parameters

(A) Waste Dumping: Inspect that the waste is being dumped at designated place in landfill site. Yes ☐ No ☐ NA ☐

If No, then please explain the deviation in detail:

(B) Polythene/Plastic Waste: Inspect whether polythene waste is being dumped at the landfill site? Yes ☐ No ☐ NA ☐

(C) Composting: Inspect whether Pit Composting is being done or not at designated place in landfill site? Yes ☐ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

1301

Annexure: IV

Sl No	Name of Officer	Day on which inspection is to be carried out	Name of DRC	Sanitary Inspector's Name, Ward No. and Contact Number	All Collection Routes of
1	Shri Kumar L, IAS Shri Nitin Shakya, DANICS	**24/06/2024 (Monday)**	M/s Greenworms Anarkali, Near MP Theater, Port Blair	Shri. Sudeep Singh Ward No - 1 and 2 Mob: **9434289509** Shri. Lalit Kr. Ekka Ward No - 3 Mob: **9531873755**	Ward No. 1,2,3
2	Shri Balwan Singh Jaglan, IAS Ms.Sapna Priya, DANICS	**25/06/2024 (Tuesday)**	M/s Rapidue Technologies, Mohanpura Bus Stand, Port Blair	Shri. Satish Kumar Ward No - 5 Mob: **9434260152** Shri. Deepak Behari Ward No – 11 Mob:**9434282714**	Ward No. 5,11
3	Ms.Purva Garg, IAS Shri Aditya Kumar Jha, DANICS	**26/06/2024 (Wednesday)**	M/s Paperman Environmental Solution, Near Kaithan Kalyan Mandappan, Junglighat, Port Blair	Shri. Vijay Kumar Ward No – 6 Mob: **9734481765** Shri. B.Rudraiah Ward No – 7 Mob: **9474204001**	Ward No. 6,7
4	Ms.Smitha R, IAS Shri Shiv Singh Meena, DANICS	**27/06/2024 (Thursday)**	M/s Shakti Plastic, VIP Road, Port Blair	Shri. Salamat Khan Ward No – 4 Mob:**9434278916** Shri. B.Rudraiah Ward No – 7 Mob: **9474204001**	Ward No. 4,7

1302

Sl No	Name of Officer	Day on which inspection is to be carried out	Name of DRC	Sanitary Inspector's Name, Ward No. and Contact Number	All Collection Routes of
5	Dr. Anil Agarwal, DANICS Shri Abhishek Bhukkal, DANICS	**28/06/2024 (Friday)**	M/s Shakti Plastic, VIP Road, Port Blair	Shri. Lalit Kr. Ekka Ward No – 8 Mob: **9531873755** Shri. L.Karuppaiah Ward No - 9 Mob:**9933250181** Shri. S Shailendra Behari Ward No – 13 Mob:**9474252171**	Ward No. 8,9,13
6	Shri A.S.P.S Raviprakash, IAS Shri Anand Vardhan Mishra, DANICS	**29/06/2024 (Saturday)**	M/s ATR Venture School Line, Near Ranchi Basthi, Port Blair.	Shri. B.Rudraiah Ward No – 14 Mob: **9474204001** Shri. Thomas Varghese Ward No - 15 Mob: **9434285993**	Ward No. 14,15
7	Dr Satyendra Singh Dursawat, IAS Shri Anuj Kumar Bharti, DANICS	**01/07/2024 (Monday)**	M/s Emerald Recycling Unit Dollygunj, Near ITI College, Port Blair	Shri. Thomas Varghese Ward No – 16 Mob: **9434285993** Shri. Amit Bhattacharaya Ward No – 17 Mob: **9933214316**	Ward No. 16,17
8	Shri Vishwendra, DANICS Shri Jatinder Sohal, DANICS	**02/07/2024 (Tuesday)**	M/s KSR Scarp & Traders, Bhatubasthi Parking, Port Blair	Shri. Jatan Lall Ward No - 19 Mob: **9933257824** Shri. Satyajit Naskar Ward No – 23 and 24 Mob: **9679531286**	Ward No. 19,23,24

1303

Sl No	Name of Officer	Day on which inspection is to be carried out	Name of SWC	Sanitary Inspector's Name, Ward No. and Contact Number	All Collection Routes of
9	Shri Arjun Sharma, IAS Shri Vinayak Chamadia, IAS	**03/07/2024 (Wednesday)**	M/s Andamans 3R Solution, Garacharma, Port Blair	Shri. Sameer Ch.Das Ward No – 20 Mob:**7063903921** Shri. Umarn Ali Ward No – 21 and 22 Mob:**9679516100** Shri. Amit Bhattacharaya Ward No – 18 Mob: **9933214316**	Ward No. 20,21,22,18
10	Shri. Azharuddin Zahiruddin Quazi, IAS Shri Vasant Dabholkar, IAS Probationer	**04/07/2024 (Thursday)**	M/s CM Scrap Trader, Brookshabad, Port Blair	Shri. Sanjeev Kumar Ward No – 10 Mob:**9434266734**	Ward No. 10
11	Ms Ranjana Deswal, DANICS Shri Vikram Singh, DANICS	**05/07/2024 (Friday)**	M/s Sankla Enterprises, Brookshabad, Port Blair	Shri. S Shailendra Behari Ward No – 12 Mob:**9474252171**	Ward No. 12
12	Shri Kale Amit Marutirao, IAS Smti Anuja Trivedi, IAS Probationer	**06/07/2024 (Saturday)**	Landfill site	----	All wards

Annexure-I

Inspection format for Dry Resource Centers (DRCs)

Dry Waste Resource Centre (DRC) Inspection Checklist

DRC Name/Location | ATHRYAL

Date of Inspection | 2/11/25

INSTRUCTIONS:
Carefully review each item and mark the corresponding checkbox to indicate compliance or note any observations and areas for improvement. Use the "Notes/Observations" section to provide additional details, corrective actions, and any required follow-up.

1. WASTE STORAGE AND HANDLING (AT DRC)

1.1 Designated Areas: Check that space is designated and properly demarcated for receiving

(A) Unsegregated waste (New waste collection point) — Yes ☑ No ☐ NA ☐

(B) Bailed dry waste — Yes ☑ No ☐ NA ☐

(C) Segregated waste including wet waste (Segregated) — Yes ☑ No ☐ NA ☐

1.2 Weighing equipment: Check availability of weighing balance at DRC — Yes ☑ No ☐ NA ☐

1.3 Waste Transportation: Inspect that the outgoing transportation is being done in segregated manner. — Yes ☑ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

2. SEGREGATION EFFICIENCY (AT DRC)

2.1 Segregation Table: Verify that the segregation table is in good condition and is being used for segregation. — Yes ☑ No ☐ NA ☐

2.2 Proper Segregation: Verify that waste is segregated in respective Bins (Wet Waste, Dry Waste, Inert etc.). — Yes ☑ No ☐ NA ☐

2.3 Waste Containers: Check that waste is stored in proper and labeled containers/bins. — Yes ☑ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

1305

3. SAFETY MEASURES(AT DRC)

3.1 Protective Gears: Please check whether the workers have appropriate protection equipment/gears like Gloves, safety boots and mask etc Yes ✓ No ☐ NA ☐

3.2 CCTV coverage: Check whether CCTV is operational or not Yes ✓ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

4. COMPOSTING EFFICIENCY (APPLICABLE AT BROOKSHABAD, DRC)

4.1 Composting: Please check whether all the compositing capacity is being put to use Yes ✓ No ☐ NA ☐

If no, then please mention details for idle capacity:

1306

Annexure-II

Inspection format for *Collection Route*

Ward No.	Collection Route (Please provide detail of location)	Collection is done in segregated manner or mostly mixed waste is being collected?	Whether any vulnerable points exists nearby where unsegregated waste is being dumped/ noticed?	Are the vehicles used for waste transportation from the collection point have separate dry or wet waste compartment?	Overall efficiency of the collection point in terms of coverage of households, collection of segregated waste etc.	Remarks (If Any)
		1. Segregated waste 2 Unsegregated waste 3 Mostly segregated waste	(Yes/No) (If Yes, then please specify location)	1. Separate compartments exists 2. No Separate Compartments (Please specify vehicle number also)	(Excellent/Good/Fair /Poor/Very Poor)	
1	10 Routes	Mostly Segregated	NO	Separate Compartments exits	Good	
2	11 Routes	Mostly Segregated	No	2 nos separate compartment	Good	
3	11 Route	Segregated waste	No	No - separate	Good	

Any general suggestion about improvement that can be done on collection route:

Annexure-III

Inspection format for *Landfill Site*

1. WASTE HANDLING AT LANDFILL SITE

INSTRUCTIONS: PHMC has designated areas for dumping different types of waste as mentioned below at landfill site

i) Mix Waste
ii) Domestic Hazardous Waste
iii) Medical Waste
iv) Green Waste
v) Coconut Waste

The team has to refer to the designate site and make an assessment on following parameters

(A) Waste Dumping: Inspect that the waste is being dumped at designated place in landfill site. Yes ☑ No ☐ NA ☐

If No, then please explain the deviation in detail:

(B) Polythene/Plastic Waste: Inspect whether polythene waste is being dumped at the landfill site? Yes ☐ No ☑ NA ☐

(C) Composting: Inspect whether Pit Composting is being done or not at designated place in landfill site? Yes ☑ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

Nothing Like Voting, I Vote for Sure

मुख्य निर्वाचन अधिकारी का कार्यालय
OFFICE OF THE CHIEF ELECTORAL OFFICER
अंडमान और निकोबार द्वीप समूह
ANDAMAN & NICOBAR ISLANDS
सचिवालय / SECRETARIAT

Port Blair, dated the 25th June, 2024

To

The Secretary (S&T)
A&N Administration
Port Blair

Sub: -Submission of Report in respect of Solid Waste Management Sites-reg.
Ref:- Order No. CS/PS/06/2024 dt 18.06.2024

Sir,

With reference to the above Order, undersigned alongwith Ms Sapna Priya inspected the designated Solid Waste Management Site as per Annexure IV on 25.06.2024 at 10.00 am.

The detailed report (Annexure I & Annexure II) is enclosed alongwith photographs of the site for further necessary action.

Yours faithfully

25/06/2024
(B.S. Jaglan)
Chief Electoral Officer
ANI

Encl:- A/A

Copy to :- The OSD to Chief Secretary for kind information of Chief Secretary.

25/6/2024
Chief Electoral Officer
ANI

Annexure-I

Inspection format for Dry Resource Centers (DRCs)

Dry Waste Resource Centre (DRC) Inspection Checklist

DRC Name/Location * ISLAND BOY Tech Solutions, Mohanpura. Ward No. 5 & 11.

Date of Inspection 25/06/2024

INSTRUCTIONS:
Carefully review each item and mark the corresponding checkbox to indicate compliance or note any observations and areas for improvement. Use the "Notes/Observations" section to provide additional details, corrective actions, and any required follow-up.

1. WASTE STORAGE AND HANDLING (AT DRC)

1.1 Designated Areas: Check that space is designated and properly demarcated for receiving

(A) Unsegregated waste (New waste collection point) — Yes ☑ No ☐ NA ☐

(B) Baled dry waste — Yes ☑ No ☐ NA ☐

(C) Segregated waste including wet waste (Segregated) — Yes ☑ No ☐ NA ☐

1.2 Weighing equipment: Check availability of weighing balance at DRC — Yes ☑ No ☐ NA ☐

1.3 Waste Transportation: Inspect that the outgoing transportation is being done in segregated manner — Yes ☑ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

1. Trancportation of baled material could not be done timely.
2. Extended Reducers Responsibility (EPR) should be enforced.

2. SEGREGATION EFFICIENCY (AT DRC)

2.1 Segregation Table: Verify that the segregation table is in good condition and is being used for segregation. — Yes ☐ No ☑ NA ☐

2.2 Proper Segregation: Verify that waste is segregated in respective bins (Wet Waste, Dry Waste, Inert etc.). — Yes ☐ No ☑ NA ☐

2.3 Waste Containers: Check that waste is stored in proper and labeled containers/bins. — Yes ☐ No ☑ NA ☐

Observations/Notes/ Corrective actions, if any:

1. No Segregation table; lack of sufficient space at DRC; water logging outside DRC
2. Issue of multi layered plastic disposal.
3. Manpower crunch.
4. —

* DRC name should be updated in the list. The list is still reflecting old name i.e M/s Rapidue Technologies.

1310

3. SAFETY MEASURES(AT DRC)

3.1 Protective Gears: Please check whether the workers have appropriate protection equipment/gears like Gloves, safety boots and mask etc. Yes [ ] No [✓] NA [ ]

3.2 CCTV coverage: Check whether CCTV is operational or not Yes [✓] No [ ] NA [ ]

Observations/Notes/ Corrective actions, if any:

1. Gloves were used; however masks | safety boots were not in use.
2. CCTV coverage issue: No monitor placed at DRC.

4. COMPOSTING EFFICIENCY (APPLICABLE AT BROOKSHABAD, DRC) N/A

4.1 Composting: Please check whether all the compositing capacity is being put to use Yes [ ] No [ ] NA [ ]

If no, then please mention details for idle capacity:

Annexure-II

Inspection format for: Collection Route

Ward No.	Collection Route (Please provide detail of location)	Collection is done in segregated manner or mostly mixed waste is being collected? 1.Segregated waste — G 2.Unsegregated waste — R 3.Mostly segregated waste — OR	Whether any vulnerable points exists nearby where unsegregated waste is being dumped/ noticed? (Yes/No) (If Yes, then please specify location)	Are the vehicles used for waste transportation from the collection point have separate dry or wet waste compartment? 1. Separate compartments exists 2. No Separate Compartments (Please specify vehicle number also)	Overall efficiency of the collection point in terms of coverage of households, collection of segregated waste etc. (Excellent/Good/Fair /Poor/Very Poor)	Remarks (If Any)
5	Raj Niwas, Telugu Bash;	Segregated waste.	No	Separate vehicles for dry & wet waste.	Good.	
M.	Atlanta Point	Segregated	No	Separate vehicles.	Good.	
11.	South Point, Near Sindair Hotel	Segregated	Yes; just below the collection points.	Separate vehicles.	Fair.	

Any general suggestion about improvement that can be done on collection route:

1. Wrt South Point collection point, a concrete 'Dhalao' should be constructed with separate compartments so as to avoid mixing of waste and spillover.
2. Green and blue (big) bins should be placed at collection points.
3. People should be sensitized about segregation of waste at source.
4. DRC is not receiving wet plastic & wet cotton. Some provision for the same should be made.
5. Collection route should be displayed.

1312

Annexure-III

Inspection format for *Landfill Site*

1. WASTE HANDLING AT LANDFILL SITE

INSTRUCTIONS: PBMC has designated areas for dumping different types of waste as mentioned below at landfill site:

i) Mix Waste
ii) Domestic Hazardous Waste
iii) Medical Waste
iv) Green Waste
v) Coconut Waste

The team has to refer to the designate site and make an assessment on following parameters

(A) **Waste Dumping:** Inspect that the waste is being dumped at designated place in landfill site. Yes ☐ No ☐ NA ☐

If No, then please explain the deviation in detail:

(B) **Polythene/Plastic Waste:** Inspect whether polythene waste is being dumped at the landfill site? Yes ☐ No ☐ NA ☐

(C) **Composting:** Inspect whether Pit Composting is being done or not at designated place in landfill site? Yes ☐ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:









1314









1315









1316



1317

ADITYA KUMAR JHA, DANICS

Annexure-I

Inspection format for *Dry Resource Centers (DRCs)*

Dry Waste Resource Centre (DRC) Inspection Checklist

DRC Name/Location M/s Paperman Environmental Sol. Near Kuthar Kalyan Mandapam, Jungle Ghat.

Date of Inspection 26/6/2024

INSTRUCTIONS:
Carefully review each item and mark the corresponding checkbox to indicate compliance or note any observations and areas for improvement. Use the "Notes/Observations" section to provide additional details, corrective actions, and any required follow-up.

1. WASTE STORAGE AND HANDLING (AT DRC)

1.1 Designated Areas: Check that space is designated and properly demarcated for receiving

(A) Unsegregated waste (New waste collection point)	Yes ☑	No ☐	NA ☐
(B) Bailed dry waste	Yes ☑	No ☐	NA ☐
(C) Segregated waste including wet waste (Segregated)	Yes ☐	No ☑	NA ☐
1.2 Weighing equipment: Check availability of weighing balance at DRC	Yes ☑	No ☐	NA ☐
1.3 Waste Transportation: Inspect that the outgoing transportation is being done in segregated manner.	Yes ☑	No ☐	NA ☐

Observations/Notes/ Corrective actions, if any: (1) Overwriting in Register
(2) Gumboot was not available

2. SEGREGATION EFFICIENCY (AT DRC)

2.1 Segregation Table: Verify that the segregation table is in good condition and is being used for segregation.	Yes ☑	No ☐	NA ☐
2.2 Proper Segregation: Verify that waste is segregated in respective Bins (Wet Waste, Dry Waste, Inert etc.).	Yes ☑	No ☐	NA ☐
2.3 Waste Containers: Check that waste is stored in proper and labeled containers/bins.	Yes ☑	No ☐	NA ☐

Observations/Notes/ Corrective actions, if any: –

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3. SAFETY MEASURES(AT DRC)

3.1 Protective Gears: Please check whether the workers have appropriate protection equipment/gears like Gloves, safety boots and mask etc. Yes ☐ No ☑ NA ☐

3.2 CCTV coverage: Check whether CCTV is operational or not. Yes ☑ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

1) No Safety Boots (2) Mask was not proper (3) Social Security / health checkups of worker / Minimum Wages are not Implemented

4. COMPOSTING EFFICIENCY (APPLICABLE AT BROOKSHABAD, DRC)

4.1 Composting: Please check whether all the compositing capacity is being put to use Yes ☐ No ☐ NA ☐

If no, then please mention details for idle capacity:

—

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Annexure-II

Inspection format for *Collection Route*

Ward No.	Collection Route (Please provide detail of location)	Collection is done in segregated manner or mostly mixed waste is being collected? 1.Segregated waste 2.Unsegregated waste 3.Mostly segregated waste	Whether any vulnerable points exists nearby where unsegregated waste is being dumped/ noticed? (Yes/No) (If Yes, then please specify location)	Are the vehicles used for waste transportation from the collection point have separate dry or wet waste compartment? 1. Separate compartments exists 2. No Separate Compartments (Please specify vehicle number also)	Overall efficiency of the collection point in terms of coverage of households, collection of segregated waste etc. (Excellent/Good/Fair /Poor/Very Poor)	Remarks (If Any)
6	12 Middle Point Phonix Bay Jungighat	Mostly Segregated waste.	Yes Middle Point,	Separate compartment is not available in each vehicle.	Good.	
7	PremNagar Delampur	Mostly Segregated waste.	Yes PremNagar Junction	Separate compartment is not available in each vehicle	Fair	

Any general suggestion about improvement that can be done on collection route:

(1) Strict rules for fine to be implemented.
(2) CCTV at vulnerable points where unsegregated waste is dumped.

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1320

Annexure-III

Inspection format for *Landfill Site*

1. WASTE HANDLING AT LANDFILL SITE — NA —

INSTRUCTIONS: PBMC has designated areas for dumping different types of waste as mentioned below at landfill site:

i) Mix Waste
ii) Domestic Hazardous Waste
iii) Medical Waste
iv) Green Waste
v) Coconut Waste

The team has to refer to the designate site and make an assessment on following parameters

(A) Waste Dumping: Inspect that the waste is being dumped at designated place in landfill site. Yes ☐ No ☐ NA ☐

If No, then please explain the deviation in detail:

(B) Polythene/Plastic Waste: Inspect whether polythene waste is being dumped at the landfill site? Yes ☐ No ☐ NA ☐

(C) Composting: Inspect whether Pit Composting is being done or not at designated place in landfill site? Yes ☐ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

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Shiv Singh Meena
Dir (RD/P)

Annexure-I

Inspection format for *Dry Resource Centers (DRCs)*

Dry Waste Resource Centre (DRC) Inspection Checklist

DRC Name/Location Shakti plastics Ward No - 4 (Jungliyat) V.I.P. Road.

Date of Inspection 27.06.2024

INSTRUCTIONS:
Carefully review each item and mark the corresponding checkbox to indicate compliance or note any observations and areas for improvement. Use the "Notes/Observations" section to provide additional details, corrective actions, and any required follow-up.

1. WASTE STORAGE AND HANDLING (AT DRC)

1.1 Designated Areas: Check that space is designated and properly demarcated for receiving

(A) Unsegregated waste (New waste collection point	Yes ☑	No ☐	NA ☐
(B) Bailed dry waste	Yes ☑	No ☐	NA ☐
(C) Segregated waste including wet waste (Segregated)	Yes ☒	No ☑	NA ☐
1.2 Weighing equipment: Check availability of weighing balance at DRC	Yes ☑	No ☐	NA ☐
1.3 Waste Transportation: Inspect that the outgoing transportation is being done in segregated manner.	Yes ☑	No ☐	NA ☐

Observations/Notes/ Corrective actions, if any:
(1) Need one more CCTV Camera. (2) Gumboot, (3) Need extra the covered space for storage.

2. SEGRAGATION EFFICIENCY (AT DRC)

2.1 Segregation Table: Verify that the segregation table is in good condition and is being used for segregation.	Yes ☑	No ☐	NA ☐
2.2 Proper Segregation: Verify that waste is segregated in respective bins.	Yes ☑	No ☐	NA ☐
2.3 Waste Containers: Check that waste is stored in proper and labeled containers/bins.	Yes ☐	No ☐	NA ☐

Observations/Notes/ Corrective actions, if any:
—

AnyScanner

3. SAFETY MEASURES(AT DRC)

Partial.

3.1 Protective Gears: Please check whether the workers have appropriate protection equipment like Gloves, safety boots and mask etc. Yes ☑ No ☐ NA ☐

3.2 CCTV coverage: Check whether CCTV is operational or not. Yes ☑ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any: Safety boots needs

---

4. COMPOSTING EFFICIENCY (APPLICABLE AT BROOKSHABAD, DRC)

4.1 Composting: Please check whether all the compositing capacity is being put to use Yes ☐ No ☐ NA ☐

If no, then please mention details for idle capacity: Due to Rain. — Visit not possible.

AnyScanner

Annexure-II

Inspection format for Collection Route

Ward No.	Collection Route (please provide detail of location)	Collection is done in segregated manner or mostly mixed waste is being collected? (1. Segregated waste 2. Unsegregated waste 3. Mostly segregated waste)	Whether any vulnerable points exists nearby where unsegregated waste is being dumped/ noticed? (Yes/No (If Yes, then please specify location))	Are the vehicles used for waste transportation from the collection point have separate dry or wet waste compartment? (1. Separate compartments exists 2. No Separate Compartments (Please specify vehicle number also))	Overall efficiency of the collection point in terms of coverage of households, collection of segregated waste etc. (Excellent/ Good/Fair/ Poor/Very Poor)	Remarks (If Any)
4	Mahanpura	mostly segregated waste	No	one Separate compartments vehicle used.	Good & Fair	
	Mamura					
	Jagraband					
	Shishu Vihar			3 Trucks with one compartment		
	Evening Bowls			2 Auto with One compartment		

Any general suggestion about improvement that can be done at collection points:

- Secondary collection points/ needed for Better Collection & Segregation Depots.
- DRC Infra needed updated according to DRC Criteria.
- Clothes, Thermocol, Roxins and all other materials other than [illegible] and Card board are not bio-enterable by DRC

Annexure-III

Inspection format for *Landfill Site*

1. WASTE HANDLING AT LANDFILL SITE

INSTRUCTIONS: PBMC has designated areas for dumping different types of waste as mentioned below at landfill site.

i) Mix Waste
ii) Domestic Hazardous Waste
iii) Medical Waste
iv) Green Waste
v) Coconut Waste

The team has to refer to the designate site and make an assessment on following parameters

(A) Waste Dumping: Inspect that the waste is being dumped at designated place in landfill site. Yes ☐ No ☐ NA ☐

If No, then please explain the deviation in detail:

(B) Polythene/Plastic Waste: Inspect whether polythene waste is being dumped at the landfill site? Yes ☐ No ☐ NA ☐

(C) Composting: Inspect whether Pit Composting is being done or not at designated place in landfill site? Yes ☐ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

Visit could not completed due to heavy Rain in the morning time.

AnyScanner

Annexure-I

Inspection format for *Dry Resource Centers (DRCs)*

Dry Waste Resource Centre (DRC) Inspection Checklist

DRC Name/Location Papermon environmental Solutions (Jughapur-

Date of Inspection 27.6.2024 W.No-67

INSTRUCTIONS:
Carefully review each item and mark the corresponding checkbox to indicate compliance or note any observations and areas for improvement. Use the "Notes/Observations" section to provide additional details, corrective actions, and any required follow-up.

1. WASTE STORAGE AND HANDLING (AT DRC)

1.1 Designated Areas: Check that space is designated and properly demarcated for receiving

(A) Unsegregated waste (New waste collection point — Yes ☑ No ☐ NA ☐

(B) Bailed dry waste — Yes ☑ No ☐ NA ☐

(C) Segregated waste including wet waste (Segregated) — Yes ☑ No ☐ NA ☐

1.2 Weighing equipment: Check availability of weighing balance at DRC — Yes ☑ No ☐ NA ☐

1.3 Waste Transportation: Inspect that the outgoing transportation is being done in segregated manner — Yes ☑ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

- Gumboots.

2. SEGRAGATION EFFICIENCY (AT DRC)

2.1 Segregation Table: Verify that the segregation table is in good condition and is being used for segregation — Yes ☑ No ☐ NA ☐

2.2 Proper Segregation: Verify that waste is segregated in respective bins — Yes ☑ No ☐ NA ☐

2.3 Waste Containers: Check that waste is stored in proper and labeled containers/bins — Yes ☑ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

- Gumboots.

AnyScanner

3. SAFETY MEASURES(AT DRC)

Partial.

3.1 **Protective Gears:**Please check whether the workers have appropriate protection equipment like Gloves, safety boots and mask etc. Yes ☐ No ☐ NA ☐

3.2 **CCTV coverage:** Check whether CCTV is operational or not. Yes ☑ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

- Gumboot
- ~~Deposi~~ Storage space may be increased by constructing Extra shed Room.

4. COMPOSTING EFFICIENCY (APPLICABLE AT BROOKSHABAD, DRC)

4.1 **Composting:** Please check whether all the compositing capacity is being put to use Yes ☐ No ☐ NA ☐

If no, then please mention details for idle capacity:

—

AnyScanner

Annexure-II

Inspection format for Collection Route

Ward No.	Collection Route (please provide detail of location)	Collection is done in segregated manner or mostly mixed waste is being collected? (1. Segregated waste 2. Unsegregated waste 3. Mostly segregated waste)	Whether any vulnerable points exists nearby where unsegregated waste is being dumped/ noticed? (Yes/No) (If Yes, then please specify location)	Are the vehicles used for waste transportation from the collection point have separate dry or wet waste compartment? (1. Separate compartments exists 2. No Separate Compartments (Please specify vehicle number also)	Overall efficiency of the collection point in terms of coverage of households, collection of segregated waste etc. (Excellent/ Good/ Fair/ Poor/ Very Poor)	Remarks (If Any)
57	Prem Nagar Dehanipur 12 Routes	mostly segregated waste.	No.	one truck without Compartment	Good	—

Any general suggestion about improvement that can be done at collection points:

Secondary Collection Points needed.

Some Suggestion. Ward - 4 & 7.

AnyScanner

Annexure-III

Inspection format for *Landfill Site*

1. WASTE HANDLING AT LANDFILL SITE

INSTRUCTIONS: PBMC has designated areas for dumping different types of waste as mentioned below at landfill site.

i) Mix Waste
ii) Domestic Hazardous Waste
iii) Medical Waste
iv) Green Waste
v) Coconut Waste

The team has to refer to the designate site and make an assessment on following parameters

(A) **Waste Dumping:** Inspect that the waste is being dumped at designated place in landfill site. Yes ☐ No ☐ NA ☐

If No, then please explain the deviation in detail:

(B) **Polythene/Plastic Waste:** Inspect whether polythene waste is being dumped at the landfill site? Yes ☐ No ☐ NA ☐

(C) **Composting:** Inspect whether Pit Composting is being done or not at designated place in landfill site? Yes ☐ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

Heavy Heavy Rain
Visit not completed.

Sd/-

AnyScanner

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F.No. 10-1/PA to DI/IND/2024/329
अण्डमान तथा निकोबार प्रशासन
ANDAMAN & NICOBAR ADMINISTRATION
उद्योग निदेशालय
DIRECTORATE OF INDUSTRIES
पोर्ट ब्लेयर/**PORT BLAIR**

Dated the 28th June 2024

To

The Secretary (S&T)
A&N Administration
Port Blair

Sub:- Submission of Report in respect of Solid Waste Management Sites – reg.
Ref: Order No. CS/PS/06/2024 dt. 18.06.2024

Sir,

With reference to the above Order, undersigned alongwith Dr. Anil Agarwal, DANICS inspected the designated Solid Waste Management Site as per Annexure-IV on 25.06.2024 at 10:00 AM.

The detailed report (Annexure I & Annexure II) is enclosed alongwith photographs of the site for further necessary action.

Encl: As above

Yours faithfully,

(Abhishek Bhukal, DANICS)
Director of Industries

Copy to :- **The OSD to CS for kind information of Chief Secretary.**

25/06/24
Director of Industries

Annexure-I

Inspection format for Dry Resource Centers (DRCs)

Dry Waste Resource Centre (DRC) Inspection Checklist

DRC Name/Location: VIP Road (Managed by H/s Shakti Plastics)

Date of Inspection: 28/6/24 Sh. Rajpal was I/c

INSTRUCTIONS:
Carefully review each item and mark the corresponding checkbox to indicate compliance or note any observations and areas for improvement. Use the "Notes/Observations" section to provide additional details, corrective actions, and any required follow-up.

1. WASTE STORAGE AND HANDLING (AT DRC)

1.1 Designated Areas: Check that space is designated and properly demarcated for receiving

(A) Unsegregated waste (New waste collection point) — Yes ☐ No ☐ NA ☑

(B) Bailed dry waste — Yes ☑ No ☐ NA ☐

(C) Segregated waste including wet waste (Segregated) — Yes ☑ No ☐ NA ☐

1.2 Weighing equipment: Check availability of weighing balance at DRC — Yes ☑ No ☐ NA ☐

1.3 Waste Transportation: Inspect that the outgoing transportation is being done in segregated manner. — Yes ☑ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

=> Segregation table is too short in length
=> Lease period of DRC should be increased atleast to 3-5 yrs
=> Regular Power supply to be ensured for boiling

2. SEGREGATION EFFICIENCY (AT DRC)

=> Closed compound be ensured

2.1 Segregation Table: Verify that the segregation table is in good condition and is being used for segregation. — Yes ☑ No ☐ NA ☐

2.2 Proper Segregation: Verify that waste is segregated in respective Bins (Wet Waste, Dry Waste, Inert etc.). — Yes ☐ No ☑ NA ☐

2.3 Waste Containers: Check that waste is stored in proper and labeled containers/bins. — Yes ☑ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

Size of Waste Containers to be slightly/reasonably big

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3. SAFETY MEASURES(AT DRC)

3.1 **Protective Gears:**Please check whether the workers have appropriate protection equipment/gears like Gloves, safety boots and mask etc. Yes ☑ No ☐ NA ☐

3.2 **CCTV coverage:** Check whether CCTV is operational or not. Yes ☑ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

=> Adequate quality mask & aeration to be made available

=> Toilet facility to be made available & washing area

4. COMPOSTING EFFICIENCY (APPLICABLE AT BROOKSHABAD, DRC)

4.1 **Composting:**Please check whether all the compositing capacity is being put to use Yes ☐ No ☐ NA ☑

If no, then please mention details for idle capacity:

—

28/6/24

28/06/24

1332

Annexure-II

Inspection format for Collection Route

		Segregation status of waste (1.Segregated waste 2.Unsegregated waste 3.Mostly segregated waste)	Are there any vulnerable points exists nearby (where unsegregated waste is being dumped/ noticed? (Yes/No) (If Yes, then please specify location)	Are the vehicles used for waste transportation from the collection point have separate dry & wet waste compartment? 1. Separate compartments exists 2. No Separate Compartments (Please specify vehicle number also)	Overall efficiency of the collection point in terms of coverage of households, collection of segregated waste etc. (Excellent/Good/Fair /Poor/Very Poor)	Remarks (If any)
13	Nabard Colony	Mostly segregated	Yes, near IOC Colony (Photo taken)	- NO -	Reasonably Good	-
	Near Hotel DRC					
9.	Lamba Lane					
	Ranchi Bed					
	Dairy farm junction					
8.	All India Radio					
	AIWC					
	Panipat Club					

Any general suggestion about improvement that can be done on collection route:

⇒ Sheds at the designated collection points are missing/lacking
⇒ C & D waste is not properly cleared by JE(PHMC)/APWO esp. roadside -
⇒ Sanitary Toilets & sheds at Site Offices to be properly made & maintained
⇒ Sanitary Services at ITF Ground/ Defence/ other Establishments should be chargeable for customers
⇒ Separate Dustbins & Segregated Compactors must for roadside

30/6/21

Annexure-I

Inspection format for *Dry Resource Centers (DRCs)*

Dry Waste Resource Centre (DRC) Inspection Checklist

DRC Name/Location	DRC, PBMC-SLRM center, Police Line, Port Blair
Date of Inspection	29/06/24

INSTRUCTIONS:
Carefully review each item and mark the corresponding checkbox to indicate compliance or note any observations and areas for improvement. Use the "Notes/Observations" section to provide additional details, corrective actions, and any required follow-up.

1. WASTE STORAGE AND HANDLING (AT DRC)

1.1 Designated Areas: Check that space is designated and properly demarcated for receiving

(A) Unsegregated waste (New waste collection point)	Yes ■	No ☐	NA ☐
(B) Bailed dry waste	Yes ■	No ☐	NA ☐
(C) Segregated waste including wet waste (Segregated)	Yes ■	No ☐	NA ☐
1.2 Weighing equipment: Check availability of weighing balance at DRC	Yes ■	No ☐	NA ☐
1.3 Waste Transportation: Inspect that the outgoing transportation is being done in segregated manner.	Yes ■	No ☐	NA ☐

Observations/Notes/ Corrective actions, if any:

1. This DRC hall is small, recommendation for the construction of another hall (for keeping Bailed material).
2. The lease period of DRC should be increased by at least two to three years
3. Regular Power supply for the Bailing machine.

2. SEGREGATION EFFICIENCY (AT DRC)

2.1 Segregation Table: Verify that the segregation table is in good condition and is being used for segregation.	Yes ■	No ☐	NA ☐
2.2 Proper Segregation: Verify that waste is segregated in respective Bins (Wet Waste, Dry Waste, Inert etc.).	Yes ■	No ☐	NA ☐
2.3 Waste Containers: Check that waste is stored in proper and labeled containers/bins.	Yes ■	No ☐	NA ☐

Observations/Notes/ Corrective actions, if any:

1. Waste containers should have wheels and they should be of big size.
2. There should be a compartment in the waste containers for segregating the waste of different types.

3. SAFETY MEASURES(AT DRC)

3.1 Protective Gears: Please check whether the workers have appropriate protection equipment/gears like Gloves, safety boots and mask etc. Yes ■ No ☐ NA ☐

3.2 CCTV coverage: Check whether CCTV is operational or not. Yes ■ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

1. Toilet facility should be available.
2. Good quality gloves, mask for the labourers.

4. COMPOSTING EFFICIENCY (APPLICABLE AT BROOKSHABAD, DRC)

4.1 Composting: Please check whether all the compositing capacity is being put to use Yes ☐ No ☐ NA ■

If no, then please mention details for idle capacity:

Annexure-II

Inspection format for Collection Route

Ward No.	Collection Route (Please provide detail of location)	Collection is done in segregated manner or mostly mixed waste is being collected?	Whether any vulnerable points exists nearby where unsegregated waste is being dumped/ noticed?	Are the vehicles used for waste transportation from the collection point have separate dry or wet waste compartment?	Overall efficiency of the collection point in terms of coverage of households, collection of segregated waste etc.	Remarks (If Any)
		1.Segregated waste 2.Unsegregated waste 3.Mostly segregated waste	(Yes/No) (If Yes, then please specify location)	1. Separate compartments exists 2. No Separate Compartments (Please specify vehicle number also)	(Excellent/Good/Fair /Poor/Very Poor)	
14	Dairy Farm covering 11 routes	Mostly segregated	NO	NO	Reasonably good	
15	Dairy Farm covering 8 routes	Mostly segregated	NO	NO	Reasonably good	

Any general suggestion about improvement that can be done on collection route:

1. There should be mobile waste collection pits, currently plastic fruit baskets are being used for this purpose (photos attached)- separate compartments must be there for degradable and plastic waste.
2. A 540-liter dustbin with a segregated component is a must for roadside garbage.
3. Some residents complain about the inefficient handling of C & D waste by PBMC and APWD.
4. Sanitary toilets should be properly managed at the site office.
5. PBMC waste collectors were not given rain coats,

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Annexure: IV

Sl No	Name of Officer	Day on which inspection is to be carried out	Name of DRC	Sanitary Inspector's Name, Ward No. and Contact Number	All Collection Routes of
1	Shri Kumar L, IAS Shri Nitin Shakya, DANICS	**24/06/2024 (Monday)**	M/s Greenworms Anarkali, Near MP Theater, Port Blair	Shri. Sudeep Singh Ward No - 1 and 2 Mob: **9434289509** Shri. Lalit Kr. Ekka Ward No - 3 Mob: **9531873755**	Ward No. 1,2,3
2	Shri Balwan Singh Jaglan, IAS Ms Sapna Priya, DANICS	**25/06/2024 (Tuesday)**	M/s Rapidus Technologies, Mohanpura Bus Stand, Port Blair	Shri. Satish Kumar Ward No - 5 Mob: **9434260152** Shri. Deepak Behan Ward No - 11 Mob:**9434282714**	Ward No. 5,11
3	Ms.Purva Garg, IAS Shri Aditya Kumar Jha, DANICS	**26/06/2024 (Wednesday)**	M/s Paperman Environmental Solution, Near Kaithan Kalyan Mandappan, Junglighat, Port Blair	Shri. Vijay Kumar Ward No - 6 Mob: **9734481755** Shri. B.Rudraiah Ward No - 7 Mob: **9474204001**	Ward No. 6,7
4	Ms.Smitha R, IAS Shri Shiv Singh Meena, DANICS	**27/06/2024 (Thursday)**	M/s Shakti Plastic, VIP Road, Port Blair	Shri. Salamat Khan Ward No - 4 Mob:**9434278916** Shri. B.Rudraiah Ward No - 7 Mob: **9474204001**	Ward No. 4,7

Sl No	Name of Officer	Day on which inspection is to be carried out	Name of DRC	Sanitary Inspector's Name, Ward No. and Contact Number	All Collection Routes of
5	Dr. Anil Agarwal, DANICS Shri Abhishek Bhukkal, DANICS	28/06/2024 (Friday)	M/s Shakti Plastic, VIP Road, Port Blair	Shri. Lalit Kr. Ekka Ward No - 8 Mob: 9531873755 Shri. L.Karuppaiah Ward No - 9 Mob.9933250181 Shri. S.Shailendra Behari Ward No - 13 Mob:9474252171	Ward No. 8,9,13
6	Shri A.S.P.S Ravisubash, IAS Shri Anand Vardhan Mishra, DANICS	29/06/2024 (Saturday)	M/s ATR Venture School Line, Near Rosshi Basthi, Port Blair	Shri. B.Rudraiah Ward No - 14 Mob: 9474204001 Shri. Thomas Varghese Ward No - 15 Mob: 9434285993	Ward No. 14,15
7	Dr Satyendra Singh Dharawat, IAS Shri Anuj Kumar Bharti, DANICS	01/07/2024 (Monday)	M/s Emerald Recycling Unit Dollyganj, Near ITI College, Port Blair	Shri. Thomas Varghese Ward No - 16 Mob: 9434285993 Shri. Amit Bhattacharya Ward No - 17 Mob: 9933214316	Ward No. 16,17
8	Shri Vishwendra, DANICS Shri Jatinder Sohal, DANICS	02/07/2024 (Tuesday)	M/s KSR Scarp & Traders, Bhatubasthi Parking, Port Blair	Shri. Jatan Lall Ward No - 19 Mob: 9933257824 Shri. Satyajit Naskar Ward No - 23 and 24 Mob: 9679531286	Ward No. 19,23,24

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Sl No	Name of Officer	Day on which inspection is to be carried out	Name of DRC	Sanitary Inspector's Name, Ward No. and Contact Number	All Collection Routes of
9	Shri Arjun Sharma, IAS Shri Vinayak Chamadia, IAS	03/07/2024 (Wednesday)	M/s Andamans 3R Solution, Garacharma, Port Blair	Shri. Sameer Ch.Das Ward No - 20 Mob:7063903921 Shri. Umarn Ali Ward No - 21 and 22 Mob:9679516100 Shri. Amit Bhattacharya Ward No - 18 Mob: 9933214316	Ward No. 20,21,22,18
10	Shri. Asharuddin Zaharuddin Quazi, IAS Shri Vasant Dabholkar, IAS Probationer	04/07/2024 (Thursday)	M/s CM Scrap Trader, Brookshabad, Port Blair	Shri. Sanjeev Kumar Ward No - 10 Mob:9434356734	Ward No. 10
11	Ms Ranjana Dawal, DANICS Shri Vikram Singh, DANICS	05/07/2024 (Friday)	M/s Sahila Enterprises, Brookshabad, Port Blair	Shri. S Shailendra Behari Ward No - 12 Mob:9474252171	Ward No. 12
12	Shri Kale Amit Marutirao, IAS Smti Anuja Trivedi, IAS Probationer	06/07/2024 (Saturday)	Landfill site		All wards

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email : dirtpt.and@nic.in

Ph/ Fax: 03192-230225/230235

No. PA/Secy(Tpt)/2024/ 45

अण्डमान तथा निकोबार प्रशासन
ANDAMAN & NICOBAR ADMINISTRATION
परिवहन निदेशालय / DIRECTORATE OF TRANSPORT

आजादी का अमृत महोत्सव

Port Blair, dated 2nd July, 2024

To,

The Secretary (S&T),
Andaman and Nicobar Administration,
Secretariat, Port Blair

Sub: Submission of report in respect of Solid Waste Management Sites – reg.

Ref: Order No.CS/PS/2024 dated 18.06.2024.

Sir,

With reference to the above mentioned order, undersigned alongwith Dr. Jatinder Sohal, Director(Transport) inspected the designated Solid Waste Management site as per Annexure- IV on 02.07.2024 at 12.00 noon.

The detailed report (Annexure I & II) is enclosed alongwith photographs of the site for further necessary action.

Encl: A/A.

Yours faithfully

Vishwendra

(Vishwendra)
Secretary (Tpt)

Copy to:- The OSD to the Chief Secretary for kind information of the Chief Secretary.

Vishwendra

Secretary (Tpt)

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Annexure-I

Inspection format for *Dry Resource Centers (DRCs)*

Dry Waste Resource Centre (DRC) Inspection Checklist

DRC Name/Location	**M/s KSR Scrap & Traders, Bhatubasti Parking, Port Blair.** **Ward No. 19, 23 & 24**
Date of Inspection	**02.07.2024**

INSTRUCTIONS:
Carefully review each item and mark the corresponding checkbox to indicate compliance or note any observations and areas for improvement. Use the 'Notes/Observations' section to provide additional details, corrective actions, and any required follow-up.

1. **Waste storage and handing (at DRC)**

1.1 **Designated areas:** check that space is designated and properly demarcated for receiving

(A)	Unsegregated waste (New waste collection point)	Yes ■	No ☐	NA ☐
(B)	Balled dry waste	Yes ■	No ☐	NA ☐
(C)	Segregated waste including wet waste (Segregated)	Yes ■	No ☐	NA ☐
1.2	**Weighing equipment:** Check availability of weighing balance at DRC	Yes ■	No ☐	NA ☐
1.3	**Waste Transportation:** Inspect that the outgoing transportation is being done in segregated manner.	Yes ■	No ☐	NA ☐

Observations/Notes/Corrective actions, if any:



1. Smallest DRC, designated area is very small.
2. Transportation of material is being done at one time for dry waste only; efficiency can be increased by providing separate chambers for dry and wet waste.
3. Fencing can be done around designated area for better accommodation and management.

2. Segregation Efficiency (at DRC)

2.1	**Segregation Table:** Verify that the segregation table is in good condition and is being used for segregation	Yes ■	No ☐	NA ☐
2.2	**Proper Segregation:** Verify that waste is segregated in respective Bins (Wet Waste, Dry Waste, Inert etc)	Yes ■	No ☐	NA ☐
2.3	**Waste containers:** Check that waste is stored in proper and labeled containers/bins.	Yes ■	No ☐	NA ☐

Observations/Notes/Corrective actions, if any:

Segregation Table-



Observations-

1. Other Protective gears except Boots were being used.

3. Safety Measures (at DRC)

3.1	**Protective Gears:** Please check whether the workers have appropriate protection equipment/gears like Gloves, Safety boots and mask etc.	Yes ■	No ☐	NA ☐
3.2	**CCTV coverage:** Check whether CCTV is operational or not.	Yes ☐	No ■	NA ☐

Observations/Notes/Corrective actions, if any: CCTV cameras were installed but screen of computer was not working.

4. Composting efficiency (Applicable at Brookshabad, DRC)

4.1	**Composting:** Please check whether all the composting capacity is being put to use	Yes ☐	No ☐	NA ■

If no, then please mention details for idle capacity:

Annexure-II

Inspection format for Collection Rout

Ward No.	Collection Route (Please provide detail of location)	Collection is done in segregated manner or mostly mixed waste is being collected? 1.Segregated waste 2.Unsegregated waste 3.Mostly segregated waste	Whether any vulnerable points exist nearby where unsegregated waste is being dumped/ noticed? (Yes/No) (If Yes, then please specify location)	Are the vehicles used for transportation from the collection points have separate dry or wet waste compartment? 1.Separate compartments exists 2.No Separate compartments (Please specify vehicle number also)	Overall efficiency of the collection point in terms of coverage of households, collection of segregated waste etc. (Excellent/Good/Fair / Poor/Very Poor)	Remarks (If Any)
19	Route No.05 Vegetable Market	Unsegregated	Yes, near vegetable market	No Separate compartments	Fair	
19	Route No. 05 Near St. Mary School	Mostly mixed	No	No Separate compartments	Good	
24	Route No.06 Doctors Colony, Bhatubasti	Mixed	No	No Separate compartments	good	

24	Route No.09, Naushad Colony	Unsegregated	Yes it is a vulnerable point at, Roop Narayan Colony, Garacharma	No Separate compartments	Good	
23	Route No. 06 Bird line	Unsegregated	Route No. 06 Aata Chakki, Prothrapur	No Separate compartments	Good	

Vishnundra
02/07/2024

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Any general suggestion about improvement that can be done on collection route:

1. No DRC is accepting Thermocol, piling up near Fish Market in ward No. 19 accordingly this category of waste needs to be processed separately.



2. There should be twice a day collection in vegetable and fish market due to high waste generation as it was observed in Route 5 Ward 19.
3. Bins and Garbage collections points were in disrepair, if the collection has been made bin free then these areas needs to be cleaned properly after collection is done once in a day and a daily monitoring mechanism needs to be put in place to check each collection point in the ward by sanitary supervisers/ inspector.
4. The beautified Garbage Vulnerable Points needs to be maintained as the same was not in good condition.



2-7-24

Vallimadhe
01/07/2024

PURVA GARG
ADITYA JHA.

DATED: 3.7.24

Annexure-I

Inspection format for *Dry Resource Centers (DRCs)*

Dry Waste Resource Centre (DRC) Inspection Checklist

DRC Name/Location JUNGLIGHAT DRC, WARD NO. 67

Date of Inspection 3.7.24

INSTRUCTIONS:
Carefully review each item and mark the corresponding checkbox to indicate compliance or note any observations and areas for improvement. Use the "Notes/Observations" section to provide additional details, corrective actions, and any required follow-up.

1. WASTE STORAGE AND HANDLING (AT DRC)

1.1 Designated Areas: Check that space is designated and properly demarcated for receiving

	Yes	No	NA
(A) Unsegregated waste (New waste collection point	☐	☐	☑
(B) Bailed dry waste	☑	☐	☐
(C) Segregated waste including wet waste (Segregated)	☐	☐	☑
1.2 Weighing equipment: Check availability of weighing balance at DRC	☑	☐	☐
1.3 Waste Transportation: Inspect that the outgoing transportation is being done in segregated manner.	☑	☐	☐

Observations/Notes/ Corrective actions, if any:

2. SEGRAGATION EFFICIENCY (AT DRC)

	Yes	No	NA
2.1 Segregation Table: Verify that the segregation table is in good condition and is being used for segregation. – A MAKESHIFT TABLE IS PROVIDED.	☑	☐	☐
2.2 Proper Segregation: Verify that waste is segregated in respective bins.	☑	☐	☐
2.3 Waste Containers: Check that waste is stored in proper and labeled containers/bins. SEPERATE CARDBOARD/CARTON BOXES ARE USED. HOWEVER PLASTIC BINS CAN US	☑	☐	☐

Observations/Notes/ Corrective actions, if any:

SEGREGATION EFFICIENCY IS NOT 100% SINCE SOME BUNDLES CONTAINED PLASTIC & CARDBOARD TOGETHER. HOWEVER IT MAY NOT AFFECT THE WASTE SEGREGATION OF PBMC, SINCE THE DRY WASTE IS BEING UTILIZED/DISPOSED OFF BY TH PRIVATE PLAYER.

1346

अण्डमान तथा निकोबार प्रशासन
ANDAMAN AND NICOBAR ADMINISTRATION
सचिवालय/SECRETARIAT
****

Port Blair, dated the 18th June, 2024

DRAFT ORDER

1. With a view to ensure effective implementation of collection, processing and disposal of Solid Waste in PBMC area, teams of senior officers are hereby formed and assigned the duty of conducting inspections at designated Solid Waste Management Sites (Dry Resource Centers/Collection Routes/Landfill Site).

2. The teams shall conduct inspection ***once in a fortnight as per schedule*** in morning hours and access the effectiveness of collection, transportation and segregation operations, as applicable.

3. The teams shall also identify areas for improvement for ensuring proper waste handling at each site.

4. The teams shall document findings accurately using the designated inspection checklist as mentioned below

A.	**Inspection format for DRCs**	: **Annexure-I**
B.	**Inspection format for Collection Points**	: **Annexure-II**
C.	**Inspection format for Landfill Site**	: **Annexure- III**

5. All teams shall submit report to Science & Technology, Department on or before every Saturday without fail. Secretary (S&T) shall compile the reports and submit a consolidated to undersigned **every Monday @11 AM without fail.**

3. SAFETY MEASURES(AT DRC)

3.1 Protective Gears: Please check whether the workers have appropriate protection equipment like Gloves, safety boots and mask etc. Yes ☐ No ☑ NA ☐

• ADEQUATE GEAR NOT PROVIDED & QUALITY OF GEAR WAS NOT SATISFACTORY.

3.2 CCTV coverage: Check whether CCTV is operational or not. Yes ☑ No ☐ NA ☐

(A) CCTV IS INSTALLED & IS WORKING. HOWEVER THE FEED IS NOT MONITORED. THE SI DOES NOT ASSESS & ACCESS THE FEED. RECORDING COULD NOT BE RETRIEVED.

-Observations/Notes/ Corrective actions, if any:

(B) AMPLE SPACE IS AVAILABLE AT THE DRC SITE. WET WASTE COMPOSTING AT SITE CAN BE PLANNED AT A LARG SCALE

4. COMPOSTING EFFICIENCY (APPLICABLE AT BROOKSHABAD, DRC) — NA —

4.1 Composting: Please check whether all the compositing capacity is being put to use Yes ☐ No ☐ NA ☐

If no, then please mention details for idle capacity:

OBSERVATIONS FOR DRC :—

1. DRC is managed/operated by a private concessionaire, on the ba of revenue sharing (per kg of segregated waste).
2. As per the register maintained at DRC, the dry waste per day reaching the DRC is minimal. If required, dry was from other areas can also be baled here.
3. Lots of baled material is stacked at site. It must be ensured that the concessionaire lifts the segregated baled material regularly.
4. Refer pt 2 above — on an average daily 2/3 bundles, each of ML plastic bottles & tin cans are baled, as per data in the segrel (80 kg) (60kg) (13
5. SPECIAL CLEANING DRIVE REQUIRED AT THE FOLLOWING LOCATIO
   a) MAIN ROAD IN FRONT OF ST THOMAS CHURCH
   b) DRAIN NEAR JUNGLIGHAT AYUSH CENTRE

1348

Annexure-II

Inspection format for *Collection Route*

Ward No.	Collection Route (please provide detail of location)	Collection is done in segregated manner or mostly mixed waste is being collected? 1.Segregated waste 2.Unsegregated waste 3. Mostly segregated waste	Whether any vulnerable points exists nearby where unsegregated waste is being dumped/ noticed? (Yes/No) (If Yes, then please specify location)	Are the vehicles used for waste transportation from the collection point have separate dry or wet waste compartment? 1. Separate compartments exists 2. No Separate Compartments (Please specify vehicle number also)	Overall efficiency of the collection point in terms of coverage of households, collection of segregated waste etc. (Excellent/ Good/Fair/ Poor/Very Poor)	Remarks (If Any)
7	2 & 3	SEGREGATED WASTE COLLECTED FROM HOME	YES ROAD INFRONT OF ST. THOMAS CHURCH	• ONLY 1 VEHICLE FOR ENTIRE WARD. REST IS COVERED MANUALLY. • SEPERATE COMPARTMENTS ARE AVAILABLE	GOOD	QUALITY/DIGNITY OF WORK FOR THE SWACHTA WORKERS NEEDS TO BE IMPROVED — PROPER GEAR & EQUIPMENT IS DESIRABLE.
	OLD SHARADWADI HOSPITAL AREA.					

Any general suggestion about improvement that can be done at collection points:

1. WARD WISE/AREA WISE SEPERATE ENCLOSED WASTE COLLECTION POINTS SHOULD BE DESIGNATED. CURRENTLY WASTE IS BEING HANDLED AT ROAD SIDES/NEAR DRAINS IN THE OPEN — WHICH LEADS TO GARBAGE ENTERING INTO DRAINS & STRAY ANIMALS CREATING A MENACE AROUND IT. IT IS ALSO AN EYE SORE FOR THE PUBLIC.

2. GARBAGE COLLECTION IS BEING DONE MANUALLY — IN PLASTIC GUNNY SACKS OR CRATES — WHICH ARE DRAGGED TILL THE POINT OF GARBAGE COLLECTION. INSTEAD GARBAGE COLLECTION VANS SHOULD BE DEPLOYED. CURRENTLY IN WARD 7 — FOR A POPULATION of 12,500 PEOPLE, ONLY 01 GARBAGE COLLECTION VAN IS DEPLOYED.

Annexure-III

Inspection format for *Landfill Site*

1. WASTE HANDLING AT LANDFILL SITE

INSTRUCTIONS: PBMC has designated areas for dumping different types of waste as mentioned below at landfill site:

i) Mix Waste
ii) Domestic Hazardous Waste
iii) Medical Waste
iv) Green Waste
v) Coconut Waste

The team has to refer to the designate site and make an assessment on following parameters

(A) Waste Dumping: Inspect that the waste is being dumped at designated place in landfill site. Yes ☐ No ☐ NA ☐

If No, then please explain the deviation in detail:

(B) Polythene/Plastic Waste: Inspect whether polythene waste is being dumped at the landfill site? Yes ☐ No ☐ NA ☐

(C) Composting: Inspect whether Pit Composting is being done or not at designated place in landfill site? Yes ☐ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

F.No.1-1/Genl/GA)
ANDAMAN & NICOBAR ADMINISTRATION
SECRETARIAT
****

Port Blair, dated the 1st July 2024

To

The Secretary (S&T),
A&N Administration,
Port Blair.

Sub: Submission of report in respect of Solid Waste Management Sites- reg
Ref:- Order No CS/PS/06/2024 dated 18-06-2024

Sir,

With reference to the above Order, undersigned alongwith Dr. Satyendra Singh Dursawat, IAS inspected the designed Solid Waste Management Site as per Annexure-IV on 01-07-2024 at 09.00 A.M.

The detailed report (Annexure I & Annexure II) is enclosed for further necessary action.

Yours faithfully

Encl: As Above

(Anuj Kumar Bharti, DANICS)
Joint Secretary (GA)

Copy to:- The OSD to CS for kind information of Chief Secretary.

(Anuj Kumar Bharti, DANICS)

Annexure I

Inspection format for Dry Resource Centers (DRCs)

Dry Waste Resource Centre (DRC) Inspection Checklist

DRC Name/Location M/s Emerald Recycling Unit, Dollyganj.

Date of Inspection 01/07/2024

INSTRUCTIONS:
Carefully review each item and mark the corresponding checkbox to indicate compliance or note any observations and areas for improvement. Use the "Notes/Observations" section to provide additional details, corrective actions, and any required follow-up.

1. WASTE STORAGE AND HANDLING (AT DRC)

1.1 Designated Areas: Check that space is designated and properly demarcated for receiving

(A) Unsegregated waste (New waste collection point)	Yes ☐	No ☑	NA ☐
(B) Bailed dry waste	Yes ☑	No ☐	NA ☐
(C) Segregated waste including wet waste (Segregated)	Yes ☐	No ☑	NA ☐
1.2 Weighing equipment: Check availability of weighing balance at DRC	Yes ☑	No ☐	NA ☐
1.3 Waste Transportation: Inspect that the outgoing transportation is being done in segregated manner.	Yes ☑	No ☐	NA ☐

Observations/Notes/ Corrective actions, if any:

- Segregation table is soon to be installed in a week time.
- Regular/timely sweeping of floor is not done.
- NLP (Polychem) & plastic waste bailing is economically less viable.

2. SEGREGATION EFFICIENCY (AT DRC)

2.1 Segregation Table: Verify that the segregation table is in good condition and is being used for segregation.	Yes ☐	No ☑	NA ☐
2.2 Proper Segregation: Verify that waste is segregated in respective Bins (Wet Waste, Dry Waste, Inert etc.).	Yes ☐	No ☑	NA ☐
2.3 Waste Containers: Check that waste is stored in proper and labeled containers/bins.	Yes ☐	No ☑	NA ☐

Observations/Notes/ Corrective actions, if any:

- The segregation table and area is not yet properly designated.
- Indoor area is desirable for this.

3. SAFETY MEASURES(AT DRC)

3.1 Protective Gears:Please check whether the workers have appropriate protection equipment/gears like Gloves, safety boots and mask etc. Yes [✓] No [ ] NA [ ]

3.2 CCTV coverage: Check whether CCTV is operational or not. Yes [✓] No [ ] NA [ ]

Observations/Notes/ Corrective actions, if any:

safety boots were not being used. Masks used were not upto standard of comfort as labours were pulling it below nose for breathing. upto a while.

4. COMPOSTING EFFICIENCY (APPLICABLE AT BROOKSHABAD, DRC)

4.1 Composting: Please check whether all the composting capacity is being put to use Yes [ ] No [ ] NA [ ]

If no, then please mention details for idle capacity:

01/7/24.

1353

Annexure-II

Inspection format for *Collection Route*

Ward No.	Collection points (Please provide detail of location)	Collection is done in segregated manner or mostly mixed waste is being collected? 1. Segregated waste 2. Unsegregated waste 3. Mostly segregated waste	Whether any vulnerable points exist nearby where unsegregated waste is being dumped / collected? (Yes/No) (If Yes, then please specify location)	Are the vehicles used for waste transportation from the collection point have separate dry or wet waste compartment? 1. Separate compartments exists 2. No Separate Compartments (Please specify vehicle number also)	Overall efficiency of the collection point in terms of coverage of households, collection of segregated waste etc. (Excellent/Good/Fair/Poor/Very Poor)	Remarks (If Any)
16.	Telugu Bank Dobhyguny (5)	Mostly segregated	Yes Krishnamala colony (near schooline junction)	No separate Compartments	Good.	
17.	Lokmatha colony, Dobhyguny (3)	Mostly segregated.	Yes. Ambu international Hotel near SBI.	No separate compartment.	Good.	

Any general suggestion about improvement that can be done on collection route:

→ For vulnerable pons :- fines to be imposed for detrimanet, but before that CCTV monitoring and is needed to identify the person who is dumpping.

→ For collection :- there was no cycle barrow cart available with collectors to collect from narrow gullies/footpaths where vehicle cant go. Hence, they may be provided.

01/11/24.

Annexure-III

Inspection format for Landfill Site

1. WASTE HANDLING AT LANDFILL SITE — NA —

INSTRUCTIONS: PBMC has designated areas for dumping different types of waste as mentioned below at landfill site:

i) Mix Waste
ii) Domestic Hazardous Waste
iii) Medical Waste
iv) Green Waste
v) Coconut Waste

The team has to refer to the designate site and make an assessment on following parameters

(A) Waste Dumping: Inspect that the waste is being dumped at designated place in landfill site. Yes ☐ No ☐ NA ☐

If No, then please explain the deviation in detail:

(B) Polythene/Plastic Waste: Inspect whether polythene waste is being dumped at the landfill site? Yes ☐ No ☐ NA ☐

(C) Composting: Inspect whether Pit Composting is being done or not at designated place in landfill site? Yes ☐ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

Annexure-I

Inspection format for Dry Resource Centers (DRCs)

Dry Waste Resource Centre (DRC) Inspection Checklist

DRC Name/Location M/s Hindemarg S R Solution Garacharma, Port Blair

Date of Inspection 3/7/2024

INSTRUCTIONS:
Carefully review each item and mark the corresponding checkbox to indicate compliance or note any observations and areas for improvement. Use the "Notes/Observations" section to provide additional details, corrective actions, and any required follow-up.

1. WASTE STORAGE AND HANDLING (AT DRC)

1.1 Designated Areas: Check that space is designated and properly demarcated for receiving

(A) Unsegregated waste (New waste collection point) Yes ☑ No ☐ NA ☐

(B) Bailed dry waste Yes ☑ No ☐ NA ☐

(C) Segregated waste including wet waste (Segregated) Yes ☑ No ☐ NA ☐

1.2 Weighing equipment: Check availability of weighing balance at DRC Yes ☐ No ☐ NA ☐

1.3 Waste Transportation: Inspect that the outgoing transportation is being done in segregated manner Yes ☑ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

1) Due to power outage and construction at compound wall, waste had not been collected for past few days.
2) DRCs are not taking MLPs due to segregation in collection centre at CBeani.
3) Earlier ordering to 2 wards, now 4 - so overcharging) ∴ Ward 22 DRC can be made functional

2. SEGREGATION EFFICIENCY (AT DRC)

2.1 Segregation Table: Verify that the segregation table is in good condition and is being used for segregation. Yes ☑ No ☐ NA ☐

2.2 Proper Segregation: Verify that waste is segregated in respective Bins (Wet Waste, Dry Waste, Inert etc.). Yes ☑ No ☐ NA ☐

2.3 Waste Containers: Check that waste is stored in proper and labeled containers/bins. Yes ☐ No ☑ NA ☐

Observations/Notes/ Corrective actions, if any:

Segregation table has been made out of a temporary arrangement of boxes and board, will be improved. Waste containers are present but not completely labelled.

1356

3. SAFETY MEASURES(AT DRC)

3.1 Protective Gears: Please check whether the **workers** have appropriate protection equipment/gears like Gloves, **safety boots and** mask etc Yes ☑ No ☐ NA ☐

3.2 CCTV coverage: Check whether CCTV is operational or not. Yes ☑ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

4. COMPOSTING EFFICIENCY (APPLICABLE AT BROOKSHABAD, DRC)

4.1 Composting: Please check whether all the composting capacity is being put to use Yes ☐ No ☐ NA ☐

If no, then please mention details for idle capacity:

1357

Annexure-II

Inspection format for Collection Route

Ward No.	Collection Route (Please provide detail of location)	Collection is done in segregated manner or mostly mixed waste is being collected? (1. Segregated waste 2. Unsegregated waste 3. Mostly segregated waste)	Whether any vulnerable points exists nearby where unsegregated waste is being dumped/ noticed? (Yes/No) (If Yes, then please specify location)	Are the vehicles used for waste transportation from the collection point have separate dry or wet waste compartment? (1. Separate compartments exists 2. No Separate Compartments (Please specify vehicle number also))	Overall efficiency of the collection point in terms of coverage of households, collection of segregated waste etc. (Excellent/Good/Fair/Poor/Very Poor)	Remarks (If Any)
21	Chakkegaon	Mostly segregated	No	Yes	Good	
20	Paharpan	Mostly segregated	No	Yes	Good	
18.	CPathegudy +Austinroad	Mostly segregated	No	Yes	Good	
22	Brooksbond +Brijoy	Mostly segregated	No	Yes	Good	
Gharoghanc						

Any general suggestion about improvement that can be done on collection route:

1> EPR norms should be put in place for solution of MLP, C&D waste and waste like Thermocol

2> Composting pits should be created in unutilised lands in every ward as solution to wet waste

3> There are private parcels of land with heaps of waste, they must be given notice & asked to clean up their plots

4> Wad 20 DRC - Not functional - must be given to some other vendor, it's space can be well utilised

5> Concrete Dustbins should have a board or some material which can segregate it into 2 compartments of dry & wet waste.

Ward 10

Annexure-I

Inspection format for *Dry Resource Centers (DRCs)*

Dry Waste Resource Centre (DRC) Inspection Checklist

DRC Name/Location CM Scrapdealer

Date of Inspection

INSTRUCTIONS:
Carefully review each item and mark the corresponding checkbox to indicate compliance or note any observations and areas for improvement. Use the "Notes/Observations" section to provide additional details, corrective actions, and any required follow-up.

1. WASTE STORAGE AND HANDLING (AT DRC)

1.1 Designated Areas: Check that space is designated and properly demarcated for receiving

(A) Unsegregated waste (New waste collection point)	Yes ☐	No ☑	NA ☐
(B) Bailed dry waste	Yes ☑	No ☐	NA ☐
(C) Segregated waste including wet waste (Segregated)	Yes ☐	No ☐	NA ☐
1.2 Weighing equipment: Check availability of weighing balance at DRC (small wt. machine)	Yes ☑	No ☐	NA ☐
1.3 Waste Transportation: Inspect that the outgoing transportation is being done in segregated manner.	Yes ☑	No ☐	NA ☐

Observations/Notes/ Corrective actions, if any: Decent facilities are there but unhygienic surrounding due to lot of piling up of dry waste.

2. SEGREGATION EFFICIENCY (AT DRC)

2.1 Segregation Table: Verify that the segregation table is in good condition and is being used for segregation.	Yes ☑	No ☐	NA ☐
2.2 Proper Segregation: Verify that waste is segregated in respective Bins (Wet Waste, Dry Waste, Inert etc.).	Yes ☑	No ☐	NA ☐
2.3 Waste Containers: Check that waste is stored in proper and labeled containers/bins. (not labled)	Yes ☑	No ☐	NA ☐

Observations/Notes/ Corrective actions, if any: Mostly dry waste comes at DRC so, efficiency is good. (Some month long waste was also pending for segregation)

3. SAFETY MEASURES(AT DRC)

3.1 Protective Gears: Please check whether the workers have appropriate protection equipment/gears like Gloves, safety boots and mask etc. Yes ☑ No ☐ NA ☐

3.2 CCTV coverage: Check whether CCTV is operational or not. Yes ☑ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any: Table was there and gloves were used . No safety boots.

4. COMPOSTING EFFICIENCY (APPLICABLE AT BROOKSHABAD, DRC)

4.1 Composting: Please check whether all the compositing capacity is being put to use Yes ☐ No ☐ NA ☑

If no, then please mention details for idle capacity:

1360

Annexure-II

Inspection format for Collection Route

Ward No.	Collection Route (Please provide detail of location)	Collection is done in segregated manner or mostly mixed waste is being collected?	Whether any vulnerable points exists nearby where unsegregated waste is being dumped/ noticed?	Are the vehicles used for waste transportation from the collection point have separate dry or wet waste compartment?	Overall efficiency of the collection point in terms of coverage of households, collection of segregated waste etc.	Remarks (If Any)
		1.Segregated waste 2.Unsegregated waste 3.Mostly segregated waste	(Yes/No) (If Yes, then please specify location)	1. Separate compartments exists 2. No Separate Compartments (Please specify vehicle number also)	(Excellent/Good/Fair /Poor/Very Poor)	
10	One truck per day. Om Nagar → Shadipur → Amita medical → police line → Hawa ghar Jn. → Shadipur Jn.	70% Segregated as per SI	Yes. 1) South point Masjid Area 2) Machi line last point 3) Hawa ghar Jn	1 truck 1) 2 Temps (No compartment) (pvt vehicle)	Good	

Any general suggestion about improvement that can be done on collection route:

South point → circuit house → machi line → Subhash Nagar → RGT Road.

NK

Annexure-III

Inspection format for *Landfill Site*

1. WASTE HANDLING AT LANDFILL SITE

INSTRUCTIONS: PBMC has designated areas for dumping different types of waste as mentioned below at landfill site:

i) Mix Waste
ii) Domestic Hazardous Waste
iii) Medical Waste
iv) Green Waste
v) Coconut Waste

The team has to refer to the designate site and make an assessment on following parameters

(A) Waste Dumping: Inspect that the waste is being dumped at designated place in landfill site. Yes ☐ No ☐ NA ☐

If No, then please explain the deviation in detail:

(B) Polythene/Plastic Waste: Inspect whether polythene waste is being dumped at the landfill site? Yes ☐ No ☐ NA ☐

(C) Composting: Inspect whether Pit Composting is being done or not at designated place in landfill site? Yes ☐ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

Sl No	Name of Officer	Day on which inspection is to be carried out	Name of DRC	Sanitary Inspector's Name, Ward No. and Contact Number	All Collection Routes of
9	Shri Arjun Sharma, IAS Shri Vinayak Chamadia, IAS	**03/07/2024 (Wednesday)**	M/s Andamans 3R Solution, Garacharma, Port Blair	Shri. Sameer Ch.Das Ward No – 20 Mob:**7063903921** Shri. Umarn Ali Ward No – 21 and 22 Mob:**9679516100** Shri. Amit Bhattacharaya Ward No – 18 Mob: **9933214316**	Ward No. 20,21,22,18
10	Shri. Azharuddin Zahiruddin Quazi, IAS Shri Vasant Dabholkar, *IAS Probationer*	**04/07/2024 (Thursday)**	M/s CM Scrap Trader, Brookshabad, Port Blair	Shri. Sanjeev Kumar Ward No – 10 Mob:**9434266734**	Ward No. 10
11	*Ms Ranjana Deswal, DANICS* *Shri Vikram Singh, DANICS*	**05/07/2024 (Friday)**	M/s Sankla Enterprises, Brookshabad, Port Blair	Shri. S Shailendra Behari Ward No – 12 Mob:**9474252171**	Ward No. 12
12	*Shri Kale Amit Marutirao, IAS* *Smti Anuja Trivedi, IAS Probationer*	**06/07/2024 (Saturday)**	Landfill site	----	All wards

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अंडमान तथा निकोबार प्रशासन
ANDAMAN & NICOBAR ADMINISTRATION
सचिवालय / **SECRETARIAT**
******

Port Blair, Dated the 5th July, 2024

To,

The Secretary (S & T)
A & N Administration
Port Blair

Sub: Submission of Report in respect of Solid Waste Management Sites.

Ref: Order No. CS/PS/06/2024 dated 18.06.2024

Sir,

With reference to the above Order undersigned alongwith Sh. Vikram Singh inspected the designated Solid Waste Management Site as per Annexure IV on 05.07.2024 at 10.00 AM.

The detailed report (Annexure I & Annexure II) is enclosed for further necessary action.

Yours faithfully

Secretary (GA/Power)

Encl: A/A

Copy to: The OSD to Chief Secretary for kind information of Chief Secretary.

Secretary (GA /Power)

Annexure-I

Inspection format for Dry Resource Centers (DRCs)

Dry Waste Resource Centre (DRC) Inspection Checklist

DRC Name/Location: M/S Sankla Enterprises, Brookshabad

Date of Inspection: 05/06/2024

INSTRUCTIONS:
Carefully review each item and mark the corresponding checkbox to indicate compliance or note any observations and areas for improvement. Use the "Notes/Observations" section to provide additional details, corrective actions, and any required follow-up.

1. WASTE STORAGE AND HANDLING (AT DRC)

1.1 Designated Areas: Check that space is designated and properly demarcated for receiving

(A) Unsegregated waste (New waste collection point)	Yes ☐	No ☑	NA ☐
(B) Bailed dry waste	Yes ☑	No ☐	NA ☐
(C) Segregated waste including wet waste (Segregated)	Yes ☑	No ☐	NA ☐
1.2 Weighing equipment: Check availability of weighing balance at DRC	Yes ☑	No ☐	NA ☐
1.3 Waste Transportation: Inspect that the outgoing transportation is being done in segregated manner.	Yes ☑	No ☐	NA ☐

Observations/Notes/ Corrective actions, if any:

Material received in segregated manner, thereafter baling packaging and transportation to mamland

2. SEGREGATION EFFICIENCY (AT DRC)

2.1 Segregation Table: Verify that the segregation table is in good condition and is being used for segregation.	Yes ☑	No ☐	NA ☐
2.2 Proper Segregation: Verify that waste is segregated in respective Bins (Wet Waste, Dry Waste, Inert etc.).	Yes ☐	No ☑	NA ☐
2.3 Waste Containers: Check that waste is stored in proper and labeled containers/bins.	Yes ☐	No ☑	NA ☐

Observations/Notes/ Corrective actions, if any:

- Install two or more bins for storage of Segregation waste and to be labelled
- Shortage of Space in DRC. Storage Space may be increased by extra shed room.

(76)

3. SAFETY MEASURES(AT DRC)

3.1 Protective Gears: Please check whether the workers have appropriate protection equipment/gears like Gloves, safety boots and mask etc. Yes ☑ No ☐ NA ☐

3.2 CCTV coverage: Check whether CCTV is operational or not. Yes ☐ No ☑ NA ☐

Observations/Notes/ Corrective actions, if any:

1. Installation of CCTV and monitor is required at center.

4. COMPOSTING EFFICIENCY (APPLICABLE AT BROOKSHABAD, DRC)

4.1 Composting: Please check whether all the compositing capacity is being put to use Yes ☐ No ☑ NA ☐

If no, then please mention details for idle capacity:

Randomly inspected composting plant- beside Sanjala enterprise, DRC and found that enzymes must be used at compost plant for fast composting. PSMC may ensure

Annexure-II

Inspection format for *Collection Route*

Ward No.	Collection Route (Please provide detail of location)	Collection is done in segregated manner or mostly mixed waste is being collected? 1.Segregated waste 2.Unsegregated waste. 3.Mostly segregated waste	Whether any vulnerable points exists nearby where unsegregated waste is being dumped/ noticed? (Yes/No) (If Yes, then please specify location)	Are the vehicles used for waste transportation from the collection point have separate dry or wet waste compartment? 1. Separate compartments exists 2. No Separate Compartments (Please specify vehicle number also)	Overall efficiency of the collection point in terms of coverage of households, collection of segregated waste etc. (Excellent/Good/Fair /Poor/Very Poor)	Remarks (If Any)
12	Sunrise colony	mostly Segregated Yes.	NO	NO	Good	
		mostly segregated				
"	Pudhline	Yes	NO.	NO	Good	
		mostly Segregated				
"	Nayagam	Yes	NO	NO	Good	
	main road					

Any general suggestion about improvement that can be done on collection route:

- Secondary collection point required for better segregation with roof and boundary
- Requirement of Hand cart with separate compartment for Dry and wet waste.

Annexure-III

Inspection format for Landfill Site

1. WASTE HANDLING AT LANDFILL SITE

INSTRUCTIONS: PBMC has designated areas for dumping different types of waste as mentioned below at landfill site:

i) Mix Waste
ii) Domestic Hazardous Waste
iii) Medical Waste
iv) Green Waste
v) Coconut Waste

The team has to refer to the designate site and make an assessment on following parameters

(A) **Waste Dumping:** Inspect that the waste is being dumped at designated place in landfill site. Yes ☐ No ☐ NA ☐

If No, then please explain the deviation in detail:

(B) **Polythene/Plastic Waste:** Inspect whether polythene waste is being dumped at the landfill site? Yes ☐ No ☐ NA ☐

(C) **Composting:** Inspect whether Pit Composting is being done or not at designated place in landfill site? Yes ☐ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

Annexure-III

Inspection format for *Landfill Site*

1. WASTE HANDLING AT LANDFILL SITE Brookshabad Landfill

INSTRUCTIONS: PBMC has designated areas for dumping different types of waste as mentioned below at landfill site:

i) Mix Waste
ii) Domestic Hazardous Waste
iii) Medical Waste
iv) Green Waste
v) Coconut Waste

The team has to refer to the designate site and make an assessment on following parameters

(A) Waste Dumping: Inspect that the waste is being dumped at designated place in landfill site. Yes ☑ No ☐ NA ☐

If No, then please explain the deviation in detail:

(B) Polythene/Plastic Waste: Inspect whether polythene waste is being dumped at the landfill site? Yes ☐ No ☑ NA ☐

(C) Composting: Inspect whether Pit Composting is being done or not at designated place in landfill site? Yes ☑ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

① Landfill site can be confined within boundary walls.
② Precautions against fire can be taken.
③ Shed is being proposed for workers.
④ Accessibility can be improved by repairing roads

1369

Annexure-I

Inspection format for *Dry Resource Centers (DRCs)*

Dry Waste Resource Centre (DRC) Inspection Checklist

DRC Name/Location

Date of Inspection

INSTRUCTIONS:
Carefully review each item and mark the corresponding checkbox to indicate compliance or note any observations and areas for improvement. Use the "Notes/Observations" section to provide additional details, corrective actions, and any required follow-up.

1. WASTE STORAGE AND HANDLING (AT DRC)

1.1 Designated Areas: Check that space is designated and properly demarcated for receiving

(A) Unsegregated waste (New waste collection point) Yes ☐ No ☐ NA ☐

(B) Bailed dry waste Yes ☐ No ☐ NA ☐

(C) Segregated waste including wet waste (Segregated) Yes ☐ No ☐ NA ☐

1.2 Weighing equipment: Check availability of weighing balance at DRC Yes ☐ No ☐ NA ☐

1.3 Waste Transportation: Inspect that the outgoing transportation is being done in segregated manner. Yes ☐ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

2. SEGREGATION EFFICIENCY (AT DRC)

2.1 Segregation Table: Verify that the segregation table is in good condition and is being used for segregation. Yes ☐ No ☐ NA ☐

2.2 Proper Segregation: Verify that waste is segregated in respective Bins (Wet Waste, Dry Waste, Inert etc.). Yes ☐ No ☐ NA ☐

2.3 Waste Containers: Check that waste is stored in proper and labeled containers/bins. Yes ☐ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

1370

3. SAFETY MEASURES(AT DRC)

3.1 Protective Gears: Please check whether the workers have appropriate protection equipment/gears like Gloves, safety boots and mask etc. Yes ☐ No ☐ NA ☐

3.2 CCTV coverage: Check whether CCTV is operational or not. Yes ☐ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

4. COMPOSTING EFFICIENCY (APPLICABLE AT BROOKSHABAD, DRC)

4.1 Composting: Please check whether all the compositing capacity is being put to use Yes ☐ No ☐ NA ☐

If no, then please mention details for idle capacity:

1371

Annexure-II

Inspection format for *Collection Route*

Ward No.	Collection Route (Please provide detail of location)	Collection is done in segregated manner or mostly mixed waste is being collected?	Whether any vulnerable points exists nearby where unsegregated waste is being dumped/ noticed?	Are the vehicles used for waste transportation from the collection point have separate dry or wet waste compartment?	Overall efficiency of the collection point in terms of coverage of households, collection of segregated waste etc.	Remarks (If Any)
		1.Segregated waste 2.Unsegregated waste 3.Mostly segregated waste	(Yes/No) (If Yes, then please specify location)	1. Separate compartments exists 2. No Separate Compartments (Please specify vehicle number also)	(Excellent/Good/Fair /Poor/Very Poor)	

Any general suggestion about improvement that can be done on collection route:

Any Garbage vulnerable points/location in the ward which needs to be cleaned by PBMC. Please specify location alongwith nearby landmark.

1372

Annexure-III

Inspection format for *Landfill Site*

1. WASTE HANDLING AT LANDFILL SITE

INSTRUCTIONS: PBMC has designated areas for dumping different types of waste as mentioned below at landfill site:

i) Mix Waste
ii) Domestic Hazardous Waste
iii) Medical Waste
iv) Green Waste
v) Coconut Waste

The team has to refer to the designate site and make an assessment on following parameters

(A) Waste Dumping: Inspect that the waste is being dumped at designated place in landfill site. Yes ☐ No ☐ NA ☐

If No, then please explain the deviation in detail:

(B) Polythene/Plastic Waste: Inspect whether polythene waste is being dumped at the landfill site? Yes ☐ No ☐ NA ☐

(C) Composting: Inspect whether Pit Composting is being done or not at designated place in landfill site? Yes ☐ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

1373

Annexure: IV

Sl no	Name of Officer	Day on which inspection is to be carried out	Name of DRC	Sanitary Inspector's Name, Ward No. and Contact Number	All Collection Routes of
1	Shri Balwan Singh Jaglan, IAS Ms.Sapna Priya, DANICS	**08/07/2024 (Monday)**	M/s Greenworms Anarkali, Near MP Theater, Port Blair	Shri. Sudeep Singh Ward No - 1 and 2 Mob: **9434289509** Shri. Lalit Kr. Ekka Ward No - 3 Mob: **9531873755**	Ward No. 1,2,3
2	Shri Kumar L, IAS Shri Nitin Shakya, DANICS	**09/07/2024 (Tuesday)**	M/s Island Boy Tech Solutions, Mohanpura	Shri. Satish Kumar Ward No - 5 Mob: **9434260152** Shri. Deepak Behari Ward No – 11 Mob:**9434282714**	Ward No. 5,11
3	Ms.Smitha R, IAS Shri Shiv Singh Meena, DANICS	**10/07/2024 (Wednesday)**	M/s Paperman Environmental Solution, Near Kaithan Kalyan Mandappan, Junglighat, Port Blair	Shri. Vijay Kumar Ward No – 6 Mob: **9734481765** Shri. B.Rudraiah Ward No – 7 Mob: **9474204001**	Ward No. 6,7
4	Dr. Anil Agarwal, DANICS Shri Abhishek Bhukal, DANICS	**11/07/2024 (Thursday)**	M/s Shakti Plastic, VIP Road, Port Blair	Shri. Salamat Khan Ward No – 4 Mob:**9434278916** Shri. B.Rudraiah Ward No – 7 Mob: **9474204001**	Ward No. 4,7

Sl No	Name of Officer	Day on which inspection is to be carried out	Name of DRC	Sanitary Inspector's Name, Ward No. and Contact Number	All Collection Routes of
5	Shri A.S.P.S Raviprakash, IAS Shri Anand Vardhan Mishra, DANICS	**12/07/2024 (Friday)**	M/s Shakti Plastic, VIP Road, Port Blair	Shri. Lalit Kr. Ekka Ward No – 8 Mob: **9531873755** Shri. L.Karuppaiah Ward No - 9 Mob:**9933250181** Shri. S ShailendraBehari Ward No – 13 Mob:**9474252171**	Ward No. 8,9,13
6	Ms.Purva Garg, IAS Shri Aditya Kumar Jha, DANICS	**13/07/2024 (Saturday)**	M/s ATR Venture School Line, Near Ranchi Basthi, Port Blair.	Shri. B.Rudraiah Ward No – 14 Mob: **9474204001** Shri. Thomas Varghese Ward No - 15 Mob: **9434285993**	Ward No. 14,15
7	Shri Vishwendra, DANICS Shri JatinderSohal, DANICS	**15/07/2024 (Monday)**	M/s Emerald Recycling Unit Dollygunj, Near ITI College, Port Blair	Shri. Thomas Varghese Ward No - 16 Mob: **9434285993** Shri. Amit Bhattacharaya Ward No – 17 Mob: **9933214316**	Ward No. 16,17
8	Dr Satyendra Singh Dursawat, IAS Shri Anuj Kumar Bharti, DANICS	**16/07/2024 (Tuesday)**	M/s KSR Scarp & Traders, Bhatubasthi Parking, Port Blair	Shri. Jatan Lall Ward No - 19 Mob: **9933257824** Shri. Satyajit Naskar Ward No – 23 and 24 Mob: **9679531286**	Ward No. 19,23,24

1375

Sl No	Name of Officer	Day on which inspection is to be carried out	Name of DRC	Sanitary Inspector's Name, Ward No. and Contact Number	All Collection Routes of
9	Shri. Azharuddin Zahiruddin Quazi, IAS Shri Vasant Dabholkar, IAS Probationer	**17/07/2024 (Wednesday)**	M/s Andamans 3R Solution, Garacharma, Port Blair	Shri. Sameer Ch.Das Ward No – 20 Mob:**7063903921** Shri. Umarn Ali Ward No – 21 and 22 Mob:**9679516100** Shri. Amit Bhattacharaya Ward No – 18 Mob: **9933214316**	Ward No. 20,21,22,18
10	Shri Arjun Sharma, IAS Shri Vinayak Chamadia, IAS	**18/07/2024 (Thursday)**	M/s CM Scrap Trader, Brookshabad, Port Blair	Shri. Sanjeev Kumar Ward No – 10 Mob:**9434266734**	Ward No. 10
11	Shri Kale Amit Marutirao, IAS Smti Anuja Trivedi, IAS Probationer	**19/07/2024 (Friday)**	M/s Sankla Enterprises, Brookshabad, Port Blair	Shri. S Shailendra Behari Ward No – 12 Mob:**9474252171**	Ward No. 12
12	Ms Ranjana Deswal, DANICS Shri Vikram Singh, DANICS	**20/07/2024 (Saturday)**	Landfill site	----	All wards

No. PA/CEO-ANI/Gen/2024/71

Nothing Like Voting, I Vote for Sure

चुनाव का पर्व
DESH KA GARV

मुख्य निर्वाचन अधिकारी का कार्यालय
OFFICE OF THE CHIEF ELECTORAL OFFICER
अंडमान और निकोबार द्वीप समूह
ANDAMAN & NICOBAR ISLANDS
सचिवालय / SECRETARIAT
****

Port Blair, dated the 8th July, 2024

To

The Secretary (S&T)
A&N Administration
Port Blair

Sub: -Submission of Report in respect of Solid Waste Management Sites-reg.,
Ref:- Order No. CS/PS/06/2024 dt 06.07.2024

Sir,

With reference to the above Order, undersigned alongwith Ms Sapna Priya, DANICS inspected the designated Solid Waste Management Site as per Annexure IV on 08.07.2024 at 9.00 am.

The detailed report (Annexure I & Annexure II) is enclosed alongwith photographs of the site for further necessary action.

Yours faithfully

8/7/2024

(B.S. Jaglan)
Chief Electoral Officer
ANI

Encl:- A/A

Copy to :- The OSD to Chief Secretary for kind information of Chief Secretary.

08/7/2024

Chief Electoral Officer
ANI

1377

Annexure-I

Inspection format for *Dry Resource Centers (DRCs)*

Dry Waste Resource Centre (DRC) Inspection Checklist

DRC Name/Location: M/s Greenventure Aquatech, Near MP Theatre, Port Blair

Date of Inspection: 8/07/2024 | 9:30 am.

PHOTOGRAPHS ENCLOSED

INSTRUCTIONS:
To be filled by the Sanitary Inspector. Review each item and mark the corresponding checkbox to indicate compliance or non-compliance. Provide observations and notes for improvement. Use the "Notes/Observations" section to provide additional details, corrective actions, and any required follow-up

1. WASTE STORAGE AND HANDLING (AT DRC)

1.1 **Designated Areas:** Check that space is designated and properly demarcated for receiving

(A) Segregated waste (New waste collection point) — Yes ☑ No ☐ NA ☐

(B) Mixed dry waste — Yes ☑ No ☐ NA ☐

(C) Segregated waste including wet waste (Segregated) — Yes ☑ No ☐ NA ☐

1.2 **Weighing equipment:** Check availability of weighing balance at DRC — Yes ☑ No ☐ NA ☐

1.3 **Waste Transportation:** Inspect that the outgoing transportation is being done in segregated manner. — Yes ☑ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

1. Segregated waste (whose component wise segregation is due) is stored in large quantity thereby constraining the space.

2. SEGREGATION EFFICIENCY (AT DRC)

2.1 **Segregation Table:** Verify that the segregation table is in good condition and is being used for segregation. — Yes ☑ No ☐ NA ☐

2.2 **Proper Segregation.** Verify that waste is segregated in respective bins (Wet Waste, Dry Waste, Inert etc) — Yes ☑ No ☐ NA ☐

2.3 **Waste Containers:** Check that waste is stored in proper and labeled containers/bins — Yes ☑ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

1. Segregated waste are dumped in different containers. However, the bins are unlabelled

* Sanitary Inspector for Ward No-3 (LALIT EKKA) was not prepared / informed.

CHALLANS ISSUED for 8 shops and 1 hotel of

1378

3. SAFETY MEASURES(AT DRC)

3.1 Protective Gears: Please check whether the workers have appropriate protection equipment/gears like Gloves, safety boots and mask etc

Yes ☑ No ☐ NA ☐

3.2 CCTV coverage: Check whether CCTV is operational or not.

Yes ☑ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

CCTV is operational, however the display screen is damaged.

4. COMPOSTING EFFICIENCY (APPLICABLE AT BROOKSHABAD, DRC)

4.1 Composting: Please check whether all the compositing capacity is being put to use

Yes ☐ No ☐ NA —

If no, then please mention details for idle capacity:

—

1379

Annexure-II

Inspection format for Collection Route

Ward No.	Collection Route (Please provide detail of location)	Collection is done in segregated manner or mostly mixed waste is being collected? 1.Segregated waste 2.Unsegregated waste 3.Mostly segregated waste	Whether any vulnerable points exists nearby where unsegregated waste is being dumped/ noticed? (Yes/No) (If Yes, then please specify location)	Are the vehicles used for waste transportation from the collection point have separate dry or wet waste compartment? 1. Separate compartments exists 2. No Separate Compartments (Please specify vehicle number also)	Overall efficiency of the collection point in terms of coverage of households, collection of segregated waste etc. (Excellent/Good/Fair /Poor/Very Poor)	Remarks (If Any)
1	10 Routes	Mostly segregated	→ Dumping of mix waste on Road-side and in drains → Dumping near collection points.	Separate	Good	
2.	11 Routes	Mostly segregated			Good	
3.	11 Routes	Mostly segregated			Good	

Any general suggestion about improvement that can be done on collection route:

1. Collection points should be covered/sheltered to avoid netting of waste due to rain.
2. Cameras should be fixed at collection points.
3. Challaning of shops/houses in front of which waste is found.
4. Sensitisation of housewives, sanitation staff including supervisory staff.
5. Police to be roped in for patrolling especially around wine shops.
6. Sanitary staff should visit each and every household including difficult areas.

Any Garbage vulnerable points/location in the ward which needs to be cleaned by PBMC. Please specify location alongwith nearby landmark.

1. Ranchi Basti, Haldo
2. Opposite M K Hotel / Ward No. 1.
3. Opposite ANUDCO wine shop.
4. Roadside and drains are dumping sites throughout Ward No. 1/2/3.
5. BEFORE & AFTER photographs of the inspected sites with PBMC staff be sent to Secy., PBMC

1380

Annexure-II

Inspection format for *Landfill Sit*

1. WASTE HANDLING AT LANDFILL SITE N/A

INSTRUCTIONS: PIMC has designated areas for dumping different types of waste as mentioned below at landfill site:

i) Mix Waste
ii) Domestic Hazardous Waste
iii) Medical Waste
iv) Green Waste
v) Coconut Waste

The team has to refer to the designate site and make an assessment on following parameters

(A) Waste Dumping: Inspect that the waste is being dumped at designated place in landfill site. Yes ☐ No ☐ NA ☐

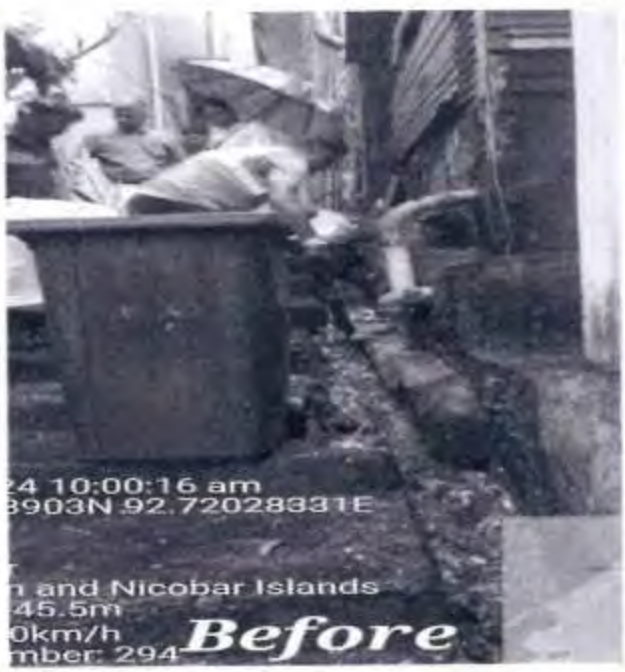
If No, then please explain the deviation in detail:

(B) Polythene/Plastic Waste: Inspect whether polythene waste is being dumped at the landfill site? Yes ☐ No ☐ NA ☐

(C) Composting: Inspect whether Pit Composting is being done or not at designated place in landfill site? Yes ☐ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

1381









Cleaning of Vegetable shop of Mr. Ibrahim ,ward no 1.









1383

















1385

















1387



Mr. Ibrahim, Vegetable shop....fine for unsegregated waste Rs 500/-



Spot fine for Dumping/ Littering of waste infront of shop..to Mr Ravi.. Main road ward no 1.



Spot fine for Littering of waste in drain, Hanifa store, main road ,Ward no 1.



Spot fine for Littering to Bay Inn hotel ,ward no 1



Spot fine for dumping of waste infront of hotel to Smti Rajamma near Community hall ward no 1.



Spot fine for Littering to Buddhadev vegetable shop in ward no 1



Spot fine for Bulk generator to Mr Zakir coconut vender ward no 2



Spot fine for Littering to Rain Bird hotel, ward no 1

1389



Verramma coconut vender...Bulk generator

1390

File : PA/CEO-ANI/Gen/2024/ 71

Nothing like Voting, I Vote for Sure

मुख्य निर्वाचन अधिकारी का कार्यालय
OFFICE OF THE CHIEF ELECTORAL OFFICER
अंडमान और निकोबार द्वीप समूह
ANDAMAN & NICOBAR ISLANDS
सचिवालय / SECRETARIAT

Port Blair, dated the 8th July, 2024

To

The Secretary (S&T)
A&N Administration
Port Blair

Sub: -Submission of Report in respect of Solid Waste Management Sites-reg.
Ref:- Order No. CS/PS/06/2024 dt 06.07.2024

Sir,

With reference to the above Order, undersigned alongwith Ms Sapna Priya, DANICS inspected the designated Solid Waste Management Site as per Annexure IV on 08.07.2024 at 9.00 am.

The detailed report (Annexure I & Annexure II) is enclosed alongwith photographs of the site for further necessary action.

Yours faithfully

8/7/2024

(B.S. Jaglan)
Chief Electoral Officer
ANI

Encl:- A/A

Copy to :- The OSD to Chief Secretary for kind information of Chief Secretary

08/7/2024

Chief Electoral Officer
ANI

Annexure-I

Inspection format for Dry Resource Centre (DRC)

Dry Waste Resource Centre (DRC) Inspection Checklist

DRC Name/Location: M/s Greenscape Aravalli, Near HP Tumber, Kher Bigh, Improvement Barracks

Date of Inspection: 8/07/2024 9:30 am.

INSTRUCTIONS:
Carefully review each item and mark the corresponding checkbox to indicate compliance or note any observations and areas for improvement. Use the "Notes/Observations" section to provide additional details, corrective actions, and any required follow-up.

1. WASTE STORAGE AND HANDLING (AT DRC)

1.1 Designated Areas: Check that space is designated and properly demarcated for receiving

(A) Unsegregated waste (Raw waste collection point) — Yes ☑ No ☐ NA ☐

(B) Bailed dry waste — Yes ☑ No ☐ NA ☐

(C) Segregated waste including wet waste (Segregated) — Yes ☑ No ☐ NA ☐

1.2 Weighing equipment: Check availability of weighing balance at DRC — Yes ☑ No ☐ NA ☐

1.3 Waste Transportation: Inspect that the outgoing transportation is being done in segregated manner. — Yes ☑ No ☐ NA ☐

Observations/Notes/Corrective actions, if any:

1. Segregated waste (whose segregation is due) is stored in large quantity. The bags containing the same.

2. SEGREGATION EFFICIENCY (AT DRC)

2.1 Segregation Table: Verify that the segregation table is in good condition and is being used for segregation. — Yes ☑ No ☐ NA ☐

2.2 Proper Segregation: Verify that waste is segregated in respective Bins (Wet Waste, Dry Waste, Inert etc.). — Yes ☑ No ☐ NA ☐

2.3 Waste Containers: Check that waste is stored in proper and labeled containers/bins. — Yes ☑ No ☐ NA ☐

Observations/Notes/Corrective actions, if any:

1. Segregated waste was dumped in different containers. However, the bins are unlabelled.

* Sanitary Inspector for Ward No-3 (LALIT BARA) was not reported / informed.

CHALLANS ISSUED to 4 Nos. of [illegible] 1. household

1392

3. SAFETY MEASURES(AT DRC)

3.1 Protective Gears:Please check whether the workers have appropriate protection equipment/gears like Gloves, safety boots and mask etc. Yes ☑ No ☐ NA ☐

3.2 CCTV coverage: Check whether CCTV is operational or not. Yes ☑ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any: CCTV is operational, however the display screen is damaged.

4. COMPOSTING EFFICIENCY (APPLICABLE AT BROOKSHABAD, DRC)

4.1 Composting:Please check whether all the composting capacity is being put to use Yes ☐ No ☐ NA ☐

If no, then please mention details for idle capacity: —

1393

Annexure-II

Inspection format for Collection Route

Ward No.	Collection Route (Please provide detail of location)	Collection is done in segregated manner or mostly mixed waste is being collected? (1.Segregated waste 2.Unsegregated waste 3.Mostly segregating waste)	Whether any vulnerable points exists nearby where unsegregated waste is being dumped/ noticed? (Yes/No) (If Yes, then please specify location)	Are the vehicles used for waste transportation from the collection point have separate dry or wet waste compartment? (1. Separate compartments exists 2. No Separate Compartments. (Please specify vehicle number also)	Overall efficiency of the collection point in terms of coverage of households, collection of segregated waste etc. (Excellent/Good/Fair /Poor/Very Poor)	Remarks (If Any)
1.	15 Routes	Mostly-segregated.	Dumping of mix waste on road-side and in drains as well as Dumping near collection points.	Separate	Good.	
2.	14 Routes	Mostly-segregated			Good	
3.	14 Routes	Mostly-segregated			Good	

Any general suggestion about improvement that can be done on collection route:

1. Collection points should be covered to avoid wetting of waste due to rain.
2. Cameras should be placed at collection points.
3. Challaning of shops / Vendors in front of which waste is found.
4. ~~Sensitization of householders, sanitation staff, Sanitary Supervisory staff.~~ Effort to be taken in patrolling especially around wine shops.
5. Sanitary staff should visit each and every household including different areas.

Any Garbage vulnerable points/location in the ward which needs to be cleaned by PBMC. Please specify location alongwith nearby landmark.

1. Parade Distt, Haldia
2. Opposite N.R Hotel / Ward No.1.
3. Opposite temple wine shop.
4. Roadside and drains are dumping sites encountered Ward No. 1 & 2.

1394

Inspection format for Landfill site

1. WASTE HANDLING AT LANDFILL SITE N/A

INSTRUCTIONS:PBMC has designated areas for dumping different types of waste as mentioned below at landfill site:

i) Mix Waste
ii) Domestic Hazardous Waste
iii) Medical Waste
iv) Green Waste
v) Coconut Waste

The team has to refer to the designate site and make an assessment on following parameters

(a) Waste Dumping: Inspect that the waste is being dumped at designated place in landfill site. Yes ☐ No ☐ NA ☐

If no, then please explain the deviation in detail:

(b) Polythene/Plastic Waste: Inspect whether polythene waste is being dumped at the landfill site? Yes ☐ No ☐ NA ☐

(C) Composting: Inspect whether Pit Composting is being done or not at designated place in landfill site? Yes ☐ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:









Cleaning of Vegetable shop of Mr. Ibrahim ,ward no 1.

1396









1397









1398









1399









1400









1401



Mr. Ibrahim, Vegetable shop....fine for unsegregated waste Rs 500/-



Spot fine for Dumping/ Littering of waste infront of shop..to Mr Ravi.. Main road ward no 1.



Spot fine for Littering of waste in drain, Hanifa store, main road ,Ward no 1.



Spot fine for Littering to Bay Inn hotel ,ward no 1

1402


South Andaman
SALE
PAID BY: CASH
BASE AMOUNT: Rs.500.00
VERSION V 2.0.0
Name Rajamma Hotel
CATEGORY SANITATION
SUB CATEGORY DUMPING/LITTERING
Details W.No. 02 Haddo
Amount Paid 500.0
Razorpay
***** Merchant Copy *****

Spot fine for dumping of waste infront of hotel to Smti Rajamma near Community hall ward no 1.


SALE
VERSION V 2.0.0
Name Buddhadev Mondal (Veg. Shop)
CATEGORY SANITATION
Details Haddo W.No. 01
Amount Paid 500.0
Razorpay
***** Merchant Copy *****

Spot fine for Littering to Buddhadev vegetable shop in ward no 1


South Andaman
SALE
PAID BY: CASH
BASE AMOUNT: Rs.300.00
VERSION V 2.0.0
Name Zakir Mondal (Coconut)
CATEGORY SANITATION
SUB CATEGORY MIXING OF TRADE WASTE
Details Haddo W.No. 01
Enter the No of Tonnes 1
Amount Paid 300.0
Razorpay
***** Merchant Copy *****

Spot fine for Bulk generator to Mr Zakir coconut vender ward no 2


SALE
VERSION V 2.0.0
Name
CATEGORY SANITATION
Details
Amount Paid 500.0
Razorpay
***** Merchant Copy *****

Spot fine for Littering to Rain Bird hotel, ward no 1



Verramma coconut vender...Bulk generator

Annexure-I

Inspection format for *Dry Resource Centers (DRCs)*

Dry Waste Resource Centre (DRC) Inspection Checklist

DRC Name/Location MOHAN PURA

Date of Inspection 9th, 11th JULY 2024

INSTRUCTIONS:
Carefully review each item and mark the corresponding checkbox to indicate compliance or note any observations and areas for improvement. Use the "Notes/Observations" section to provide additional details, corrective actions, and any required follow-up.

1. WASTE STORAGE AND HANDLING (AT DRC)

1.1 Designated Areas: Check that space is designated and properly demarcated for receiving

(A) Unsegregated waste (New waste collection point)	Yes ☑	No ☐	NA ☐
(B) Bailed dry waste	Yes ☑	No ☐	NA ☐
(C) Segregated waste including wet waste (Segregated)	Yes ☑	No ☐	NA ☐
1.2 Weighing equipment: Check availability of weighing balance at DRC	Yes ☑	No ☐	NA ☐
1.3 Waste Transportation: Inspect that the outgoing transportation is being done in segregated manner.	Yes ☑	No ☐	NA ☐

Observations/Notes/ Corrective actions, if any:

2. SEGREGATION EFFICIENCY (AT DRC)

2.1 Segregation Table: Verify that the segregation table is in good condition and is being used for segregation.	Yes ☑	No ☐	NA ☐
2.2 Proper Segregation: Verify that waste is segregated in respective Bins (Wet Waste, Dry Waste, Inert etc.)	Yes ☑	No ☐	NA ☐
2.3 Waste Containers: Check that waste is stored in proper and labeled containers/bins.	Yes ☑	No ☐	NA ☐

Observations/Notes/ Corrective actions, if any:

- Dry waste Resource centre (DRC) operator informed that MLP is sent to mainland for cement industry and suggested that MLP can be use in road construction.
- EPR option can also be explored.

1405

3. SAFETY MEASURES(AT DRC)

3.1 Protective Gears: Please check whether the workers have appropriate protection equipment gears like Gloves, safety boots and mask etc

Yes [✓] No [ ] NA [ ]

3.2 CCTV coverage: Check whether CCTV is operational or not

Yes [✓] No [ ] NA [ ]

Observations/Notes/ Corrective actions, if any:

4. COMPOSTING EFFICIENCY (APPLICABLE AT BROOKSHABAD, DRC)

4.1 Composting: Please check whether all the compositing capacity is being put to use

Yes [ ] No [ ] NA [ ]

If no, then please mention details for idle capacity:

1406

Annexure-II
Inspection format for *Landfill Sit*

1. WASTE HANDLING AT LANDFILL SITE

INSTRUCTIONS: PHMC has designated areas for dumping different types of waste as mentioned below at landfill site

i) Mix Waste
ii) Domestic Hazardous Waste
iii) Medical Waste
iv) Green Waste
v) Coconut Waste

The team has to refer to the designate site and make an assessment on following parameters

(A) Waste Dumping: Inspect that the waste is being dumped at designated place in landfill site — Yes [✓] No [ ] NA [ ]

If No, then please explain the deviation in detail:

- Plastic, CMED, water bottles, Tyres are dumped in mixed waste.
- Demarcation of waste-landfill not done properly.
- Pigs roaming & consuming the waste.

(B) Polythene/Plastic Waste: Inspect whether polythene waste is being dumped at the landfill site? — Yes [✓] No [ ] NA [ ]

(C) Composting: Inspect whether PH Composting is being done or not at designated place in landfill site? — Yes [✓] No [ ] NA [ ]

Observations/Notes/ Corrective actions, if any:

- Manpower to be deployed to remove PET bottle and tyre.
- To ensure pigs are not entering the land fill area and confined to an enclosure.
- Areas for dumping different types of waste to be demarcated in a proper manner.
- High probability of leachate flowing into the sea from land fill.

Annexure-II

Inspection format for Collection Route

Ward No.	Collection Route (Please provide detail of location)	Collection is done in segregated manner or mostly mixed waste is being collected? (1 Segregated waste 2 Unsegregated waste 3 Mostly segregated waste)	Whether any vulnerable points exists nearby where unsegregated waste is being dumped/ noticed? (Yes/No) (If Yes, then please specify location)	Are the vehicles used for waste transportation from the collection point have separate dry or wet waste compartment? (1 Separate compartments exists 2 No Separate Compartments (Please specify action taken also))	Overall efficiency of the collection point in terms of coverage of households, collection of segregated waste etc. (Excellent/Good/Fair /Poor/Very Poor)	Remarks (If Any)
5	Route No.3	Mostly Segregated	Supply line APWD land	Separate Compartments	Good	
5	Route No.10	Mostly Segregated	Bijmabad near fish market	Separate Compartments	Good	
11	Route No.6	Mostly Segregated	Near Masjid	Separate Compartments	Good	
11	Route No.10	Mostly Segregated	Krishna Nagar	Separate compartments	Good	

Any general suggestion about improvement that can be done on collection route:

- Reluctance of DRL to receive MLP, drive for collection of e-waste also required.
- Awareness, Posters & pamphlates for Public.
- Awareness to prevent dumping of garbage after the collection in afternoon by Public.
- Gloves, mask for workers needed.

Any Garbage vulnerable points/location in the ward which needs to be cleaned by PBMC. Please specify location alongwith nearby landmark.

(1) Supply line, Route No.2 of ward 5 Garbage in APWD land need to be removed (2) Ward 11 ACE colony, water bodies & garbage dumped near houses. (Route No.10) (3) water leakage from drainage need to be corrected in ACE Colony. (Route No.10)

- To designate a specific day in the week for collection of e-waste, electrical, building material for ease of handling and aggregation.

1408



Before



After

Ward No. 11, ABC Colony, Route No.:10

1409









DRC, Ward No.:5&11

1410

SHIV SINGH MEENA, DANICS

Annexure-I

Inspection format for *Dry Resource Centers (DRCs)*

Dry Waste Resource Centre (DRC) Inspection Checklist

DRC Name/Location | Ward No. 687. DRC Jungligbat

Date of Inspection | 10.9.2024

INSTRUCTIONS:
Carefully review each item and mark the corresponding checkbox to indicate compliance or note any observations and areas for improvement. Use the "Notes/Observations" section to provide additional details, corrective actions, and any required follow-up.

1. WASTE STORAGE AND HANDLING (AT DRC)

1.1 Designated Areas: Check that space is designated and properly demarcated for receiving

(A) Unsegregated waste (New waste collection point) — Yes ☐ No ☑ NA ☐

(B) Bailed dry waste — Yes ☑ No ☐ NA ☐

(C) Segregated waste including wet waste (Segregated) — Yes ☑ No ☐ NA ☐

1.2 Weighing equipment: Check availability of weighing balance at DRC — Yes ☑ No ☐ NA ☐

1.3 Waste Transportation: Inspect that the outgoing transportation is being done in segregated manner. — Yes ☑ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any: Need more frequent transportation of Bailed Waste.

2. SEGREGATION EFFICIENCY (AT DRC)

2.1 Segregation Table: Verify that the segregation table is in good condition and is being used for segregation. — Yes ☑ No ☐ NA ☐

2.2 Proper Segregation: Verify that waste is segregated in respective Bins (Wet Waste, Dry Waste, Inert etc.). — Yes ☑ No ☐ NA ☐

2.3 Waste Containers: Check that waste is stored in proper and labeled containers/bins. — Yes ☑ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any: Now DRC is functioning better than Previous visit.

1411

Annexure-II

Inspection format for *Landfill Sit*

1. WASTE HANDLING AT LANDFILL SITE

INSTRUCTIONS: PBMC has designated areas for dumping different types of waste as mentioned below at landfill site:

i) Mix Waste — Landfill / Seperate Space
ii) Domestic Hazardous Waste — C.B. pant — incinerator.
iii) Medical Waste — C.B. pant
iv) Green Waste — Seperate area at land fill site
v) Coconut Waste

The team has to refer to the designate site and make an assessment on following parameters

(A) Waste Dumping: Inspect that the waste is being dumped at designated place in landfill site. Yes ☑ No ☐ NA ☐

If No, then please explain the deviation in detail:

(B) Polythene/Plastic Waste: Inspect whether polythene waste is being dumped at the landfill site? Yes ☐ No ☑ NA ☐

(C) Composting: Inspect whether Pit Composting is being done or not at designated place in landfill site? Yes ☑ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

—

1412

3. SAFETY MEASURES(AT DRC)

3.1 Protective Gears: Please check whether the workers have appropriate protection equipment/gears like Gloves, safety boots and mask etc. Yes ☑ No ☐ NA ☐

3.2 CCTV coverage: Check whether CCTV is operational or not. Yes ☐ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

4. COMPOSTING EFFICIENCY (APPLICABLE AT BROOKSHABAD, DRC)

4.1 Composting: Please check whether all the composting capacity is being put to use Yes ☑ No ☐ NA ☐

If no, then please mention details for idle capacity:



1413

Annexure-II

Inspection format for *Collection Route*

Ward No.	Collection Route (Please provide detail of location)	Collection is done in segregated manner or mostly mixed waste is being collected?	Whether any vulnerable points exists nearby where unsegregated waste is being dumped/ noticed?	Are the vehicles used for waste transportation from the collection point have separate dry or wet waste compartment?	Overall efficiency of the collection point in terms of coverage of households, collection of segregated waste etc.	Remarks (If Any)
6	Total Route-12	1.Segregated waste 2.Unsegregated waste 3.Mostly segregated waste	(Yes/No) (If Yes, then please specify location)	1. Separate compartments exists 2. No Separate Compartments (Please specify vehicle number also)	(Excellent/Good/Fair /Poor/Very Poor)	
	Collection points - 7.	Mostly Segregated Waste - 70-90% Segregated	Near Bay School gate middle point Bus Stop.	Ward No-6 ✓ compartment - Ward No-7 ✗	Good	

Any general suggestion about improvement that can be done on collection route:

Any Garbage vulnerable points/location in the ward which needs to be cleaned by PBMC. Please specify location alongwith nearby landmark.

(I) Near Bengali club/ Relax point - Stagnation of Water. (Ward No-6 / Route No-6) Bus Stop.

(II) Route No-11, - pls provide drain Slab and Grill. Raising of Rain Wall.

1414

Annexure-II

Inspection format for *Collection Route*

Ward No.	Collection Route (Please provide detail of location)	Collection is done in segregated manner or mostly mixed waste is being collected?	Whether any vulnerable points exists nearby where unsegregated waste is being dumped/ noticed?	Are the vehicles used for waste transportation from the collection point have separate dry or wet waste compartment?	Overall efficiency of the collection point in terms of coverage of households, collection of segregated waste etc.	Remarks (If Any)
7	Total Routes 12	1.Segregated waste 2.Unsegregated waste 3.Mostly segregated waste	(Yes/No) (If Yes, then please specify location)	1. Separate compartments exists 2. No Separate Compartments (Please specify vehicle number also)	(Excellent/Good/Fair /Poor/Very Poor)	
		Mostly Segregated Waste.	Collection point No.3, Near Anganwadi	Veh. No – 7 No separate Compartment	Good	

Any general suggestion about improvement that can be done on collection route:

—

Any Garbage vulnerable points/location in the ward which needs to be cleaned by PBMC. Please specify location alongwith nearby landmark.

—

Annexure-I

Inspection format for Dry Resource Centers (DRCs)

Dry Waste Resource Centre (DRC) Inspection Checklist

DRC Name/Location M/S Shakti Plastic, VIP Road, Port Blair

Date of Inspection For 11/07/24 As per Order

INSTRUCTIONS:
Carefully review each item and mark the corresponding checkbox to indicate compliance or note any observations and areas for improvement. Use the "Notes/Observations" section to provide additional details, corrective actions, and any required follow-up.

1. WASTE STORAGE AND HANDLING (AT DRC)

1.1 Designated Areas: Check that space is designated and properly demarcated for receiving

(A) Unsegregated waste (New waste collection point) — Yes ☑ No ☐ NA ☐

(B) Bailed dry waste — Yes ☑ No ☐ NA ☐

(C) Segregated waste including wet waste (Segregated) — Yes ☑ No ☐ NA ☐

1.2 Weighing equipment: Check availability of weighing balance at DRC — Yes ☑ No ☐ NA ☐

1.3 Waste Transportation: Inspect that the outgoing transportation is being done in segregated manner. — Yes ☑ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any: Premises should be gated to avoid dumping by outsiders

2. SEGREGATION EFFICIENCY (AT DRC)

2.1 Segregation Table: Verify that the segregation table is in good condition and is being used for segregation. — Yes ☑ No ☐ NA ☐

2.2 Proper Segregation: Verify that waste is segregated in respective Bins (Wet Waste, Dry Waste, Inert etc.). — Yes ☑ No ☐ NA ☐

2.3 Waste Containers: Check that waste is stored in proper and labeled containers/bins. — Yes ☑ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

1416

3. SAFETY MEASURES(AT DRC)

3.1 **Protective Gears:**Please check whether the workers have appropriate protection equipment/gears like Gloves, safety boots and masks etc — Yes ☑ No ☐ NA ☐

3.2 **CCTV coverage:** Check whether CCTV is operational or not. — Yes ☑ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any: CCTV should be repositioned to cover entire space

4. COMPOSTING EFFICIENCY (APPLICABLE AT BROOKSHABAD, DRC)

4.1 **Composting:**Please check whether all the composting capacity is being put to use — Yes ☐ No ☐ NA ☑

If no, then please mention details for idle capacity:

Abhishek Bhukal
(JS, PBMC)

Annexure-II

Inspection format for *Collection Route*

Ward No.	Collection Route (Please provide detail of location)	Collection is done in segregated manner or mostly mixed waste is being collected? 1.Segregated waste 2.Unsegregated waste 3.Mostly segregated waste	Whether any vulnerable points exists nearby where unsegregated waste is being dumped/ noticed? (Yes/No) (If Yes, then please specify location)	Are the vehicles used for waste transportation from the collection point have separate dry or wet waste compartment? 1. Separate compartments exists 2. No Separate Compartments (Please specify vehicle number also)	Overall efficiency of the collection point in terms of coverage of households, collection of segregated waste etc. (Excellent/Good/Fair /Poor/Very Poor)	Remarks (If any)
7	- Kanya Ashram - AIR Road - Mubarak Lane - Pram Nagar - Chuna Bhatti - Andaman Stone	Mostly Segregated	NO	No	Good	
4	- Mohanpura - Marine Hill					

Any general suggestion about improvement that can be done on collection route:

Time schedule of municipal workers for collection to be widely publicized for collection efficiency.

Any Garbage vulnerable points/location in the ward which needs to be cleaned by PBMC. Please specify location alongwith nearby landmark.

1418

email : dirtpt.and@nic.in

Ph/ Fax: 03192-230225/230235

No. PA/Secy(Tpt)/2024/3992

अण्डमान तथा निकोबार प्रशासन

ANDAMAN & NICOBAR ADMINISTRATION

परिवहन निदेशालय / DIRECTORATE OF TRANSPORT

आज़ादी का अमृत महोत्सव

Port Blair, dated 15th July, 2024

To,

The Secretary (S&T),
Andaman and Nicobar Administration,
Secretariat, Port Blair

Sub: Submission of report in respect of Solid Waste Management Sites – reg.

Ref: Order No.CS/PS/06/2024 dated 06.07.2024.

Sir,

With reference to the above mentioned order, undersigned alongwith Dr. Jatinder Sohal, Director(Transport) inspected the designated Solid Waste Management site as per Annexure- IV on 15.07.2024 at 12.00 noon.

The detailed report (Annexure I & II) is enclosed alongwith photographs of the site for further necessary action.

Encl: A/A.

Yours faithfully

Vishwendra

(Vishwendra)
Secretary (Tpt)

Copy to:- The OSD to the Chief Secretary for kind information of the Chief Secretary.

Vishwendra

Secretary (Tpt)

1419

Annexure-II

Inspection format for Collection Rout

Ward No.	Collection Route (Please provide detail of location)	Collection is done in segregated manner or mostly mixed waste is being collected?	Whether any vulnerable points exist nearby where unsegregated waste is being dumped/ noticed?	Are the vehicles used for waste transportation from the collection points have separate dry or wet waste compartment?	Overall efficiency of the collection point in terms of coverage of households, collection of segregated waste etc.	Remarks (If Any)
		1.Segregated waste 2.Unsegregated waste 3 Mostly segregated waste	(Yes/No) (If Yes, then please specify location)	1.Separate compartments exists 2.No Separate compartments (Please specify vehicle number also)	(Excellent/Good/Fair / Poor/Very Poor)	
17	Route No.06, 07,08	Mostly Segregated	No	No Separate compartments	Good	
17	Route No. 03,04,05	Mostly segregated	No	No Separate compartments	Good	
24	Route No.01,02	Mostly Segregated	Yes, in Front of Alam Noor Maszid	No Separate compartments	Good	

1420

16	Route No.04	Mostly Segregated	No	No Separate compartments	Good	
16	Route No. 03	Mostly Segregated	No	No Separate compartments	Good	
16	Route No. 05	Mostly Segregated	Yes, Near Telugu Basti	No Separate compartments	Good	
16	Route No. 06	Mostly Segregated	No	No Separate compartments	Good	

Glass Waste found outside the Private Auto Body Builders-

1. On the spot clearance of the waste done-





2. On the spot Challan issued



1422

Any general suggestion about improvement that can be done on collection route:

1. At collection points, no bins are kept, instead gunny bags are there which can be replaced with closed bins. At some collection site like Route No. 03 of Ward No. 16, it became difficult to identify the collection site. A proper designated covered area is required to manage better and prevent rain seepage of waste.
2. Green waste collected from various places is kept in front of a closed SLRM-1 centre near ITI College. It stays there till a sufficient amount gets accumulated and then transported to Landfill. Instead, some mechanism of composting can be started on this site itself.



3. Plastic crates are being used to transport waste till collection site. Instead, Wheel barrow carts can be provided to the staff that will be easier to carry in narrow elevated streets.
4. Staff to regularly visit private areas to sensitise them about waste management and on repeat offence, challans to be issued.

Any Garbage vulnerable Points /location in the ward which needs to be cleaned by PBMC. Please specify location along with nearby Landmark

1. In front of Alam Noor Maszid- near Collection point on Route No.1,2 in Ward No.17-



2. On Route No.05 of Ward No. 16, Near Telugu Basti, some bushy area is there inside which public has dumped has various plastic & liquor bottles and other wastes



15.7.24

15/07/2024

1424

Annexure-I

Inspection format for *Dry Resource Centers (DRCs)*

Dry Waste Resource Centre (DRC) Inspection Checklist

DRC Name/Location	**M/s Emerald Recycling Unit Dollygunj, Near ITI College, Port Blair**
Date of Inspection	**15.07.24**

INSTRUCTIONS:
Carefully review each item and mark the corresponding checkbox to indicate compliance or note any observations and areas for improvement. Use the 'Notes/Observations" section to provide additional details, corrective actions, and any required follow-up.

1. Waste storage and handing (at DRC)

1.1 Designated areas: check that space is designated and properly demarcated for receiving

(A)	Unsegregated waste (New waste collection point)	Yes ☐	No ■	NA ☐
(B)	Bailed dry waste	Yes ■	No ☐	NA ☐
(C)	Segregated waste including wet waste (Segregated)	Yes ☐	No ■	NA ☐
1.2	**Weighing equipment:** Check availability of weighing balance at DRC	Yes ■	No ☐	NA ☐
1.3	**Waste Transportation:** Inspect that the outgoing transportation is being done in segregated manner.	Yes ■	No ☐	NA ☐

Observations/Notes/Corrective actions, if any:

1. No designated and properly demarcated area for collection.





13.7.24

2. Segregation Efficiency (at DRC)

2.1	**Segregation Table:** Verify that the segregation table is in good condition and is being used for segregation.	Yes ☐	No ■	NA ☐
2.2	**Proper Segregation:** Verify that waste is segregated in respective Bins (Wet Waste, Dry Waste, Inert etc)	Yes ☐	No ■	NA ☐
2.3	**Waste containers:** Check that waste is stored in proper and labeled containers/bins.	Yes ☐	No ■	NA ☐

Observations/Notes/Corrective actions, if any:

1. No Segregation Table installed, segregation is done by the staff on floor



2. No separate containers for the segregated waste.

3. Safety Measures (at DRC)

3.1	**Protective Gears:** Please check whether the workers have appropriate protection equipment/gears like Gloves, Safety boots and mask etc.	Yes ■	No ☐	NA ☐
3.2	**CCTV coverage:** Check whether CCTV is operational or not.	Yes ■	No ☐	NA ☐

Observations/Notes/Corrective actions, if any:

4. Composting efficiency (Applicable at Brookshabad, DRC)

4.1 **Composting:** Please check whether all the composting capacity is being put to use Yes ☐ No ☐ NA ■

If no, then please mention details for idle capacity:

Annexure-I

Inspection format for *Dry Resource Centers (DRCs)*

Dry Waste Resource Centre (DRC) Inspection Checklist

DRC Name/Location Gaiachaima

Date of Inspection 17-07-2024

INSTRUCTIONS:
Carefully review each item and mark the corresponding checkbox to indicate compliance or note any observations and areas for improvement. Use the "Notes/Observations" section to provide additional details, corrective actions, and any required follow-up.

1. WASTE STORAGE AND HANDLING (AT DRC)

1.1 Designated Areas: Check that space is designated and properly demarcated for receiving

(A) Unsegregated waste (New waste collection point)	Yes ☐	No ☑	NA ☐
(B) Bailed dry waste	Yes ☐	No ☑	NA ☐
(C) Segregated waste including wet waste (Segregated)	Yes ☑	No ☐	NA ☐
1.2 Weighing equipment: Check availability of weighing balance at DRC	Yes ☑	No ☐	NA ☐
1.3 Waste Transportation: Inspect that the outgoing transportation is being done in segregated manner.	Yes ☑	No ☐	NA ☐

Observations/Notes/ Corrective actions, if any:

DRC may improve upon the followings:—
1) More space may be allocated
2) Sanitation may be improved
3) Worker safety may be improved.

2. SEGREGATION EFFICIENCY (AT DRC)

2.1 Segregation Table: Verify that the segregation table is in good condition and is being used for segregation.	Yes ☐	No ☐	NA ☐
2.2 Proper Segregation: Verify that waste is segregated in respective Bins (Wet Waste, Dry Waste, Inert etc.).	Yes ☐	No ☑	NA ☐
2.3 Waste Containers: Check that waste is stored in proper and labeled containers/bins.	Yes ☐	No ☑	NA ☐

Observations/Notes/ Corrective actions, if any:

Overall hygiene may be improved while handling the operations.

1428

3. SAFETY MEASURES(AT DRC)

3.1 Protective Gears: Please check whether the workers have appropriate protection equipment/gears like Gloves, safety boots and mask etc. Yes ☐ No ☑ NA ☐

3.2 CCTV coverage: Check whether CCTV is operational or not. Yes ☑ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any: Workers may be provided with sufficient no. of protective gears like hand gloves, boots etc.

4. COMPOSTING EFFICIENCY (APPLICABLE AT BROOKSHABAD, DRC)

4.1 Composting: Please check whether all the compositing capacity is being put to use Yes ☐ No ☐ NA ☐

If no, then please mention details for idle capacity: – NA

Annexure-II

Inspection format for *Collection Route*

Ward No.	Collection Route (Please provide detail of location)	Collection is done in segregated manner or mostly mixed waste is being collected? (1.Segregated waste 2.Unsegregated waste 3.Mostly segregated waste)	Whether any vulnerable points exists nearby where unsegregated waste is being dumped/ noticed? (Yes/No) (If Yes, then please specify location)	Are the vehicles used for waste transportation from the collection point have separate dry or wet waste compartment? (1. Separate compartments exists 2. No Separate Compartments (Please specify vehicle number also)	Overall efficiency of the collection point in terms of coverage of households, collection of segregated waste etc. (Excellent/ Good/ Fair /Poor/ Very Poor)	Remarks (If Any)
20		More than 70% is Segregated	1) Police Quarters. 2) Chidambaram Railway Colony	No Separate Compartment	Fair	
21		More than 70% is segregated.	—	—	Good	NIL
22		More than 75% is segregated.	—	—	Good	
18		More than 90% is segregated	1) Near Apollo Hosp. 2) SBI ATM Gowrishankar	—	Good	

Any general suggestion about improvement that can be done on collection route:

— NIL —

Any Garbage vulnerable points/location in the ward which needs to be cleaned by PBMC. Please specify location alongwith nearby landmark.

- Near police Quarters and Chidambaram Railway Colony, in ward No. 20.
- Near Apollo Hospital & SBI ATM Gowrishankar in ward No. 18.

1430

Annexure-I

Inspection format for *Dry Resource Centers (DRCs)*

Dry Waste Resource Centre (DRC) Inspection Checklist

DRC Name/Location M/s CM Scrap Trader, Brookshabad

Date of Inspection 18/7/2024

INSTRUCTIONS:
Carefully review each item and mark the corresponding checkbox to indicate compliance or note any observations and areas for improvement. Use the "Notes/Observations" section to provide additional details, corrective actions, and any required follow-up.

1. WASTE STORAGE AND HANDLING (AT DRC)

1.1 Designated Areas: Check that space is designated and properly demarcated for receiving			
(A) Unsegregated waste (New waste collection point)	Yes ☑	No ☐	NA ☐
(B) Bailed dry waste	Yes ☑	No ☐	NA ☐
(C) Segregated waste including wet waste (Segregated)	Yes ☑	No ☐	NA ☐
1.2 Weighing equipment: Check availability of weighing balance at DRC	Yes ☑	No ☐	NA ☐
1.3 Waste Transportation: Inspect that the outgoing transportation is being done in segregated manner.	Yes ☑	No ☐	NA ☐

Observations/Notes/ Corrective actions, if any: One more shed needs to be made between 2 existing sheds. Water spoils the waste lying without roof over it.

2. SEGREGATION EFFICIENCY (AT DRC)

2.1 Segregation Table: Verify that the segregation table is in good condition and is being used for segregation.	Yes ☑	No ☐	NA ☐
2.2 Proper Segregation: Verify that waste is segregated in respective Bins (Wet Waste, Dry Waste, Inert etc.).	Yes ☑	No ☐	NA ☐
2.3 Waste Containers: Check that waste is stored in proper and labeled containers/bins.	Yes ☐	No ☑	NA ☐

Observations/Notes/ Corrective actions, if any:

3. SAFETY MEASURES(AT DRC)

3.1 Protective Gears: Please check whether the workers have appropriate protection equipment/gears like Gloves, safety boots and mask etc.

Yes ☑ No ☐ NA ☐

3.2 CCTV coverage: Check whether CCTV is operational or not.

Yes ☑ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

4. COMPOSTING EFFICIENCY (APPLICABLE AT BROOKSHABAD, DRC)

4.1 Composting: Please check whether all the compositing capacity is being put to use

Yes ☑ No ☐ NA ☐

If no, then please mention details for idle capacity:

Annexure-II

Inspection format for *Collection Route*

Ward No.	Collection Route (Please provide detail of location)	Collection is done in segregated manner or mostly mixed waste is being collected? 1.Segregated waste 2.Unsegregated waste 3.Mostly segregated waste	Whether any vulnerable points exists nearby where unsegregated waste is being dumped/ noticed? (Yes/No) (If Yes, then please specify location)	Are the vehicles used for waste transportation from the collection point have separate dry or wet waste compartment? 1. Separate compartments exists 2. No Separate Compartments (Please specify vehicle number also)	Overall efficiency of the collection point in terms of coverage of households, collection of segregated waste etc. (Excellent/Good/Fair /Poor/Very Poor)	Remarks (If Any)
10.	Macchi line	1. Segregated	One green patch near Mariamma temple	No separate compartments	fair	

Any general suggestion about improvement that can be done on collection route:

1. Wheel barrows need to be provided.
2. Local composting needs to be promoted.

Any Garbage vulnerable points/location in the ward which needs to be cleaned by PBMC. Please specify location alongwith nearby landmark.

1. RGT road, near old quarters. Lot of green waste dumped adjacent to road on the vacant plot.

Annexure-I

Inspection format for *Dry Resource Centers (DRCs)*

Dry Waste Resource Centre (DRC) Inspection Checklist

DRC Name/Location Gyaracharma

Date of Inspection 19/7/24

INSTRUCTIONS:
Carefully review each item and mark the corresponding checkbox to indicate compliance or note any observations and areas for improvement. Use the "Notes/Observations" section to provide additional details, corrective actions, and any required follow-up.

1. WASTE STORAGE AND HANDLING (AT DRC)

1.1 Designated Areas: Check that space is designated and properly demarcated for receiving

(A) Unsegregated waste (New waste collection point) — Yes ☐ No ☑ NA ☐

(B) Bailed dry waste — Yes ☐ No ☑ NA ☐

(C) Segregated waste including wet waste (Segregated) — Yes ☑ No ☐ NA ☐

1.2 Weighing equipment: Check availability of weighing balance at DRC — Yes ☑ No ☐ NA ☐

1.3 Waste Transportation: Inspect that the outgoing transportation is being done in segregated manner. — Yes ☑ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any: The DRC in overall can be improved interms of space allocation sanitation & worker safety

2. SEGREGATION EFFICIENCY (AT DRC)

2.1 Segregation Table: Verify that the segregation table is in good condition and is being used for segregation. — Yes ☐ No ☐ NA ☐

2.2 Proper Segregation: Verify that waste is segregated in respective Bins (Wet Waste, Dry Waste, Inert etc.). — Yes ☐ No ☑ NA ☐

2.3 Waste Containers: Check that waste is stored in proper and labeled containers/bins. — Yes ☐ No ☑ NA ☐

Observations/Notes/ Corrective actions, if any: Highly mis-managed in terms of Hygiene

1434

3. SAFETY MEASURES(AT DRC)

3.1 Protective Gears: Please check whether the workers have appropriate protection equipment/gears like Gloves, safety boots and mask etc. Yes ☐ No ☑ NA ☐

3.2 CCTV coverage: Check whether CCTV is operational or not. Yes ☑ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

4. COMPOSTING EFFICIENCY (APPLICABLE AT BROOKSHABAD, DRC)

4.1 Composting: Please check whether all the compositing capacity is being put to use Yes ☐ No ☐ NA ☐

If no, then please mention details for idle capacity:

Ward No.	Collection Route (Please provide detail of location)	Collection is done in segregated manner or mostly mixed waste is being collected? 1.Segregated waste 2.Unsegregated waste 3.Mostly segregated waste	Whether any vulnerable points exists nearby where unsegregated waste is being dumped/ noticed? (Yes/No) (If Yes, then please specify location)	Are the vehicles used for waste transportation from the collection point have separate dry or wet waste compartment? 1. Separate compartments exists 2. No Separate Compartments (Please specify vehicle number also)	Overall efficiency of the collection point in terms of coverage of households, collection of segregated waste etc. (Excellent/Good/Fair /Poor/Very Poor)	Remarks (If Any)
20		70% Segregated	→ Police Qtr. → Chitambaram colony	No separate Compartment	Fair	
21		70% Segre.		— " —	Good	
22		75% Segr.		— " —	Good	
18		90% segrey.	→ Near Appollo Hosp → Gyaracharma SBI ATM	— " —	Good	

Any general suggestion about improvement that can be done on collection route:

Any Garbage vulnerable points/location in the ward which needs to be cleaned by PBMC. Please specify location alongwith nearby landmark.

Police Qtr., Chidambaram Colony
Appollo hospital, Gyaracharma SBI atm are vulnerable points

Annexure-I

Inspection format for *Dry Resource Centers (DRCs)*

Dry Waste Resource Centre (DRC) Inspection Checklist

DRC Name/Location Brookshotnd

Date of Inspection 19 July 2024

INSTRUCTIONS:
Carefully review each item and mark the corresponding checkbox to indicate compliance or note any observations and areas for improvement. Use the "Notes/Observations" section to provide additional details, corrective actions, and any required follow-up.

1. WASTE STORAGE AND HANDLING (AT DRC)

1.1 Designated Areas: Check that space is designated and properly demarcated for receiving

(A) Unsegregated waste (New waste collection point	Yes ☑	No ☐	NA ☐
(B) Bailed dry waste Bailing is done at DRC.	Yes ☑	No ☐	NA ☐
(C) Segregated waste including wet waste (Segregated)	Yes ☐	No ☐	NA ☑
1.2 Weighing equipment: Check availability of weighing balance at DRC	Yes ☑	No ☐	NA ☐
1.3 Waste Transportation: Inspect that the outgoing transportation is being done in segregated manner.	Yes ☑	No ☐	NA ☐

Observations/Notes/ Corrective actions, if any: Electricity connection can be more regular

2. SEGRAGATION EFFICIENCY (AT DRC)

2.1 Segregation Table: Verify that the segregation table is in good condition and is being used for segregation.	Yes ☑	No ☐	NA ☐
2.2 Proper Segregation: Verify that waste is segregated in respective bins.	Yes ☑	No ☐	NA ☐
2.3 Waste Containers: Check that waste is stored in proper and labeled containers/bins.	Yes ☑	No ☐	NA ☐

Observations/Notes/ Corrective actions, if any: Recently big clean up done, hence no piling of waste

1437

3. SAFETY MEASURES(AT DRC)

3.1 Protective Gears: Please check whether the workers have appropriate protection equipment like Gloves, safety boots and mask etc. But not all worker Yes ☑ No ☐ NA ☐

3.2 CCTV coverage: Check whether CCTV is operational or not. Yes ☑ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

4. COMPOSTING EFFICIENCY (APPLICABLE AT BROOKSHABAD, DRC)

4.1 Composting: Please check whether all the compositing capacity is being put to use Yes ☑ No ☐ NA ☐

If no, then please mention details for idle capacity:

Annexure-I

Inspection format for *Collection Route*

Ward No.	Collection Route (please provide detail of location)	Collection is done in segregated manner or mostly mixed waste is being collected?	Whether any vulnerable points exists nearby where unsegregated waste is being dumped/ noticed?	Are the vehicles used for waste transportation from the collection point have separate dry or wet waste compartment?	Overall efficiency of the collection point in terms of coverage of households, collection of segregated waste etc.	Remarks (If Any)
		1.Segregated waste 2.Unsegregated waste 3. Mostly segregated waste	(Yes/No) (If Yes, then please specify location)	1. Separate compartments exists 2. No Separate Compartments (Please specify vehicle number also)	(Excellent/ Good/Fair/ Poor/Very Poor)	
12	1 Truck/day Auto	80% segregated waste →	Yes	1 Truck 1 auto	Good	Unsegregated waste is observed
	Domestic waste + Dustbins +	Wet & Dry		(No compartment)		against workers.
	Nearby Kendal Shiva temple +	① Dry waste is not segregated further because of lack of secondary segregation facility		[ppl] by trader		Public need to be sensitized
	Happy Nivas + Bright General pool + Lilac accomodation	② Need for shed				
	Dusty road → Sandpura Line of Jay → Mangalam Square Line					
	Nityanand Nagar → Nya Nada Gali → Dalda Colony → Indian gate					

Any general suggestion about improvement that can be done at collection points:

GIS Mapping: Utilize Geographic Information Systems (GIS) to map collection routes and identify optimal paths.

Container Monitoring: Implement sensors on waste containers to monitor fill levels. This data can be used to prioritize collection routes

1439

Annexure-III

Inspection format for *Landfill Site*

1. WASTE HANDLING AT LANDFILL SITE Brookshabad Landfill

INSTRUCTIONS: PBMC has designated areas for dumping different types of waste as mentioned below at landfill site:

i) Mix Waste
ii) Domestic Hazardous Waste
iii) Medical Waste
iv) Green Waste
v) Coconut Waste

The team has to refer to the designate site and make an assessment on following parameters

(A) Waste Dumping: Inspect that the waste is being dumped at designated place in landfill site. Yes ☑ No ☐ NA ☐

If No, then please explain the deviation in detail:

(B) Polythene/Plastic Waste: Inspect whether polythene waste is being dumped at the landfill site? Yes ☐ No ☑ NA ☐

(C) Composting: Inspect whether Pit Composting is being done or not at designated place in landfill site? Yes ☑ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

① Landfill site can be confined within boundary walls.
② Precautions against fire can be taken.
③ Shed is being proposed for workers
④ Accessibility can be improved by repairing roads

1440

F.No. CS/PS/07/2024

अण्डमान तथा निकोबार प्रशासन

ANDAMAN AND NICOBAR ADMINISTRATION

सचिवालय/SECRETARIAT

*****

Port Blair, dated the 20th July, 2024

ORDER

1. In continuation to Order No. CS/PS/06/2024 dated 18.06.2024 and CS/PS/06/2024 dated 06.07.2024 with a view to ensure effective implementation of collection, processing and disposal of Solid Waste in PBMC area, teams of senior officers are hereby formed and assigned the duty of conducting inspections at designated Solid Waste Management Sites (Dry Resource Centers/Collection Routes/Landfill Site). The composition of teams along with their respective areas of inspection is mentioned in **Annexure-IV**.

2. The teams shall conduct inspection ***as per schedule*** in morning hours and assess the effectiveness of collection, transportation and segregation operations, as applicable.

3. As discussed in last Senior Officers Meeting, the teams shall also identify garbage vulnerable points where cleaning needs to be carried out by PBMC.

4. The teams shall document findings accurately using the designated inspection checklist as mentioned below

A.	**Inspection format for DRCs**	**: Annexure-I**
B.	**Inspection format for Collection Routes**	**: Annexure-II**
C.	**Inspection format for Landfill Site**	**: Annexure-III**

5. All teams shall submit report to Science & Technology, Department on or before every Saturday without fail. Secretary (S&T) shall compile the reports and submit a consolidated report to undersigned **every Monday @1100 Hrs without fail.**

(Keshav Chandra)
Chief Secretary
A&N Administration

To

All Officers as per the Annexure-IV.

Annexure-I

Inspection format for *Dry Resource Centers (DRCs)*

Dry Waste Resource Centre (DRC) Inspection Checklist

DRC Name/Location _____

Date of Inspection _____

INSTRUCTIONS:
Carefully review each item and mark the corresponding checkbox to indicate compliance or note any observations and areas for improvement. Use the "Notes/Observations" section to provide additional details, corrective actions, and any required follow-up.

1. WASTE STORAGE AND HANDLING (AT DRC)

1.1 Designated Areas: Check that space is designated and properly demarcated for receiving

(A) Unsegregated waste (New waste collection point) Yes ☐ No ☐ NA ☐

(B) Bailed dry waste Yes ☐ No ☐ NA ☐

(C) Segregated waste including wet waste (Segregated) Yes ☐ No ☐ NA ☐

1.2 Weighing equipment: Check availability of weighing balance at DRC Yes ☐ No ☐ NA ☐

1.3 Waste Transportation: Inspect that the outgoing transportation is being done in segregated manner. Yes ☐ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

2. SEGREGATION EFFICIENCY (AT DRC)

2.1 Segregation Table: Verify that the segregation table is in good condition and is being used for segregation. Yes ☐ No ☐ NA ☐

2.2 Proper Segregation: Verify that waste is segregated in respective Bins (Wet Waste, Dry Waste, Inert etc.). Yes ☐ No ☐ NA ☐

2.3 Waste Containers: Check that waste is stored in proper and labeled containers/bins. Yes ☐ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

1442

3. SAFETY MEASURES(AT DRC)

3.1 Protective Gears: Please check whether the workers have appropriate protection equipment/gears like Gloves, safety boots and mask etc. Yes ☐ No ☐ NA ☐

3.2 CCTV coverage: Check whether CCTV is operational or not. Yes ☐ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

4. COMPOSTING EFFICIENCY (APPLICABLE AT BROOKSHABAD, DRC)

4.1 Composting: Please check whether all the compositing capacity is being put to use Yes ☐ No ☐ NA ☐

If no, then please mention details for idle capacity:

1443

Annexure-II

Inspection format for *Collection Route*

Ward No.	Collection Route (Please provide detail of location)	Collection is done in segregated manner or mostly mixed waste is being collected?	Whether any vulnerable points exists nearby where unsegregated waste is being dumped/ noticed?	Are the vehicles used for waste transportation from the collection point have separate dry or wet waste compartment?	Overall efficiency of the collection point in terms of coverage of households, collection of segregated waste etc.	Remarks (If Any)
		1.Segregated waste 2.Unsegregated waste 3.Mostly segregated waste	(Yes/No) (If Yes, then please specify location)	1. Separate compartments exists 2. No Separate Compartments (Please specify vehicle number also)	(Excellent/Good/Fair /Poor/Very Poor)	

Any general suggestion about improvement that can be done on collection route:

Any Garbage vulnerable points/location in the ward which needs to be cleaned by PBMC. Please specify location alongwith nearby landmark.

Annexure-III

Inspection format for *Landfill Site*

1. WASTE HANDLING AT LANDFILL SITE

INSTRUCTIONS: PBMC has designated areas for dumping different types of waste as mentioned below at landfill site:

i) Mix Waste
ii) Domestic Hazardous Waste
iii) Medical Waste
iv) Green Waste
v) Coconut Waste

The team has to refer to the designate site and make an assessment on following parameters

(A) Waste Dumping: Inspect that the waste is being dumped at designated place in landfill site. Yes ☐ No ☐ NA ☐

If No, then please explain the deviation in detail:

(B) Polythene/Plastic Waste: Inspect whether polythene waste is being dumped at the landfill site? Yes ☐ No ☐ NA ☐

(C) Composting: Inspect whether Pit Composting is being done or not at designated place in landfill site? Yes ☐ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

1445

Annexure: IV

Sl No	Name of Officer	Day on which inspection is to be carried out	Name of DRC	Sanitary Inspector's Name, Ward No. and Contact Number	All Collection Routes of
1	Shri. Azharuddin Zahiruddin Quazi, IAS Shri Vasant Dabholkar, IAS Probationer	**22/07/2024 (Monday)**	M/s Greenworms Anarkali, Near MP Theater, Port Blair	Shri. Sudeep Singh Ward No - 1 and 2 Mob: **9434289509** Shri. Lalit Kr. Ekka Ward No - 3 Mob: **9531873755**	Ward No. 1,2,3
2	Ms Smitha R, IAS Shri Shiv Singh Meena, DANICS	**23/07/2024 (Tuesday)**	M/s Island Boy Tech Solutions, Mohanpura	Shri. Satish Kumar Ward No - 5 Mob: **9434260152** Shri. Deepak Behari Ward No – 11 Mob:**9434282714**	Ward No. 5,11
3	Dr. Anil Agarwal, DANICS Shri Abhishek Bhukal, DANICS	**24/07/2024 (Wednesday)**	M/s Paperman Environmental Solution, Near Kaithan Kalyan Mandappan, Junglighat, Port Blair	Shri. Vijay Kumar Ward No – 6 Mob: **9734481765** Shri. B.Rudraiah Ward No – 7 Mob: **9474204001**	Ward No. 6,7
4	Shri Kale Amit Marutirao, IAS Smti Anuja Trivedi, IAS Probationer	**25/07/2024 (Thursday)**	M/s Shakti Plastic, VIP Road, Port Blair	Shri. Salamat Khan Ward No – 4 Mob:**9434278916** Shri. B.Rudraiah Ward No – 7 Mob: **9474204001**	Ward No. 4,7

1446

Sl No	Name of Officer	Day on which inspection is to be carried out	Name of DRC	Sanitary Inspector's Name, Ward No. and Contact Number	All Collection Routes of
5	Ms.Purva Garg, IAS Shri Aditya Kumar Jha, DANICS	**26/07/2024 (Friday)**	M/s Shakti Plastic, VIP Road, Port Blair	Shri. Lalit Kr. Ekka Ward No – 8 Mob: **9531873755** Shri. L.Karuppaiah Ward No - 9 Mob:**9933250181** Shri. S ShailendraBehari Ward No – 13 Mob:**9474252171**	Ward No. 8,9,13
6	Dr Satyendra Singh Dursawat, IAS Shri Abhishek Gulia, DANICS	**27/07/2024 (Saturday)**	M/s ATR Venture School Line, Near Ranchi Basthi, Port Blair.	Shri. B.Rudraiah Ward No – 14 Mob: **9474204001** Shri. Thomas Varghese Ward No – 15 Mob: **9434285993**	Ward No. 14,15
7	Ms Ranjana Deswal, DANICS Shri Vikram Singh, DANICS	**29/07/2024 (Monday)**	M/s Emerald Recycling Unit Dollygunj, Near ITI College, Port Blair	Shri. Thomas Varghese Ward No - 16 Mob: **9434285993** Shri. Amit Bhattacharaya Ward No – 17 Mob: **9933214316**	Ward No. 16,17
8	Shri Arjun Sharma, IAS Shri Vinayak Chamadia, IAS	**30/07/2024 (Tuesday)**	M/s KSR Scarp & Traders, Bhatubasthi Parking, Port Blair	Shri. Jatan Lall Ward No - 19 Mob: **9933257824** Shri. Satyajit Naskar Ward No – 23 and 24 Mob: **9679531286**	Ward No. 19,23,24

1447

अंडमान तथा निकोबार प्रशासन
ANDAMAN & NICOBAR ADMINISTRATION
सचिवालय/**SECRETARIAT**
******

Port Blair, Dated the 22nd July, 2024

To,

The Secretary (Sci. & Tech.)
A & N Administration
Port Blair

Sub: Submission of Report in respect of Solid Waste Management Sites.

Ref: Order No. CS/PS/06/2024 dated 06.07.2024

Sir,

With reference to the above Order undersigned alongwith Sh. Pradeep Chaudhary, Sr. Sanitary Inspector, PBMC inspected the land fill site at Brookshabad as per Annexure IV on 20.07.2024 at 10.00 AM.

The detailed report (Annexure III) alongwith photographs are enclosed for further necessary action.

Yours faithfully

(C Arvind)
Secretary (GA/Power)

Encl: A/A
Copy to: The OSD to Chief Secretary for kind information of Chief Secretary.

Secretary (GA /Power)

1448

Annexure – III
Inspection format for Landfill site

1. WASTE HANDING AT LANDFILL SITE

INSTRUCTIONS: PBMC has designated areas for dumping different types of waste as mentioned below at landfill site:

I. Mix Waste
II. Domestic Hazardous Waste
III. Medical Waste
IV. Green Waste
V. Coconut Waste

The team has to refer to the designated site and make an assessment on following parameters

(A) Waste Dumping: Inspect that the waste is being dumped at designated place in landfill site. Yes ☐ No ☑ NA ☐

If No, then please explain the deviation in detail

A. The levelling work of dumping site is going on the work is expected to be completed in about two weeks and thereafter designated separate area will be made for five different waste. The progress of work appears satisfactory.

(B) Polythene/Plastic Waste: Inspect whether Polythene is Being dumped at the landfill site. Yes ☐ No ☑ NA ☐

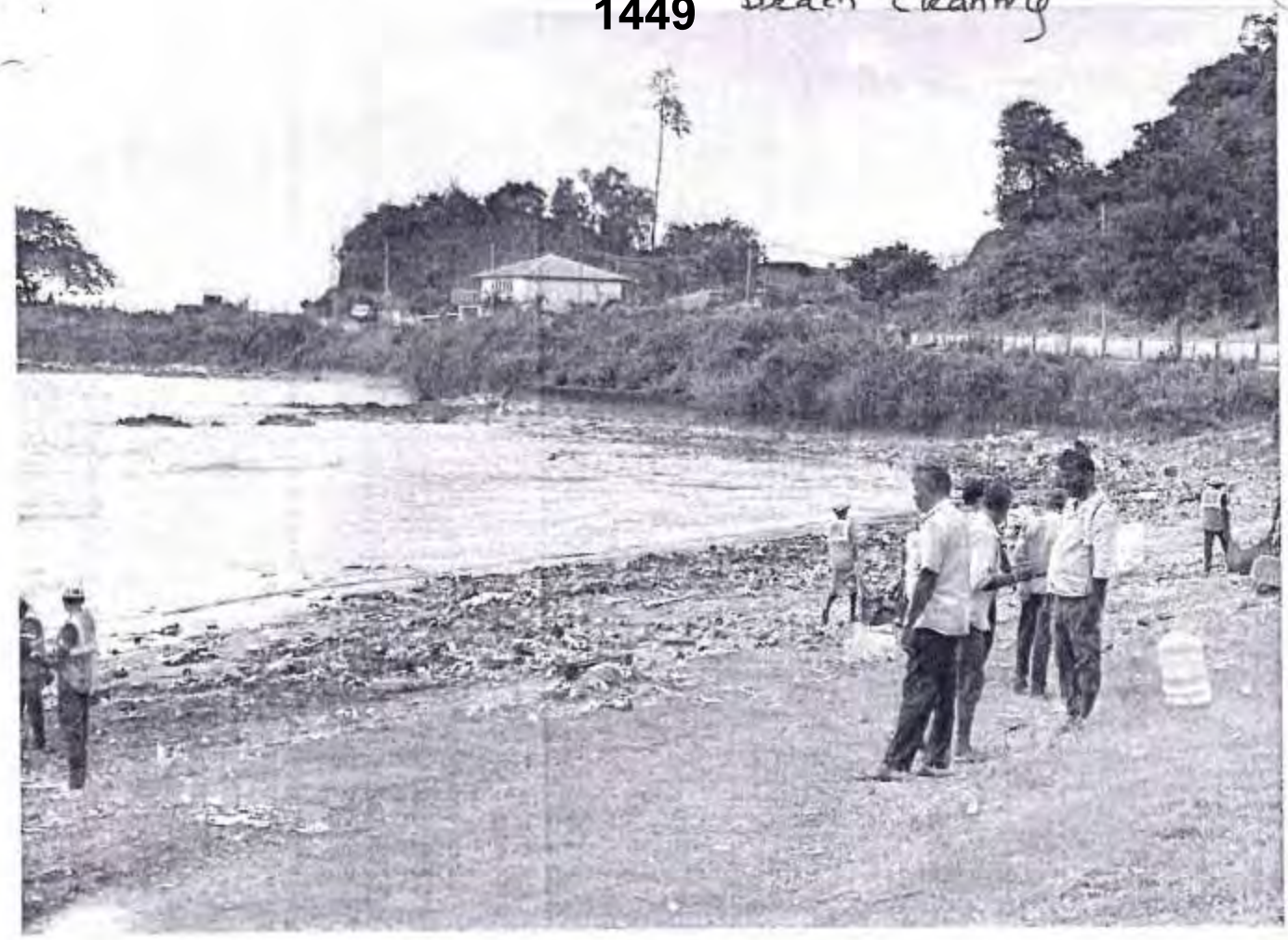
(C) Composting: Inspect whether Pit Composting is being done Being dumped at the landfill site. Yes ☑ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

A. Capacity of the composting Pit needs to be increased. The present Composting site is unable to handle all the vegetable and food waste. JE stated that DPR has been made for setting up of 60 TPD capacity compost.
B. DRC at Brokshabad is functioning well. The plastic processing plant of MLP is ready for inauguration, training has already been done. The overall maintenance is satisfactory.
C. The approach road to the dumping area may be repaired by PWD.
D. Regular collection of waste materials along the Boorkshbad side Carbyns Cove beach is being carried out. The staff were wearing safety gloves and boot etc.

Photos are attached.

1449 Beach Cleaning





1450 levelling of Landfill site





DRC at Brooleshabad 197





MLP Center.

1452 Site for 60 TDP Compost Pit-



Present Compost pit

1453





Annexure-I

Inspection format for *Dry Resource Centers (DRCs)*

Dry Waste Resource Centre (DRC) Inspection Checklist

DRC Name/Location Anarkali (Greenworms)

Date of Inspection 22/7/24

INSTRUCTIONS:
Carefully review each item and mark the corresponding checkbox to indicate compliance or note any observations and areas for improvement. Use the "Notes/Observations" section to provide additional details, corrective actions, and any required follow-up.

1. WASTE STORAGE AND HANDLING (AT DRC)

1.1 Designated Areas: Check that space is designated and properly demarcated for receiving

(A) Unsegregated waste (New waste collection point) — Yes ☑ No ☐ NA ☐

(B) Bailed dry waste — Yes ☑ No ☐ NA ☐

(C) Segregated waste including wet waste (Segregated) — Yes ☑ No ☐ NA ☐

1.2 Weighing equipment: Check availability of weighing balance at DRC — Yes ☑ No ☐ NA ☐

1.3 Waste Transportation: Inspect that the outgoing transportation is being done in segregated manner. — Yes ☑ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any: The waste management & collection is very well done compared to other DRC.

2. SEGREGATION EFFICIENCY (AT DRC)

2.1 Segregation Table: Verify that the segregation table is in good condition and is being used for segregation. — Yes ☑ No ☐ NA ☐

2.2 Proper Segregation: Verify that waste is segregated in respective Bins (Wet Waste, Dry Waste, Inert etc.). — Yes ☑ No ☐ NA ☐

2.3 Waste Containers: Check that waste is stored in proper and labeled containers/bins. (Stored in panai / jute bag) — Yes ☑ No ☐ NA ☑

Observations/Notes/ Corrective actions, if any: The waste was kept in jute bags.

3. SAFETY MEASURES(AT DRC)

3.1 Protective Gears: Please check whether the workers have appropriate protection equipment/gears like Gloves, safety boots and mask etc. Yes ☑ No ☐ NA ☐

3.2 CCTV coverage: Check whether CCTV is operational or not. Yes ☑ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

4. COMPOSTING EFFICIENCY (APPLICABLE AT BROOKSHABAD, DRC)

4.1 Composting: Please check whether all the compositing capacity is being put to use Yes ☐ No ☐ NA ☐

If no, then please mention details for idle capacity:

1456

Ward ①

Panipat road
↓
MES office
↓
Milky way restaurant
↓
Doctors colony
↓
Coop. bank
↓
post office
↓
Kolapuri temple
↓
Community hall
↓
Ranchi vision
↓
Gate 3 (Jetty)
↓
Gate 4
↓
WIMCO

Ward ②

PHC Haddo
↓
Sundar Colony
↓
Sajeevan Co.
↓
Megapode (upper side)
↓
Agri - office
↓
megapod resort
↓
Bhagatsingh Colony
↓
Haddo sea shore
↓
police station
↓
Vegetable & Fish mkt
↓
E-type quarter
↓
Mattai vision

1457

Ward 3

Milanipus regi. mkt

↓

TSG Hotel

↓

Pangi Chong

↓

Pawerhouse

↓

PNG Office

↓

NK Hotel

1458

Ward No.	Collection Route (Please provide detail of location)	Collection is done in segregated manner or mostly mixed waste is being collected? 1.Segregated waste 2.Unsegregated waste 3.Mostly segregated waste	Whether any vulnerable points exists nearby where unsegregated waste is being dumped/ noticed? (Yes/No) (If Yes, then please specify location)	Are the vehicles used for the transportation from the collection point have separate dry or wet waste compartment? 1. Separate compartments exists 2. No Separate Compartments (Please specify vehicle number also)	Overall efficiency of the collection point in terms of coverage of households, collection of segregated waste etc. (Excellent/Good/Fair /Poor/Very Poor)	Remarks (If Any)
1		> 70%. Segre.		Single compartment	Good	
2		> 70%. Segre.	E-type quarter	Auto - 2 compart.	Fair	
3		> 80%. Segre.	Tilanipur community Hall	No. Carts)	Good	

Any general suggestion about improvement that can be done on collection route:

ward 3 - No segregation shed to separate the waste.

Any Garbage vulnerable points/location in the ward which needs to be cleaned by PBMC. Please specify location alongwith nearby landmark.

Near E-type quarter, random throwing (roadside) has been observed. That vulnerable point can be improved.

1459

Annexure-I

Inspection formate for dry resource centers (DRCs)

Dry Waste Resource Centre (DRC) Inspection Checklist

DRC Name /Location	M/S Island boy Tech Solution, Mohanpura
Date of Inspection	23.07.2024

INSTRUCTIONS:

Carefully review each item and mark the corresponding checkbox to indicate compliance or note any observations and areas for improvement. Use the "Notes/ Observations" section to provide additional details, corrective actions, and any required follow-up.

1. WASTE STORAGE AND HANDLING (AT DRC)

1.1 **Designated Areas:** Check that space is designated and properly demarcated for receiving

(A) Unsegregated waste (New waste collection point	Yes	✓	No		NA	
(B) Bailed dry waste	Yes	✓	No		NA	
(C) Segregated waste including wet waste (Segregated)	Yes	✓	No		NA	
1.2 Weighing equipment: Check availability of weighing balance at DRC	Yes	✓	No		NA	
1.3 Waste Transportation: Inspect that the outgoing transportation is being done in segregated manner.	Yes	✓	No		NA	

Observations/ Notes/ Corrective actions, if any: The area surrounding the DRC has waste dumped. This has to be cleared. Details of waste receipt and despatch are updated in the register.

2. SEGREGATION EFFICIENCY (AT DRC)

2.1 Segregation Table: Verify that the segregation table is in good Condition and is being used for segregation.	Yes	✓	No		NA	
2.2 Proper Segregation: Verify that waste is segregated in respective Bins (Wet Waste, Dry Waste, Inert etc.).	Yes	✓	No		NA	
2.3 Waste Containers: Check that waste is stored in proper and labeled containers/ bins.	Yes	✓	No		NA	

1460

Observations/ Notes/ Corrective actions, if any:

3. SAFETY MEASURES(AT DRC)

3.1 Protective Gears: Please check whether the workers have appropriate protection equipment / gears like Gloves, safety boots and mask etc.

Yes	No	NA
✓		

3.2 CCTV coverage: Check whether CCTV is operational or not.

Yes	No	NA
✓		

Observations/ Notes/ Corrective actions, if any:

4. COMPOSTING EFFICIENCY (APPLICABLE AT BROOKSHABAD, DRC)

4.1 Composting: Please check whether all the compositing capacity is being put to use

Yes	No	NA

If no, please mention details for idle capacity:

Annexure-III

Inspection format for *Landfill Site*

1. WASTE HANDLING AT LANDFILL SITE

INSTRUCTIONS: PBMC has designated areas for dumping different types of waste as mentioned below at landfill site:

i) Mix Waste
ii) Domestic Hazardous Waste
iii) Medical Waste
iv) Green Waste
v) Coconut Waste

The team has to refer to the designate site and make an assessment on following parameters

(A) Waste Dumping: Inspect that the waste is being dumped at designated place in landfill site.

Yes ☐ No ☐ NA ☐

If No, then please explain the deviation in detail:

(B) Polythene/ Plastic Waste: Inspect whether polythene waste is being dumped at the landfill site?

Yes ☐ No ☐ NA ☐

(C) Composting: Inspect whether Pit Composting is being done or not at designated place in landfill site?

Yes ☐ No ☐ NA ☐

Observations/ Notes/ Corrective actions, if any:

Annexure-II

Inspection format for collection Route

Ward No.	Collection Route (Please provide details of location)	Collection is done in segregated manner or mostly mixed waste id being collected?	Whether any vulnerable points exist nearby where unsegregated waste in being dumped /noticed?	Are the vehicles used for waste transportation from the collection point have separate dry or wet waste compartment?	Overall efficiency of the collection point i9n terms of coverage of households, collection of segregated waste etc.	Remark, (if any)
		1. Segregated waste 2. Unsegregated waste 3. Mostly segregated waste	(Yes/ No) (If Yes, then please specify location)	1. Separate compartments exists 2. No Separate Compartments (Please specify vehicle number also)	(Excellent/ Good/ Fair/Poor/Very Poor)	
Ward No. 5	Raj Niwas to JNRM College to dignabadh 14 routes	Mostly segregated waste	No	Yes	Good	
Ward No. 11	South Point 10 routes	Mostly segregated waste	No	Yes	Good	

Any General suggestion about improvement that can be done on collection route:

It was observed that households (quarters attached to Raj Niwas) were still not doing segregation of waste. It was observed that even food waste was mixed with the other waste being received by sanitary staff.

Annexure-I

Inspection format for *Dry Resource Centers (DRCs)*

Dry Waste Resource Centre (DRC) Inspection Checklist

DRC Name/Location Paperman Env. Solution, Junglighat

Date of Inspection 24/07/24

INSTRUCTIONS:
Carefully review each item and mark the corresponding checkbox to indicate compliance or note any observations and areas for improvement. Use the "Notes/Observations" section to provide additional details, corrective actions, and any required follow-up.

1. WASTE STORAGE AND HANDLING (AT DRC)

1.1 Designated Areas: Check that space is designated and properly demarcated for receiving

(A) Unsegregated waste (New waste collection point)	Yes ☑	No ☐	NA ☐
(B) Bailed dry waste	Yes ☑	No ☐	NA ☐
(C) Segregated waste including wet waste (Segregated)	Yes ☑	No ☐	NA ☐
1.2 Weighing equipment: Check availability of weighing balance at DRC	Yes ☑	No ☐	NA ☐
1.3 Waste Transportation: Inspect that the outgoing transportation is being done in segregated manner.	Yes ☑	No ☐	NA ☐

Observations/Notes/ Corrective actions, if any: ~~Nos~~ There is visible incremental improvement

2. SEGREGATION EFFICIENCY (AT DRC)

2.1 Segregation Table: Verify that the segregation table is in good condition and is being used for segregation.	Yes ☑	No ☐	NA ☐
2.2 Proper Segregation: Verify that waste is segregated in respective Bins (Wet Waste, Dry Waste, Inert etc.).	Yes ☑	No ☐	NA ☐
2.3 Waste Containers: Check that waste is stored in proper and labeled containers/bins.	Yes ☑	No ☐	NA ☐

Observations/Notes/ Corrective actions, if any:

1464

3. SAFETY MEASURES(AT DRC)

3.1 Protective Gears: Please check whether the workers have appropriate protection equipment/gears like Gloves, safety boots and mask etc. Yes ☑ No ☐ NA ☐

3.2 CCTV coverage: Check whether CCTV is operational or not. Yes ☑ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

Eye protective gear could be of better quality.
Operator of bailing machine should have helmet.

4. COMPOSTING EFFICIENCY (APPLICABLE AT BROOKSHABAD, DRC)

4.1 Composting: Please check whether all the compositing capacity is being put to use Yes ☐ No ☐ NA ☑

If no, then please mention details for idle capacity:

29/07/24
(Abhishek Bhutkal)

Annexure-II

Inspection format for *Collection Route*

Ward No.	Collection Route (Please provide detail of location)	Collection is done in segregated manner or mostly mixed waste is being collected?	Whether any vulnerable points exists nearby where unsegregated waste is being dumped/ noticed?	Are the vehicles used for waste transportation from the collection point have separate dry or wet waste compartment?	Overall efficiency of the collection point in terms of coverage of households, collection of segregated waste etc.	Remarks (If Any)
		1.Segregated waste 2.Unsegregated waste 3.Mostly segregated waste	(Yes/No) (If Yes, then please specify location)	1. Separate compartments exists 2. No Separate Compartments (Please specify vehicle number also)	(Excellent/Good/Fair /Poor/Very Poor)	
6	R.No 3 (NGO Colony)	Mostly Segregated	Yes, near BJP Bhawan, bits of waste in vacant	No Separate compartment in trucks	Good	

Any general suggestion about improvement that can be done on collection route:

Wards can be made free of collection point by following waste collection schedule, which should be perused and enforced strictly.

Any Garbage vulnerable points/location in the ward which needs to be cleaned by PBMC. Please specify location alongwith nearby landmark.

29/07/24

(Abhishek Bhukal)

Annexure-I

Inspection format for *Dry Resource Centers (DRCs)*

Dry Waste Resource Centre (DRC) Inspection Checklist

DRC Name/Location Shakti Plastic, VIP Rd.

Date of Inspection 25 (29.7.24

INSTRUCTIONS:
Carefully review each item and mark the corresponding checkbox to indicate compliance or note any observations and areas for improvement. Use the "Notes/Observations" section to provide additional details, corrective actions, and any required follow-up.

1. WASTE STORAGE AND HANDLING (AT DRC)

1.1 **Designated Areas:** Check that space is designated and properly demarcated for receiving

(A) Unsegregated waste (New waste collection points) Yes ☐ No ☑ NA ☐

(B) Baled dry waste Yes ☑ No ☐ NA ☐

(C) Segregated waste including wet waste (Segregated) Yes ☐ No ☐ NA ☑

1.2 Weighing equipment: Check availability of weighing balance at DRC Yes ☑ No ☐ NA ☐

1.3 Waste Transportation: Inspect that the outgoing transportation is being done in segregated manner Yes ☑ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

2. SEGREGATION EFFICIENCY (AT DRC)

2.1 Segregation Table: Verify that the segregation table is in good condition and is being used for segregation. Yes ☑ No ☐ NA ☐

2.2 Proper Segregation: Verify that waste is segregated in respective Bins (Wet Waste, Dry Waste, Inert etc.). Yes ☑ No ☐ NA ☐

2.3 Waste Containers: Check that waste is stored in proper and labeled containers/bins. Yes ☑ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any: Double shift; clean the premises. Monster for cleaning, light,

1467

3. SAFETY MEASURES(AT DRC)

3.1 Protective Gears: Please check whether the workers have appropriate protection equipment/gears like Gloves, safety boots and mask etc. Yes [✓] No [ ] NA [ ]

3.2 CCTV coverage: Check whether CCTV is operational or not. Yes [✓] No [ ] NA [ ]

Observations/Notes/ Corrective actions, if any:

4. COMPOSTING EFFICIENCY (APPLICABLE AT BROOKSHABAD, DRC)

4.1 Composting: Please check whether all the compositing capacity is being put to use Yes [ ] No [ ] NA [✓]

If no, then please mention details for idle capacity:

1468

Aditya Kumar Jha
DANICS

Annexure-I

Inspection format for *Dry Resource Centers (DRCs)*

Dry Waste Resource Centre (DRC) Inspection Checklist

DRC Name/Location Shakti Plastic, VIP Road

Date of Inspection 26/7

INSTRUCTIONS:
Carefully review each item and mark the corresponding checkbox to indicate compliance, note any observations and areas for improvement. Use the "Notes/Observations" section to provide additional details, corrective actions, and any required follow-up.

1. WASTE STORAGE AND HANDLING (AT DRC)

1.1 Designated Areas: Check that space is designated and properly demarcated for receiving

(A) Unsegregated waste (New waste collection point)	Yes ☐	No ☑
(B) Bailed dry waste	Yes ☑	No ☐
(C) Segregated waste including wet waste (Segregated)	Yes ☐	No ☑
1.2 Weighing equipment: Check availability of weighing balance at DRC	Yes ☑	No ☐
1.3 Waste Transportation: Inspect that the outgoing transportation is being done in segregated manner.	Yes ☑	No ☐

Observations/Notes/ Corrective actions, if any:
(1) Shed was not available at dumping area
(2) Open dumping from Truck / No designated area
(3) Table is small

2. SEGREGATION EFFICIENCY (AT DRC)

2.1 Segregation Table: Verify that the segregation table is in good condition and is being used for segregation.	Yes ☑	No ☑
2.2 Proper Segregation: Verify that waste is segregated in respective Bins (Wet Waste, Dry Waste, Inert etc.).	Yes ☐	No ☑
2.3 Waste Containers: Check that waste is stored in proper and labeled containers/bins.	Yes ☑	No ☐

Observations/Notes/ Corrective actions, if any:
(1) Segregation Table is small
(2) Protective gear is lacking

1469

3. SAFETY MEASURES(AT DRC)

3.1 Protective Gears: Please check whether the workers have appropriate protection equipment/gears like Gloves, safety boots and mask etc. Yes ☐ No ☑

3.2 CCTV coverage: Check whether CCTV is operational or not. Yes ☑ No ☐

Observations/Notes/ Corrective actions, if any:

(I) More Protective Gears are required
(II) Toilet facility is not available.

4. COMPOSTING EFFICIENCY (APPLICABLE AT BROOKSHABAD, DRC)

4.1 Composting: Please check whether all the compositing capacity is being put to use Yes ☐ No ☐

If no, then please mention details for idle capacity:

—

1470

Annexure-III

Inspection format for *Landfill Site*

1. WASTE HANDLING AT LANDFILL SITE

NA

INSTRUCTIONS: PBMC has designated areas for dumping different types of waste as mentioned below at landfill site:

i) Mix Waste
ii) Domestic Hazardous Waste
iii) Medical Waste
iv) Green Waste
v) Coconut Waste

The team has to refer to the designate site and make an assessment on following parameters

(A) Waste Dumping: Inspect that the waste is being dumped at designated place in landfill site. Yes ☐ No ☐ NA ☐

If No, then please explain the deviation in detail:

(B) Polythene/Plastic Waste: Inspect whether polythene waste is being dumped at the landfill site? Yes ☐ No ☐ NA ☐

(C) Composting: Inspect whether Pit Composting is being done or not at designated place in landfill site? Yes ☐ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

Annexure-II

Inspection format for *Collection Route*

Ward No.	Collection Route (Please provide detail of location)	Collection is done in segregated manner or mostly mixed waste is being collected?	Whether any vulnerable points exists nearby where unsegregated waste is being dumped/ noticed?	Are the vehicles used for waste transportation from the collection point have separate dry or wet waste compartment?	Overall efficiency of the collection point in terms of coverage of households, collection of segregated waste etc.	Remarks (If Any)
		1.Segregated waste 2.Unsegregated waste 3.Mostly segregated waste	(Yes/No) (If Yes, then please specify location)	1. Separate compartments exists 2. No Separate Compartments (Please specify vehicle number also)	(Excellent/Good/Fair /Poor/Very Poor)	
8	6 (ANC area, Tamil Basti, Mullai Basti Pampat, Hello Block)	Mostly Segregated	Yes Tamil Basti,	NO	Good	
9	13 (Lambalane, Gungalighat Diary farm	"	Diary farm, PS Hill Gungalighat Market area	No	Good	
	Citizen Colony, Telugu Basti	"	yes		G	
13	18 (Dean Street, VIP road NABARD Colony, Gungalighat Main Road	"	Yes VIP Road, Bhagwan Singh Road, Main Road	NO	Good.	

Any general suggestion about improvement that can be done on collection route:

(I) On the spot challan to be imposed.
(II) CCTV at Vulnerable Point.
(III) Shed at dumping location

Any Garbage vulnerable points/location in the ward which needs to be cleaned by PBMC. Please specify location alongwith nearby landmark.

(I) VIP Road near DRC
(II) Gungalighat Market area

3. SAFETY MEASURES(AT DRC)

3.1 Protective Gears: Please check whether the workers have appropriate protection equipment/gears like Gloves, safety boots and mask etc. Yes ☑ No ☐ NA ☐

3.2 CCTV coverage: Check whether CCTV is operational or not. Yes ☑ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

4. COMPOSTING EFFICIENCY (APPLICABLE AT BROOKSHABAD, DRC)

4.1 Composting: Please check whether all the composting capacity is being put to use Yes ☐ No ☐ NA ☐

If no, then please mention details for idle capacity: -

Annexure II

Inspection format for *Collection Route*

Ward No	Collection Route (Please provide detail of location)	Collection is done in segregated manner or mostly mixed waste is being collected? (1 Segregated waste 2 Unsegregated waste 3 Mostly segregated waste)	Whether any vulnerable points exists nearby where unsegregated waste is being dumped/ noticed? (Yes/No If Yes then please specify location)	Are the vehicles used for waste transportation from the collection point have separate dry or wet waste compartment? (1 Separate compartments exist 2 No Separate Compartments (Please specify which mingled)	Overall efficiency of the collection point in terms of coverage of households, collection of segregated waste etc (Excellent/Good/Fair /Poor/Very Poor)	Remarks if Any
14	11 routes	Mostly segregated		Not Separate	Good	
15	8 routes	Mostly segregated		Not separate	Good	

Any general suggestion about improvement that can be done on collection route:

1. collection points could be covered to avoid putting of waste. A shed with eco-friendly material (all sides open) could be constructed.
2. Cameras could be installed for surveillance.
3. Sensitization of households by mobilising school children & college students.

Any Garbage vulnerable points/location in the ward which needs to be cleaned by PHMC. Please specify location alongwith nearby landmark.

Annexure-I

Inspection format for *Dry Resource Centers (DRCs)*

Dry Waste Resource Centre (DRC) Inspection Checklist

DRC Name/Location M/S ATR Venture School Line, Near Kendriya Vidyalaya, Port Blair

Date of Inspection 27.09.24

INSTRUCTIONS:
Carefully review each item and mark the corresponding checkbox to indicate compliance or note any observations and areas for improvement. Use the "Notes/Observations" section to provide additional details, corrective actions, and any required follow-up

1. WASTE STORAGE AND HANDLING (AT DRC)

1.1 Designated Areas: Check that space is designated and properly demarcated for receiving

(A) Unsegregated waste (New waste collection point)	Yes ☑	No ☐	NA ☐
(B) Bailed dry waste	Yes ☑	No ☐	NA ☐
(C) Segregated waste including wet waste (Segregated)	Yes ☑	No ☐	NA ☐
1.2 Weighing equipment: Check availability of weighing balance at DRC	Yes ☑	No ☐	NA ☐
1.3 Waste Transportation: Inspect that the outgoing transportation is being done in segregated manner.	Yes ☑	No ☐	NA ☐

Observations/Notes/ Corrective actions, if any:

- Space constraint
- Basic amenities for staff/workers could be given in PBML building (near to DRC)

2. SEGREGATION EFFICIENCY (AT DRC)

2.1 Segregation Table: Verify that the segregation table is in good condition and is being used for segregation.	Yes ☑	No ☐	NA ☐
2.2 Proper Segregation: Verify that waste is segregated in respective Bins (Wet Waste, Dry Waste, Inert etc.).	Yes ☑	No ☐	NA ☐
2.3 Waste Containers: Check that waste is stored in proper and labeled containers/bins.	Yes ☑	No ☐	NA ☐

Observations/Notes/ Corrective actions, if any:

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अंडमान तथा निकोबार प्रशासन
ANDAMAN & NICOBAR ADMINISTRATION
सचिवालय/**SECRETARIAT**
******

Port Blair, Dated the 29th July, 2024

To,

The Secretary (Sci. & Tech)
A & N Administration
Port Blair

Sub: Submission of Report in respect of Solid Waste Management Sites.

Ref: Order No. CS/PS/06/2024 dated 20.07.2024

Sir,

With reference to the above Order undersigned alongwith Sh. Thomas Varghese, SI (PBMC) & Sh. Amit Bhattacharaya, SI (PBMC) inspected M/s Emerald Recycling Unit, Dollygunj and routes of Ward No. 16 & 17 as per Annexure IV on 29.07.2024 at 10.00 AM.

The detailed report (Annexure I & II) alongwith photographs are enclosed for further necessary action.

Yours faithfully

(C Arvind)
Secretary (GA/Power)

Encl: A/A
Copy to: The OSD to Chief Secretary for kind information of Chief Secretary.

Secretary (GA /Power)

Annexure-I

Inspection format for Dry Resource Centers (DRCs)

Dry Waste Resource Centre (DRC) Inspection Checklist

DRC Name/Location: Emerald Recycling Unit; Dollygunj

Date of Inspection: 29/07/24

INSTRUCTIONS:
Carefully review each item and mark the corresponding checkbox to indicate compliance or note any observations and areas for improvement. Use the "Notes/Observations" section to provide additional details, corrective actions, and any required follow-up.

1. WASTE STORAGE AND HANDLING (AT DRC)

1.1 Designated Areas: Check that space is designated and properly demarcated for receiving

	Yes	No	NA
(A) Unsegregated waste (New waste collection point)	☑	☐	☐
(B) Balled dry waste	☑	☐	☐
(C) Segregated waste including wet waste (Segregated)	☑	☐	☐
1.2 Weighing equipment: Check availability of weighing balance at DRC	☑	☐	☐
1.3 Waste Transportation: Inspect that the outgoing transportation is being done in segregated manner.	☑	☐	☐

Observations/Notes/ Corrective actions, if any:

- Transportation of MLP (zero Value Wastes) to mainland immediately.
- New waste collection to be done under Shed.

2. SEGREGATION EFFICIENCY (AT DRC)

	Yes	No	NA
2.1 Segregation Table: Verify that the segregation table is in good condition and is being used for segregation.	☐	☑	☐
2.2 Proper Segregation: Verify that waste is segregated in respective Bins (Wet Waste, Dry Waste, Inert etc.).	☐	☑	☐
2.3 Waste Containers: Check that waste is stored in proper and labeled containers/bins.	☐	☑	☐

Observations/Notes/ Corrective actions, if any:

- Segregation Table to be provided to Sanitary workers at DRC.
- Separate bins to be installed at DRC for Wet, DRY, Inert etc.
- Bins to be labbelled.

214

Annexure-II

Inspection format for Collection Route

Ward No.	Collection Route (Please provide detail of location)	Collection is done in segregated manner or mostly mixed waste is being collected? 1.Segregated waste 2.Unsegregated waste 3.Mostly segregated waste	Whether any vulnerable points exists nearby where unsegregated waste is being dumped/ noticed? (Yes/No) (If Yes, then please specify location)	Are the vehicles used for waste transportation from the collection point have separate dry or wet waste compartment? 1. Separate compartments exists 2. No Separate Compartments (Please specify vehicle number also)	Overall efficiency of the collection point in terms of coverage of households, collection of segregated waste etc (Excellent/Good/ Fair /Poor/Very Poor)	Remarks (If Any)
16	Halder colony	Mostly Segregated	—No—	No Separate.	Good	-
17	Shiv colony	Mostly Segregated	-No-	No Separate	Good.	—

Any general suggestion about improvement that can be done on collection route:

- Wheels trolley to be provided to Sanitary Workers.
- Shed with boundary required at collection point.
- Shortage of manpower in extension ward. 12. 17 & 18.

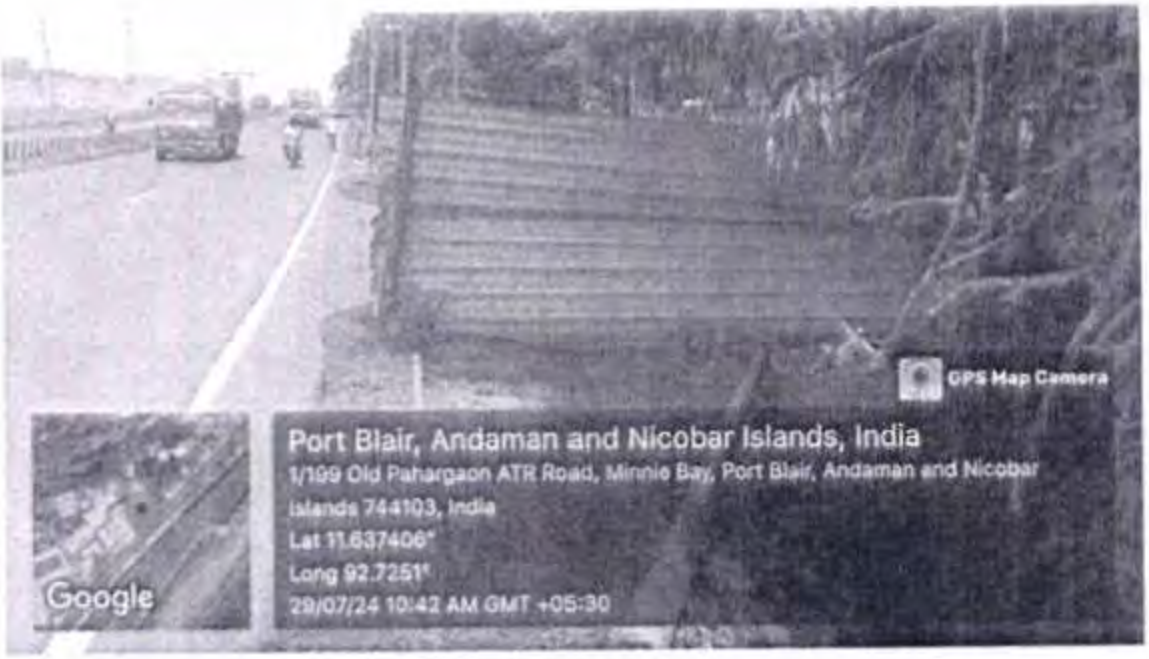


* Segregation table required



* New collection point

1479



* collection point, Pahargaon,



* MLP stored in DRC, needs to be transported to mainland.

1480

Annexure-II

Inspection format for *Collection Route*

Ward No.	Collection Route (Please provide detail of location)	Collection is done in segregated manner or mostly mixed waste is being collected?	Whether any vulnerable points exists nearby where unsegregated waste is being dumped/ noticed?	Are the vehicles used for waste transportation from the collection point have separate dry or wet waste compartment?	Overall efficiency of the collection point in terms of coverage of households, collection of segregated waste etc.	Remarks (If Any)
		1.Segregated waste 2.Unsegregated waste 3.Mostly segregated waste	(Yes/No) (If Yes, then please specify location)	1. Separate compartments exists 2. No Separate Compartments (Please specify vehicle number also)	(Excellent/Good/Fair /Poor/Very Poor)	
19	Veterinary Line Maharaja Colony	Mostly seg.	Yes, Maharaja Colony	No	Good	
23	Santosh Colony	"	Yes, Private plot near Hanuman Murti	No	Fair	

Any general suggestion about improvement that can be done on collection route:

① HDPE dustbins (660L) for collection of both wet/dry waste should be kept at different places in wards.

② Local composty sites can be created on empty revenue land.

Any Garbage vulnerable points/location in the ward which needs to be cleaned by PBMC. Please specify location alongwith nearby landmark.

① Drain cleaning in all wards needs to be improved

Annexure-I

Inspection format for *Dry Resource Centers (DRCs)*

Dry Waste Resource Centre (DRC) Inspection Checklist

DRC Name/Location KSR Scrap & Traders, Basthubasti

Date of Inspection 30/7/2024

INSTRUCTIONS:
Carefully review each item and mark the corresponding checkbox to indicate compliance or note any observations and areas for improvement. Use the "Notes/Observations" section to provide additional details, corrective actions, and any required follow-up.

1. WASTE STORAGE AND HANDLING (AT DRC)

1.1 Designated Areas: Check that space is designated and properly demarcated for receiving

(A) Unsegregated waste (New waste collection point)	Yes ☑	No ☐	NA ☐
(B) Bailed dry waste	Yes ☑	No ☐	NA ☐
(C) Segregated waste including wet waste (Segregated)	Yes ☐	No ☑	NA ☐
1.2 Weighing equipment: Check availability of weighing balance at DRC	Yes ☑	No ☐	NA ☐
1.3 Waste Transportation: Inspect that the outgoing transportation is being done in segregated manner.	Yes ☑	No ☐	NA ☐

Observations/Notes/ Corrective actions, if any:

① MLP & thermocol not collected
② Wet waste not collected at DRC, sent to Brookshabad
③

2. SEGREGATION EFFICIENCY (AT DRC)

2.1 Segregation Table: Verify that the segregation table is in good condition and is being used for segregation.	Yes ☑	No ☐	NA ☐
2.2 Proper Segregation: Verify that waste is segregated in respective Bins (Wet Waste, Dry Waste, Inert etc.).	Yes ☑	No ☐	NA ☐
2.3 Waste Containers: Check that waste is stored in proper and labeled containers/bins.	Yes ☐	No ☑	NA ☐

Observations/Notes/ Corrective actions, if any:

Overall cleanliness of DRC is good

1482

3. SAFETY MEASURES(AT DRC)

3.1 Protective Gears: Please check whether the workers have appropriate protection equipment/gears like Gloves, safety boots and mask etc. Yes ☑ No ☐ NA ☐

3.2 CCTV coverage: Check whether CCTV is operational or not. Yes ☑ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

4. COMPOSTING EFFICIENCY (APPLICABLE AT BROOKSHABAD, DRC)

4.1 Composting: Please check whether all the compositing capacity is being put to use Yes ☐ No ☐ NA ☐

If no, then please mention details for idle capacity:

22

3. SAFETY MEASURES(AT DRC)

Yes ✓ No ☐ NA ☐

3.1 Protective Gears: Please check whether the workers have adequate safety equipments or gears like Gloves, safety boots and helmets.

Yes ☐ No ✓ NA ☐

3.2 CCTV coverage: Check whether CCTV is operational or not

Observations/Notes/Corrective actions, if any:

1. CCTV is not operational. There is no monitor for the same.

4. COMPOSTING EFFICIENCY (APPLICABLE AT BROOKSHABAD, DRC)

4.1 Composting: Please check whether all the compositing chambers are put to use

Yes ☐ No ☐ NA ☐

If no, then please mention details for idle capacity:

At DRC, toilets are not functional.

Lack of proper drinking water facility.

3 nos. challans issued.

Annexure-II

Inspection format for Collection Route

Ward No.	Collection Route (Please provide detail of location)	Collection is done in segregated manner or mostly mixed waste is being collected? 1.Segregated waste 2.Unsegregated waste 3.Mostly segregated waste	Whether any vulnerable points exists nearby where unsegregated waste is being dumped/ noticed? (Yes/No) (If Yes, then please specify location)	Are the vehicles used for waste transportation from the collection point have separate dry or wet waste compartment? 1. Separate compartments exists 2. No Separate Compartments (Please specify vehicle number also)	Overall efficiency of the collection point in terms of coverage of households, collection of segregated waste etc. (Excellent/Good/Fair /Poor/Very Poor)	Remarks (If Any)
18	17	Mostly segregated	Yes, at cen-front, near Graveyard; also at junction, near market premises	Separate Compartments	Fair	
20	14	Mostly segregated		Separate	Fair	
21	5	Mostly segregated		Separate	Fair	
22	4	Mostly segregated		Separate	Fair	

Any general suggestion about improvement that can be done on collection route:

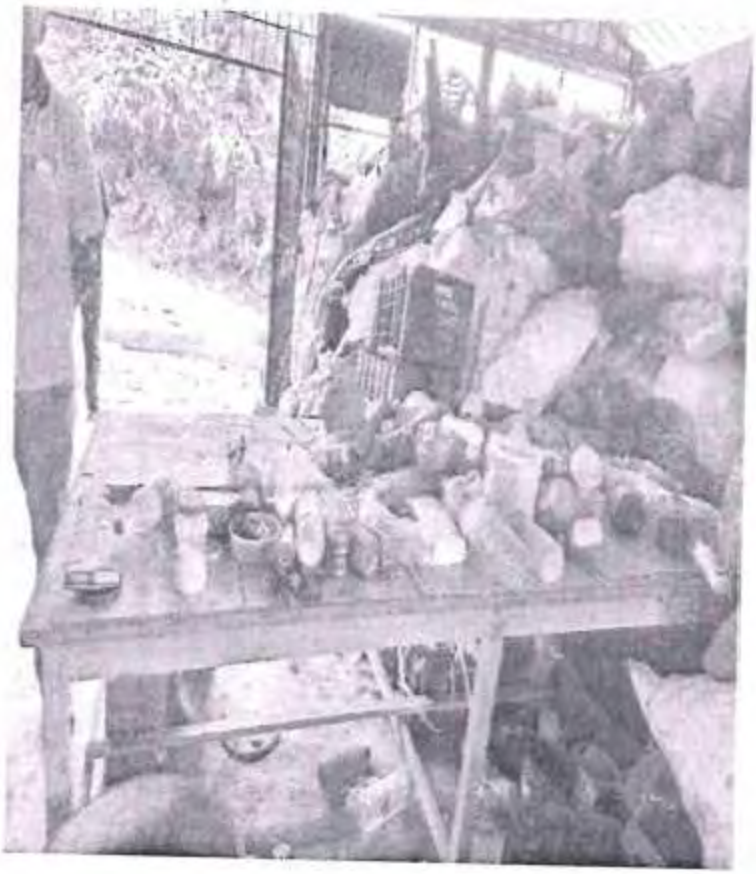
- Most of the shops/households do not have separate bins for dry & wet waste.
- Need for greater sensitisation.

Any Garbage vulnerable points/location in the ward which needs to be cleaned by PBMC. Please specify location alongwith nearby landmark.

1485












GROTT





1487

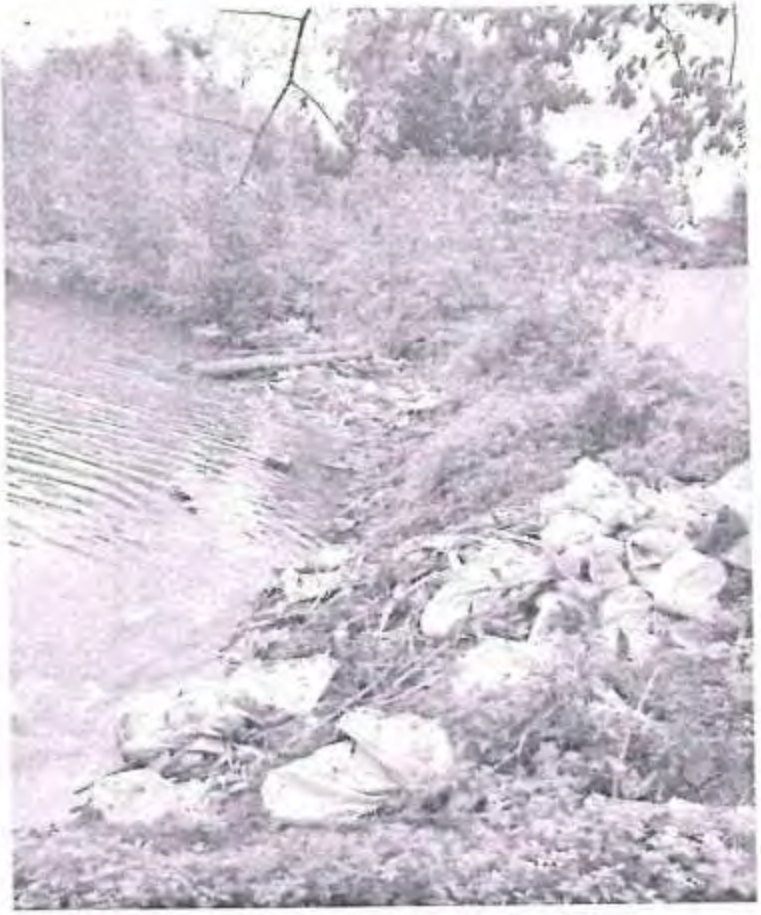








1488















F.No. CS/PS/08/2024
अण्डमानतथानिकोबारप्रशासन
ANDAMAN AND NICOBAR ADMINISTRATION
सचिवालय/**SECRETARIAT**

*****

Port Blair, dated the 2nd Aug, 2024

ORDER

1. In continuation to Order No. CS/PS/07/2024 dated 20.07.2024, CS/PS/06/2024 dated 18.06.2024, and CS/PS/06/2024 dated 06.07.2024 with a view to ensure effective implementation of collection, processing and disposal of Solid Waste in PBMC area, teams of senior officers are hereby formed and assigned the duty of conducting inspections at designated Solid Waste Management Sites (Dry Resource Centres/Collection Routes/Landfill Site). The composition of teamsalongwith their respective areas of inspection is mentioned in **Annexure-IV**.

2. The teams shall conduct inspection ***as per schedule*** in morning hours and assess the effectiveness of collection, transportation and segregation operations, as applicable.

3. As discussed in last Senior Officers Meeting, the teams shall also identify garbage vulnerable points where cleaning needs to be carried out by PBMC.

4. The teams shall document findings accurately using the designated inspection checklist as mentioned below

A.	**Inspection format for DRCs**	**: Annexure-I**
B.	**Inspection format for Collection Routes**	**: Annexure-II**
C.	**Inspection format for Landfill Site**	**: Annexure-III**

5. All teams shall submit report to Science & Technology, Department on or before every Saturday without fail. Secretary (S&T) shall compile the reports and submit a consolidated report to undersigned **every Monday @1100Hrs without fail.**

(Keshav Chandra)
Chief Secretary
A&N Administration

To

All Officers as per the Annexure-IV.

5/8/24

1491

F.No. CS/PS/08/2024
अण्डमानतथानिकोबारप्रशासन
ANDAMAN AND NICOBAR ADMINISTRATION
सचिवालय/**SECRETARIAT**
*****

Port Blair, dated the 2nd Aug, 2024

ORDER

1. In continuation to Order No. CS/PS/07/2024 dated 20.07.2024, CS/PS/06/2024 dated 18.06.2024, and CS/PS/06/2024 dated 06.07.2024 with a view to ensure effective implementation of collection, processing and disposal of Solid Waste in PBMC area, teams of senior officers are hereby formed and assigned the duty of conducting inspections at designated Solid Waste Management Sites (Dry Resource Centres/Collection Routes/Landfill Site). The composition of teamsalongwith their respective areas of inspection is mentioned in **Annexure-IV**.

2. The teams shall conduct inspection ***as per schedule*** in morning hours and assess the effectiveness of collection, transportation and segregation operations, as applicable.

3. As discussed in last Senior Officers Meeting, the teams shall also identify garbage vulnerable points where cleaning needs to be carried out by PBMC.

4. The teams shall document findings accurately using the designated inspection checklist as mentioned below

A.	**Inspection format for DRCs**	**: Annexure-I**
B.	**Inspection format for Collection Routes**	**: Annexure-II**
C.	**Inspection format for Landfill Site**	**: Annexure-III**

5. All teams shall submit report to Science & Technology, Department on or before every Saturday without fail. Secretary (S&T) shall compile the reports and submit a consolidated report to undersigned **every Monday @1100Hrs without fail.**

(Keshav Chandra)
Chief Secretary
A&N Administration

To

All Officers as per the Annexure-IV.

5/8/24 5/8/24 5/8/24 5/8/24

Annexure-I

Inspection format for *Dry Resource Centers (DRCs)*

Dry Waste Resource Centre (DRC) Inspection Checklist

DRC Name/Location _____

Date of Inspection _____

INSTRUCTIONS:
Carefully review each item and mark the corresponding checkbox to indicate compliance or note any observations and areas for improvement. Use the "Notes/Observations" section to provide additional details, corrective actions, and any required follow-up.

1. WASTE STORAGE AND HANDLING (AT DRC)

1.1 Designated Areas: Check that space is designated and properly demarcated for receiving

(A) Unsegregated waste (New waste collection point)	Yes ☐	No ☐	NA ☐
(B) Bailed dry waste	Yes ☐	No ☐	NA ☐
(C) Segregated waste including wet waste (Segregated)	Yes ☐	No ☐	NA ☐
1.2 Weighing equipment: Check availability of weighing balance at DRC	Yes ☐	No ☐	NA ☐
1.3 Waste Transportation: Inspect that the outgoing transportation is being done in segregated manner.	Yes ☐	No ☐	NA ☐

Observations/Notes/ Corrective actions, if any: _____

2. SEGREGATION EFFICIENCY (AT DRC)

2.1 Segregation Table: Verify that the segregation table is in good condition and is being used for segregation.	Yes ☐	No ☐	NA ☐
2.2 Proper Segregation: Verify that waste is segregated in respective Bins (Wet Waste, Dry Waste, Inert etc.).	Yes ☐	No ☐	NA ☐
2.3 Waste Containers: Check that waste is stored in proper and labeled containers/bins.	Yes ☐	No ☐	NA ☐

Observations/Notes/ Corrective actions, if any: _____

3. SAFETY MEASURES(AT DRC)

3.1 Protective Gears: Please check whether the workers have appropriate protection equipment/gears like Gloves, safety boots and mask etc. Yes ☐ No ☐ NA ☐

3.2 CCTV coverage: Check whether CCTV is operational or not. Yes ☐ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

4. COMPOSTING EFFICIENCY (APPLICABLE AT BROOKSHABAD, DRC)

4.1 Composting: Please check whether all the compositing capacity is being put to use Yes ☐ No ☐ NA ☐

If no, then please mention details for idle capacity:

Annexure-II

Inspection format for *Collection Route*

Ward No.	Collection Route (Please provide detail of location)	Collection is done in segregated manner or mostly mixed waste is being collected?	Whether any vulnerable points exists nearby where unsegregated waste is being dumped/ noticed?	Are the vehicles used for waste transportation from the collection point have separate dry or wet waste compartment?	Overall efficiency of the collection point in terms of coverage of households, collection of segregated waste etc.	Remarks (If Any)
		1.Segregated waste 2.Unsegregated waste 3.Mostly segregated waste	(Yes/No) (If Yes, then please specify location)	1. Separate compartments exists 2. No Separate Compartments (Please specify vehicle number also)	(Excellent/Good/Fair /Poor/Very Poor)	

Any general suggestion about improvement that can be done on collection route:

Any Garbage vulnerable points/location in the ward which needs to be cleaned by PBMC. Please specify location alongwith nearby landmark.

Annexure-III

Inspection format for *Landfill Site*

1. WASTE HANDLING AT LANDFILL SITE

INSTRUCTIONS: PBMC has designated areas for dumping different types of waste as mentioned below at landfill site:

i) Mix Waste
ii) Domestic Hazardous Waste
iii) Medical Waste
iv) Green Waste
v) Coconut Waste

The team has to refer to the designate site and make an assessment on following parameters

(A) Waste Dumping: Inspect that the waste is being dumped at designated place in landfill site. Yes ☐ No ☐ NA ☐

If No, then please explain the deviation in detail:

(B) Polythene/Plastic Waste: Inspect whether polythene waste is being dumped at the landfill site? Yes ☐ No ☐ NA ☐

(C) Composting: Inspect whether Pit Composting is being done or not at designated place in landfill site? Yes ☐ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

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Annexure: IV

Sl No	Name of Officer	Day on which inspection is to be carried out	Name of DRC	Sanitary Inspector's Name, Ward No. and Contact Number	All Collection Routes of
1	Ms Smitha R, IAS Shri Shiv Singh Meena, DANICS	**05/08/2024 (Monday)**	M/s GreenwormsAnarkali, Near MP Theater, Port Blair	Shri. Sudeep Singh Ward No - 1 and 2 Mob: **9434289509** Shri. Lalit Kr. Ekka Ward No - 3 Mob: **9531873755**	Ward No. 1,2,3
2	Shri. Azharuddin Zahiruddin Quazi, IAS Shri Vasant Dabholkar, IAS Probationer	**06/08/2024 (Tuesday)**	M/s Island Boy Tech Solutions, Mohanpura	Shri. Satish Kumar Ward No - 5 Mob: **9434260152** Shri. Deepak Behari Ward No – 11 Mob:**9434282714**	Ward No. 5,11
3	Shri Kumar L, IAS Shri Nitin Shakya, DANICS	**07/08/2024 (Wednesday)**	M/s Paperman Environmental Solution, Near KaithanKalyanMandappan, Junglighat, Port Blair	Shri. Vijay Kumar Ward No – 6 Mob: **9734481765** Shri. B.Rudraiah Ward No – 7 Mob: **9474204001**	Ward No. 6,7
4	Shri Arjun Sharma, IAS Shri Vinayak Chamadia, IAS	**08/08/2024 (Thursday)**	M/s Shakti Plastic, VIP Road, Port Blair	Shri. Salamat Khan Ward No – 4 Mob:**9434278916** Shri. B.Rudraiah Ward No – 7 Mob: **9474204001**	Ward No. 4,7

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5/8/24

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Sl No	Name of Officer	Day on which inspection is to be carried out	Name of DRC	Sanitary Inspector's Name, Ward No. and Contact Number	All Collection Routes of
5	Shri Kale Amit Marutirao, IAS Smti Anuja Trivedi, IAS Probationer	**09/08/2024 (Friday)**	M/s Shakti Plastic, VIP Road, Port Blair	Shri. Lalit Kr. Ekka Ward No – 8 Mob: **9531873755** Shri. L.Karuppaiah Ward No - 9 Mob:**9933250181** Shri. S ShailendraBehari Ward No – 13 Mob:**9474252171**	Ward No. 8,9,13
6	Dr. Anil Agarwal, DANICS Shri Abhishek Bhukal, DANICS	**10/08/2024 (Saturday)**	M/s ATR Venture School Line, Near Ranchi Basthi, Port Blair.	Shri. B.Rudraiah Ward No – 14 Mob: **9474204001** Shri. Thomas Varghese Ward No - 15 Mob: **9434285993**	Ward No. 14,15
7	Ms.Purva Garg, IAS Shri. Aditya Kumar Jha, DANICS	**12/08/2024 (Monday)**	M/s Emerald Recycling Unit Dollygunj, Near ITI College, Port Blair	Shri. Thomas Varghese Ward No - 16 Mob: **9434285993** Shri. Amit Bhattacharaya Ward No – 17 Mob: **9933214316**	Ward No. 16,17
8	Ms Nandini Maharaj, IAS, Shri Nitin Shakya, DANICS	**13/08/2024 (Tuesday)**	M/s KSR Scarp & Traders, Bhatubasthi Parking, Port Blair	Shri. JatanLall Ward No - 19 Mob: **9933257824** Shri. SatyajitNaskar Ward No – 23 and 24 Mob: **9679531286**	Ward No. 19,23,24

Sl No	Name of Officer	Day on which inspection is to be carried out	Name of DRC	Sanitary Inspector's Name, Ward No. and Contact Number	All Collection Routes of
9	Dr Satyendra Singh Dursawat, IAS Shri Abhishek Gulia, DANICS	**14/08/2024 (Wednesday)**	M/s Andamans 3R Solution, Garacharma, Port Blair	Shri. Sameer Ch.Das Ward No – 20 Mob:**7063903921** Shri. Umarn Ali Ward No – 21 and 22 Mob:**9679516100** Shri. Amit Bhattacharaya Ward No – 18 Mob: **9933214316**	Ward No. 20,21,22,18
10	Shri Balwan Singh Jaglan, IAS Ms.Sapna Priya, DANICS	**16/08/2024 (Friday)**	M/s CM Scrap Trader, Brookshabad, Port Blair	Shri. Sanjeev Kumar Ward No – 10 Mob:**9434266734**	Ward No. 10
11	Shri A.S.P.S Raviprakash, IAS Shri Anand Vardhan Mishra, DANICS	**17/08/2024 (Saturday)**	M/s Sankla Enterprises, Brookshabad, Port Blair	Shri. S ShailendraBehari Ward No – 12 Mob:**9474252171**	Ward No. 12
12	Shri Vishwendra, DANICS Shri Jatinder Sohal, DANICS	**19/08/2024 (Monday)**	Landfill site	----	All wards

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email : dirtpt.and@nic.in

Ph/ Fax: 03192-230225/230235

No. PA/Secy(Tpt)/2024/ 53

अण्डमान तथा निकोबार प्रशासन

ANDAMAN & NICOBAR ADMINISTRATION

परिवहन निदेशालय / **DIRECTORATE OF TRANSPORT**

आज़ादी का अमृत महोत्सव

Port Blair, dated 2nd Aug, 2024

To,

The Secretary (S&T),
Andaman and Nicobar Administration,
Secretariat, Port Blair

Sub: Submission of report in respect of Solid Waste Management Sites – reg.

Ref: Order No.CS/PS/07/2024 dated 20.07.2024.

Sir,

With reference to the above mentioned order, undersigned along with Dr. Jatinder Sohal, Director (Transport) inspected the designated Solid Waste Management site as per Annexure- IV on 02.08.2024 at 11.00 AM.

The detailed report (Annexure I & II) is enclosed along with photographs of the site for further necessary action.

Encl: A/A.

Yours faithfully

Vishwendra

(Vishwendra)
Secretary (Tpt)

Copy to:- The OSD to the Chief Secretary for kind information of the Chief Secretary.

Vishwendra

Secretary (Tpt)

1500

Annexure-I

Inspection format for *Dry Resource Centers (DRCs)*

Dry Waste Resource Centre (DRC) Inspection Checklist

DRC Name/Location	**M/s Sankla Enterprises, Brookshabad**
Date of Inspection	**02.08.24**

INSTRUCTIONS:
Carefully review each item and mark the corresponding checkbox to indicate compliance or note any observations and areas for improvement. Use the "Notes/Observations" section to provide additional details, corrective actions, and any required follow-up.

1. Waste storage and handing (at DRC)

1.1 Designated areas: check that space is designated and properly demarcated for receiving

(A)	Unsegregated waste (New waste collection point)	Yes ☐	No ■	NA ☐
(B)	Bailed dry waste	Yes ■	No ☐	NA ☐
(C)	Segregated waste including wet waste (Segregated)	Yes ☐	No ■	NA ☐
1.2	**Weighing equipment:** Check availability of weighing balance at DRC	Yes ■	No ☐	NA ☐
1.3	**Waste Transportation:** Inspect that the outgoing transportation is being done in segregated manner.	Yes ■	No ☐	NA ☐

Observations/Notes/Corrective actions, if any:

1. Size of DRC is small as compared to daily waste collection.





2. No designated and properly demarcated area for collection and segregated waste.

3. Segregated waste is found here and there in whole compound of PBMC Complex.





4. Thermocol waste is dumped at far end in the PBMC Compund.



5. Green waste, dumped wheel carts, other waste can also be found in the compound



1502

2. Segregation Efficiency (at DRC)

2.1	**Segregation Table:** Verify that the segregation table is in good condition and is being used for segregation.	Yes ■	No ☐	NA ☐
2.2	**Proper Segregation:** Verify that waste is segregated in respective Bins (Wet Waste, Dry Waste, Inert etc)	Yes ☐	No ■	NA ☐
2.3	**Waste containers:** Check that waste is stored in proper and labeled containers/bins.	Yes ☐	No ■	NA ☐

Observations/Notes/Corrective actions, if any:

1. Segregation Table present, but small in size to handle all waste.



2. Separate containers only present for Multi layered plastic and plastic waste.

3. Safety Measures (at DRC)

3.1	**Protective Gears:** Please check whether the workers have appropriate protection equipment/gears like Gloves, Safety boots and mask etc.	Yes ■	No ☐	NA ☐
3.2	**CCTV coverage:** Check whether CCTV is operational or not.	Yes ■	No ☐	NA ☐

Observations/Notes/Corrective actions, if any:

1503

4. Composting efficiency (Applicable at Brookshabad, DRC)

4.1 **Composting:** Please check whether all the composting capacity is being put to use Yes ☐ No ☐ NA ■

If no, then please mention details for idle capacity:

1504

Annexure-II

Inspection format for Collection Route

Ward No.	Collection Route (Please provide detail of location)	Collection is done in segregated manner or mostly mixed waste is being collected?	Whether any vulnerable points exist nearby where unsegregated waste is being dumped/ noticed?	Are the vehicles used for waste transportation from the collection points have separate dry or wet waste compartment?	Overall efficiency of the collection point in terms of coverage of households, collection of segregated waste etc.	Remarks (If Any)
		1.Segregated waste 2.Unsegregated waste 3.Mostly segregated waste	(Yes/No) (If Yes, then please specify location)	1.Separate compartments exists 2.No Separate compartments (Please specify vehicle number also)	(Excellent/Good/Fair / Poor/Very Poor)	
12	Route No.05	Mostly Segregated	Yes, Airtel Tower Road	No Separate compartments	Fair	
12	Route No. 11	Mostly segregated	Yes, on Bargad Line	No Separate compartments	Fair	
24	Route No.10	Mostly Segregated	Yes, in vicinity of Collection point	No Separate compartments	Good	

1505

16	Route No.01, Doodh Line	Mostly Segregated	No	No Separate compartments	Good	

Any general suggestion about improvement that can be done on collection route:

1. At collection points, no bins are kept, instead gunny bags are there which can be replaced with closed bins. Also, it became difficult to identify the collection sites. A proper designated covered area is required to manage better and prevent rain seepage of waste.
2. Staff to regularly visit private areas to sensitise them about waste management and on repeat offence, challans to be issued. Dumping being done by the public leading to various Vulnerable points in the Wards.
3. More Gunny bags needed to be provided to the Ward staff as additional required bags are somehow being managed by staff from courier services.
4. CCTVs can be installed at vulnerable points for more vigilance.
5. Separate chambers in the transportation services can be considered for better segregation and more efficiency.

Vishwanatha
02/08/2024

1506

Any Garbage vulnerable Points /location in the ward which needs to be cleaned by PBMC. Please specify location along with nearby Landmark

1. Route No. 10- Nayagaon Main Road, Opposite Durga Mandir-



2. In Ward No. 10, Opposite Hotel Tamarind Tree-



3. Route No. 11, near collection point-



8.8.24

Vasumeha
8/8/2024

1507

Annexure-I

Inspection formate for dry resource centers (DRCs)

Dry Waste Resource Centre (DRC) Inspection Checklist

DRC Name /Location	M/S Greenworms Anarkali, Near MP Theater, Port Blair
Date of Inspection	05.08.2024

INSTRUCTIONS:

Carefully review each item and mark the corresponding checkbox to indicate compliance or note any observations and areas for improvement. Use the "Notes/ Observations" section to provide additional details, corrective actions, and any required follow-up.

1. WASTE STORAGE AND HANDLING (AT DRC)

1.1 **Designated Areas:** Check that space is designated and properly demarcated for receiving

(A) Unsegregated waste (New waste collection point	Yes	✓	No		NA	
(B) Bailed dry waste	Yes	✓	No		NA	
(C) Segregated waste including wet waste (Segregated)	Yes	✓	No		NA	
1.2 Weighing equipment: Check availability of weighing balance at DRC	Yes	✓	No		NA	
1.3 Waste Transportation: Inspect that the outgoing transportation is being done in segregated manner.	Yes	✓	No		NA	

Observations/ Notes/ Corrective actions, if any:

The DRC receives dry waste from 03 wards. There is only one bailing machine which is not sufficient to handle the waste that is coming in. Lot of waste is stacked up in the centre as well as surroundings. A large space is utilized to store some smart city material. This space can be utilized for the DRC. Also another DRC just down the road remains closed. This may be allotted and some dry waste diverted there to reduce pressure on this DRC.

2. SEGREGATION EFFICIENCY (AT DRC)

2.1 Segregation Table: Verify that the segregation table is in good Condition and is being used for segregation.	Yes	✓	No		NA	
2.2 Proper Segregation: Verify that waste is segregated in respective Bins (Wet Waste, Dry Waste, Inert etc.),	Yes	✓	No		NA	
2.3 Waste Containers: Check that waste is stored in proper and labeled containers/ bins.	Yes	✓	No		NA	

1508

Observations/ Notes/ Corrective actions, if any:	Since space is a constraint, bundles of waste are stacked every where making it difficult for the staff to do their work. Earlier also it was expressed in the inspection report that PBMC's intervention in transportation of bailed material at least till the backlog is cleared will make a lot of improvement. The registers are maintained upto date.

3. SAFETY MEASURES(AT DRC)

3.1 Protective Gears: Please check whether the workers have appropriate protection equipment /gears like Gloves, safety boots and mask etc.

Yes [✓] No [ ] NA [ ]

3.2 CCTV coverage: Check whether CCTV is operational or not.

Yes [✓] No [ ] NA [ ]

Observations/ Notes/ Corrective actions, if any:

4. COMPOSTING EFFICIENCY (APPLICABLE AT BROOKSHABAD, DRC)

4.1 Composting: Please check whether all the compositing capacity is being put to use

Yes [ ] No [ ] NA [✓]

If no, please mention details for idle capacity:	No composting is done at the DRC as there is no wet material. Direction was given to clean up the compost pit and cover it up to avoid unhygienic conditions in the area.

Annexure-II

Inspection format for collection Route

Ward No.	**Collection Route (Please provide details of location)**	**Collection is done in segregated manner or mostly mixed waste id being collected?**	**Whether any vulnerable points exist nearby where unsegregated waste in being dumped /noticed?**	**Are the vehicles used for waste transportation from the collection point have separate dry or wet waste compartment?**	**Overall efficiency of the collection point i9n terms of coverage of households, collection of segregated waste etc.**	**Remark, (if any)**
		1. Segregated waste 2. Unsegregated waste 3. Mostly segregated waste	(Yes/ No) (If Yes, then please specify location)	1. Separate compartments exists 2. No Separate Compartments (Please specify vehicle number also)	(Excellent/ Good/ Fair/Poor/Very Poor)	
Ward No. 1	10 routes	Mostly segregated waste	No	Yes	Good	
Ward No. 2	11 routes	Mostly segregated waste	No	Yes	Good	
Ward No. 3	11 routes	Mostly segregated waste	No	Yes	Good	

Any General suggestion about improvement that can be done on collection route:

Primary collection centres are needed. A number of black spots were observed. The quantity of Glass Bottles disposed in these wards are on the higher side. There are 02 ANIDCO outlets in these wards apart from a number of bars and restaurants here. Storage space is not available

Annexure-III

Inspection format for *Landfill Site*

1. WASTE HANDLING AT LANDFILL SITE

INSTRUCTIONS: PBMC has designated areas for dumping different types of waste as mentioned below at landfill site:

i) Mix Waste
ii) Domestic Hazardous Waste
iii) Medical Waste
iv) Green Waste
v) Coconut Waste

The team has to refer to the designate site and make an assessment on following parameters

(A) Waste Dumping: Inspect that the waste is being dumped at designated place in landfill site. Yes ☐ No ☐ NA ☐

If No, then please explain the deviation in detail:

(B) Polythene/ Plastic Waste: Inspect whether polythene waste is being dumped at the landfill site? Yes ☐ No ☐ NA ☐

(C) Composting: Inspect whether Pit Composting is being done or not at designated place in landfill site? Yes ☐ No ☐ NA ☐

Observations/ Notes/ Corrective actions, if any:

Annexure-I

Inspection format for *Dry Resource Centers (DRCs)*

Dry Waste Resource Centre (DRC) Inspection Checklist

DRC Name/Location Mohanpura

Date of Inspection 6/8/24

INSTRUCTIONS:
Carefully review each item and mark the corresponding checkbox to indicate compliance or note any observations and areas for improvement. Use the "Notes/Observations" section to provide additional details, corrective actions, and any required follow-up.

1. WASTE STORAGE AND HANDLING (AT DRC)

1.1 Designated Areas: Check that space is designated and properly demarcated for receiving

(A) Unsegregated waste (New waste collection point)	Yes ☑	No ☐	NA ☐
(B) Bailed dry waste	Yes ☑	No ☐	NA ☐
(C) Segregated waste including wet waste (Segregated)	Yes ☑	No ☐	NA ☐
1.2 Weighing equipment: Check availability of weighing balance at DRC	Yes ☐	No ☑	NA ☐
1.3 Waste Transportation: Inspect that the outgoing transportation is being done in segregated manner.	Yes ☑	No ☐	NA ☐

Observations/Notes/ Corrective actions, if any: The DRC is in good condition in comparison with previous inspection

2. SEGREGATION EFFICIENCY (AT DRC)

2.1 Segregation Table: Verify that the segregation table is in good condition and is being used for segregation.	Yes ☑	No ☐	NA ☐
2.2 Proper Segregation: Verify that waste is segregated in respective Bins (Wet Waste, Dry Waste, Inert etc.).	Yes ☑	No ☐	NA ☐
2.3 Waste Containers: Check that waste is stored in proper and labeled containers/bins.	Yes ☐	No ☑	NA ☐

Observations/Notes/ Corrective actions, if any:

1512

F.No. CS/PS/08/2024
अण्डमानतथानिकोबारप्रशासन
ANDAMAN AND NICOBAR ADMINISTRATION
सचिवालय/**SECRETARIAT**
*****

Port Blair, dated the 2nd Aug, 2024

ORDER

1. In continuation to Order No. CS/PS/07/2024 dated 20.07.2024, CS/PS/06/2024 dated 18.06.2024, and CS/PS/06/2024 dated 06.07.2024 with a view to ensure effective implementation of collection, processing and disposal of Solid Waste in PBMC area, teams of senior officers are hereby formed and assigned the duty of conducting inspections at designated Solid Waste Management Sites (Dry Resource Centres/Collection Routes/Landfill Site). The composition of teamsalongwith their respective areas of inspection is mentioned in **Annexure-IV**.

2. The teams shall conduct inspection ***as per schedule*** in morning hours and assess the effectiveness of collection, transportation and segregation operations, as applicable.

3. As discussed in last Senior Officers Meeting, the teams shall also identify garbage vulnerable points where cleaning needs to be carried out by PBMC.

4. The teams shall document findings accurately using the designated inspection checklist as mentioned below

A.	**Inspection format for DRCs**	**: Annexure-I**
B.	**Inspection format for Collection Routes**	**: Annexure-II**
C.	**Inspection format for Landfill Site**	**: Annexure-III**

5. All teams shall submit report to Science & Technology, Department on or before every Saturday without fail. Secretary (S&T) shall compile the reports and submit a consolidated report to undersigned **every Monday @1100Hrs without fail**.

(Keshav Chandra)
Chief Secretary
A&N Administration

To

All Officers as per the Annexure-IV.

1513

3. SAFETY MEASURES(AT DRC)

3.1 Protective Gears: Please check whether the workers have appropriate protection equipment/gears like Gloves, safety boots and mask etc.

Yes ☑ No ☐ NA ☐

3.2 CCTV coverage: Check whether CCTV is operational or not.

Yes ☐ No ☐ NA ☑

Observations/Notes/ Corrective actions, if any:

The worker strength was 1-2, compared to the amount of waste, workers can be increased.

4. COMPOSTING EFFICIENCY (APPLICABLE AT BROOKSHABAD, DRC)

4.1 Composting: Please check whether all the compositing capacity is being put to use

Yes ☐ No ☐ NA ☐

If no, then please mention details for idle capacity:

1514

Annexure-II

Inspection format for *Collection Route*

Ward No.	Collection Route (Please provide detail of location)	Collection is done in segregated manner or mostly mixed waste is being collected?	Whether any vulnerable points exists nearby where unsegregated waste is being dumped/ noticed?	Are the vehicles used for waste transportation from the collection point have separate dry or wet waste compartment?	Overall efficiency of the collection point in terms of coverage of households, collection of segregated waste etc.	Remarks (If Any)
		1. Segregated waste 2. Unsegregated waste 3. Mostly segregated waste	(Yes/No) (If Yes, then please specify location)	1. Separate compartments exists 2. No Separate Compartments (Please specify vehicle number also)	(Excellent/Good/Fair /Poor/Very Poor)	
5		Mostly segre	Near Market	Auto trasport	Good	
11		Mostly segre	—	So no compartment	Good	

Any general suggestion about improvement that can be done on collection route:

Staff strength in Mohanpura DRC is very less
Just 1-2 Safai karmacharies. That can be improved.

Any Garbage vulnerable points/location in the ward which needs to be cleaned by PBMC. Please specify location alongwith nearby landmark.

—

Annexure-III

Inspection format for *Landfill Site*

1. WASTE HANDLING AT LANDFILL SITE

INSTRUCTIONS: PBMC has designated areas for dumping different types of waste as mentioned below at landfill site:

i) Mix Waste
ii) Domestic Hazardous Waste
iii) Medical Waste
iv) Green Waste
v) Coconut Waste

The team has to refer to the designate site and make an assessment on following parameters

(A) Waste Dumping: Inspect that the waste is being dumped at designated place in landfill site. Yes ☐ No ☐ NA ☐

If No, then please explain the deviation in detail:

(B) Polythene/Plastic Waste: Inspect whether polythene waste is being dumped at the landfill site? Yes ☐ No ☐ NA ☐

(C) Composting: Inspect whether Pit Composting is being done or not at designated place in landfill site? Yes ☐ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

1516

Annexure: IV

Sl No	Name of Officer	Day on which inspection is to be carried out	Name of DRC	Sanitary Inspector's Name, Ward No. and Contact Number	All Collection Routes of
1	Ms Smitha R, IAS Shri Shiv Singh Meena, DANICS	**05/08/2024 (Monday)**	M/s GreenwormsAnarkali, Near MP Theater, Port Blair	Shri. Sudeep Singh Ward No - 1 and 2 Mob: **9434289509** Shri. Lalit Kr. Ekka Ward No - 3 Mob: **9531873755**	Ward No. 1,2,3
2	Shri. Azharuddin Zahiruddin Quazi, IAS Shri Vasant Dabholkar, IAS Probationer	**06/08/2024 (Tuesday)**	M/s Island Boy Tech Solutions, Mohanpura	Shri. Satish Kumar Ward No - 5 Mob: **9434260152** Shri. Deepak Behari Ward No – 11 Mob:**9434282714**	Ward No. 5,11
3	Shri Kumar L, IAS Shri Nitin Shakya, DANICS	**07/08/2024 (Wednesday)**	M/s Paperman Environmental Solution, Near KaithanKalyanMandappan, Junglighat, Port Blair	Shri. Vijay Kumar Ward No – 6 Mob: **9734481765** Shri. B.Rudraiah Ward No – 7 Mob: **9474204001**	Ward No. 6,7
4	Shri Arjun Sharma, IAS Shri Vinayak Chamadia, IAS	**08/08/2024 (Thursday)**	M/s Shakti Plastic, VIP Road, Port Blair	Shri. Salamat Khan Ward No – 4 Mob:**9434278916** Shri. B.Rudraiah Ward No – 7 Mob: **9474204001**	Ward No. 4,7

1517

Sl No	Name of Officer	Day on which inspection is to be carried out	Name of DRC	Sanitary Inspector's Name, Ward No. and Contact Number	All Collection Routes of
5	Shri Kale Amit Marutirao, IAS Smti Anuja Trivedi, IAS Probationer	**09/08/2024 (Friday)**	M/s Shakti Plastic, VIP Road, Port Blair	Shri. Lalit Kr. Ekka Ward No – 8 Mob: **9531873755** Shri. L.Karuppaiah Ward No - 9 Mob:**9933250181** Shri. S ShailendraBehari Ward No – 13 Mob:**9474252171**	Ward No. 8,9,13
6	Dr. Anil Agarwal, DANICS Shri Abhishek Bhukal, DANICS	**10/08/2024 (Saturday)**	M/s ATR Venture School Line, Near Ranchi Basthi, Port Blair.	Shri. B.Rudraiah Ward No – 14 Mob: **9474204001** Shri. Thomas Varghese Ward No - 15 Mob: **9434285993**	Ward No. 14,15
7	Ms.Purva Garg, IAS Shri. Aditya Kumar Jha, DANICS	**12/08/2024 (Monday)**	M/s Emerald Recycling Unit Dollygunj, Near ITI College, Port Blair	Shri. Thomas Varghese Ward No - 16 Mob: **9434285993** Shri. Amit Bhattacharaya Ward No – 17 Mob: **9933214316**	Ward No. 16,17
8	Ms Nandini Maharaj, IAS, Shri Nitin Shakya, DANICS	**13/08/2024 (Tuesday)**	M/s KSR Scarp & Traders, Bhatubasthi Parking, Port Blair	Shri. JatanLall Ward No - 19 Mob: **9933257824** Shri. SatyajitNaskar Ward No – 23 and 24 Mob: **9679531286**	Ward No. 19,23,24

1518

Sl No	Name of Officer	Day on which inspection is to be carried out	Name of DRC	Sanitary Inspector's Name, Ward No. and Contact Number	All Collection Routes of
9	Dr Satyendra Singh Dursawat, IAS Shri Abhishek Gulia, DANICS	**14/08/2024 (Wednesday)**	M/s Andamans 3R Solution, Garacharma, Port Blair	Shri. Sameer Ch.Das Ward No – 20 Mob:**7063903921** Shri. Umarn Ali Ward No – 21 and 22 Mob:**9679516100** Shri. Amit Bhattacharaya Ward No – 18 Mob: **9933214316**	Ward No. 20,21,22,18
10	Shri Balwan Singh Jaglan, IAS Ms.Sapna Priya, DANICS	**16/08/2024 (Friday)**	M/s CM Scrap Trader, Brookshabad, Port Blair	Shri. Sanjeev Kumar Ward No – 10 Mob:**9434266734**	Ward No. 10
11	Shri A.S.P.S Raviprakash, IAS Shri Anand Vardhan Mishra, DANICS	**17/08/2024 (Saturday)**	M/s Sankla Enterprises, Brookshabad, Port Blair	Shri. S ShailendraBehari Ward No – 12 Mob:**9474252171**	Ward No. 12
12	Shri Vishwendra, DANICS Shri Jatinder Sohal, DANICS	**19/08/2024 (Monday)**	Landfill site	----	All wards

Annexure -1

Inspection format for Dry Resource Centres (DRCs)

Dry Waste Resource Centre (DRC) Inspection Checklist

DRC Name/Location Junglighat near Khithan kalyanmandappan

Date of Inspection 7/8/2024 and 10/8/2024

INSTRUCTION:

Carefully review each item and mark the corresponding checkbox to indicate compliance or note any observation and areas for improvement. Use the "Note/Observation" section to provide additional details, corrective action, and any required follow-up

1. WASTE STORAGE AND HANDLING (AT DRC)

1.1 Designated Area: Check that space is designated and properly demarcated for receiving

(A) Unsegregated waste (New waste collection point) Yes [✓] No [ ] NA [ ]

(B) Bailed dry waste Yes [✓] No [ ] NA [ ]

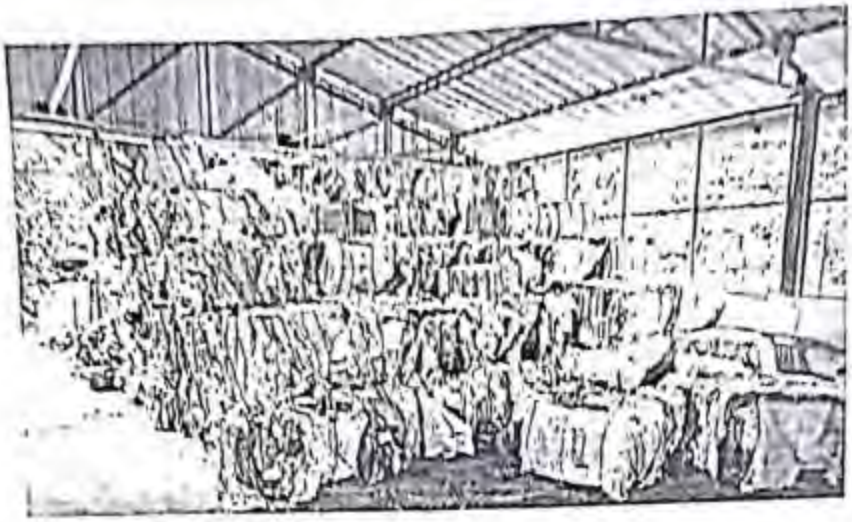
(C) Segreagated waste including wet waste (Segregated) Yes [✓] No [ ] NA [ ]

1.2 Weighting equipment: Check availability of weighing balance at DRC Yes [✓] No [ ] NA [ ]

1.3 Waste Transportation: Inspect that the outgoing transportation is being done in segregated manner. Yes [✓] No [ ] NA [ ]

Observation/Note/ Corrective actions, if any: Adequate space may be provided for storing baled waste

1520



2. SEGREGATION EFFICIENCY (AT DRC)

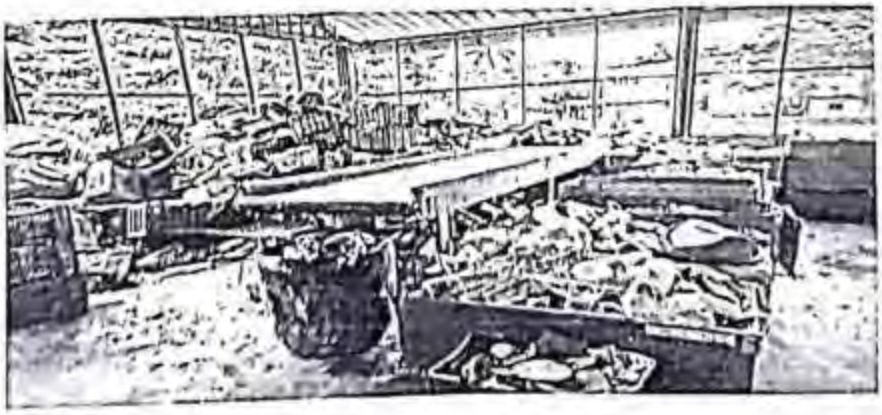
2.1 Segregation Table: Verify that the segregation table is in good condition and is being used for segregation. Yes [✓] No [ ] NA [ ]

2.2 **Proper Segregation:** Verify that waste is segregated in respective Bins (Wet waste, Dry Waste, Inert etc). Yes [✓] No [ ] NA [ ]

2.3 **Waste Containers:** Check that waste is stored in proper and labeled containers/bins. Yes [✓] No [ ] NA [ ]

Observation /Notes/ Corrective action, if any

Segregated plastic waste and baled waste stored around the segregation table. Need to re-arrange the plastic waste to provide sufficient space for segregation to be done in the segregation table.



1521

3. **SAFETY MEASURES (AT DRC)**

3.1 **Protective Gears:** Please check whether the workers have appropriate protection equipment/gears like Gloves, safety boots and mask etc. Yes [✓] No [ ] NA [ ]

3.2 **CCTV Coverage:** Check whether CCTV is operational or not Yes [✓] No [ ] NA [ ]

Observation /Notes/ Corrective action, if any

- 03 staff present for segregation and baling
- Staff with protective gears.

4. **COMPOSTING EFFICIENCY (APPLICABLE AT BROOKSHABAD, DRC)**

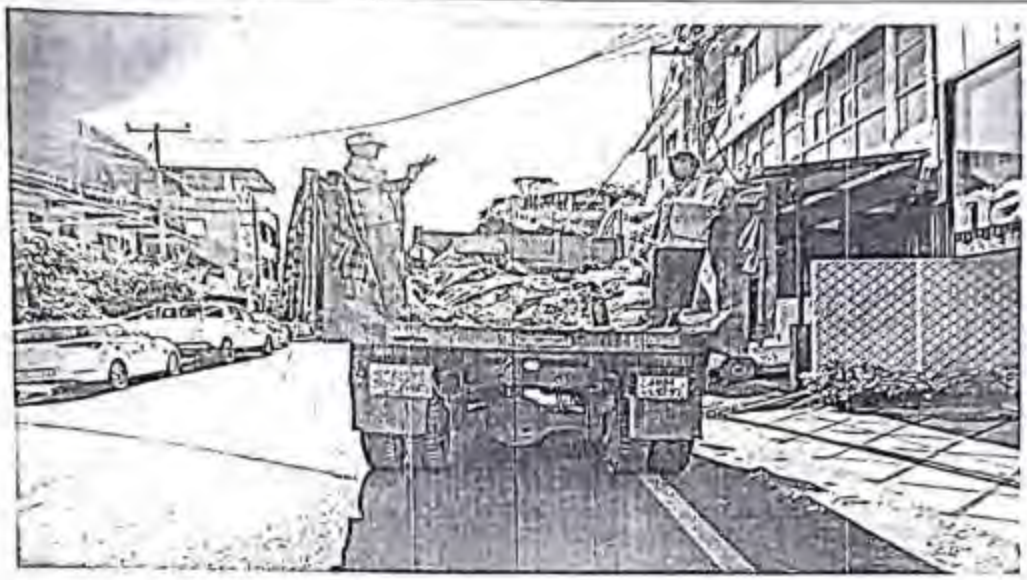
4.1 **Composting :** Please check whether all the composting capacity is being put to use. Yes [ ] No [ ] NA [ ]

If no. then please mention details for the idle capacity

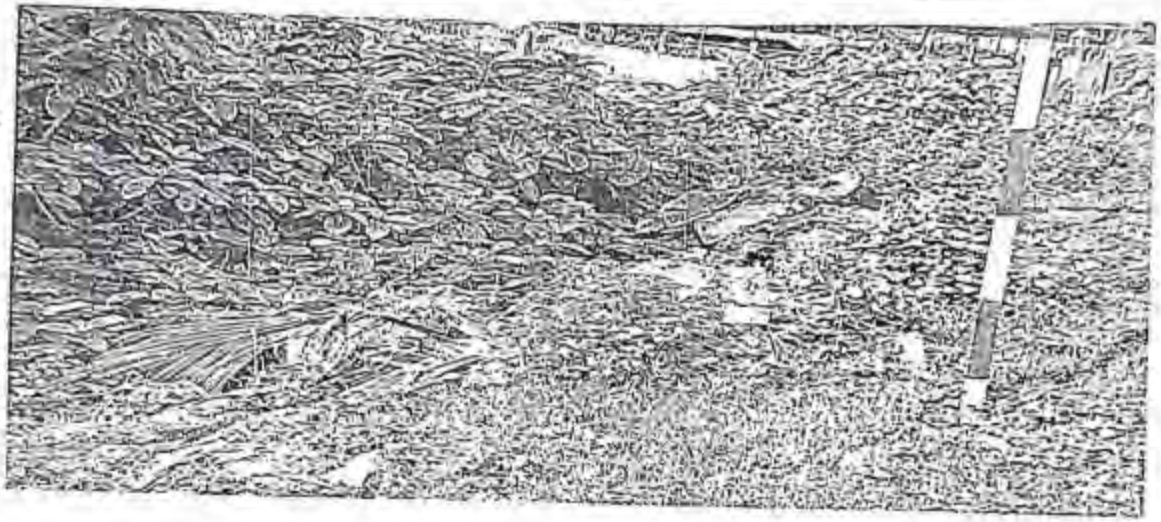
Annexure-II

Inspection format for Collection Route

Ward No.	Collection Route (Please provide details of location)	Collection is done in segregated manner or mostly mixed waste is being collected ?	Whether any vulnerable points exists nearby where unsegregated waste is being dumped noticed?	Are the vehicles used for waste transportation from the collection point have separate dry or wet waste compartment ?	Overall efficiency of the collection point in terms of coverage of households, collection of segregated waste etc.	Remarks (If any)
		1. Segregated waste 2. Unsegregated waste 3. Mostly segregated waste	(Yes/No) (If Yes, then please specify location)	1. Separate compartments exists 2. No Separate Compartments (Please specify vehicle number also)	(Excellent/Good/Fair/Poor/Verry poor)	
6	Route No. 9 Phongy chang	Segregated waste	No	Found two vehicles (one truck No. AN 04 L9293and mini tempo) collecting waste, but no separate compartments.	Good	A separate enclosure with roofing may be provided for secondary collection centers.



6	Route No. 10 Phongychang and Phoenix Bay	Segregated waste	Yes, There are some sites opposite to Kerala samajam where wastes are dumped without any segregation.	do	Good	In Phoenix Bay, it was noticed that waste without any segregation has been dumped in the secondary collection center. Cattle are found feeding

						in the secondary collection center at Phoenix bay.
						
7	Route No. 9, Delanipur Junction	Segregated waste	-	-	Good	
	Route No 11.all India Radio near naseem oil factory	Segregated waste	-	-	Good	Near Naseem oil company, mixed waste found in secondary collection centers

1525

7	Route No.10 Mubarak Line	Segregated waste	Building, workshop materials dumped in the road side. Tyres with rain water stagnating	-	Good	-
						
7	Route No. 11, Masjid area	Segregated waste	-	do	Good	-

1526

Any general suggestion about improvement that can be done on collection route.

The sanitary workers may be provided with light weight wheel barrows and adequate safety gears. In the secondary collection centers at Phoenix Bay near TSG and Junglighat near government quarters, pigs and cattle are roaming . Mixed waste are dumped in the night and morning hours by public in the secondary collection centre which need to be monitored. Small sheds with roofing and door to be provided at secondary collection centres. Compartments to be provided in large trucks for different type of waste.

Any Garbage vulnerable points/location in the ward which needs to be cleaned by PBMC. Please specify location alongwith nearby landmarks.

In junglighat, near govt. quarters and JE office the drains are filled with plastic and other mixed waste. In Phongy Chang area route no.9, waste are dumped in private areas which may be cleaned.

Secretary (Social Welfare)

Annexure-I

Inspection format for *Dry Resource Centers (DRCs)*

Dry Waste Resource Centre (DRC) Inspection Checklist

DRC Name/Location ATR Ventura, School Line, Rambi Basti

Date of Inspection 10.08.2024

INSTRUCTIONS:
Carefully review each item and mark the corresponding checkbox to indicate compliance or note any observations and areas for improvement. Use the "Notes/Observations" section to provide additional details, corrective actions, and any required follow-up.

1. WASTE STORAGE AND HANDLING (AT DRC)

1.1 Designated Areas: Check that space is designated and properly demarcated for receiving

(A) Unsegregated waste (New waste collection point)	Yes ☐	No ☑	NA ☐
(B) Bailed dry waste	Yes ☑	No ☐	NA ☐
(C) Segregated waste including wet waste (Segregated)	Yes ☐	No ☐	NA ☐
1.2 Weighing equipment: Check availability of weighing balance at DRC	Yes ☑	No ☐	NA ☐
1.3 Waste Transportation: Inspect that the outgoing transportation is being done in segregated manner.	Yes ☑	No ☐	NA ☐

Observations/Notes/ Corrective actions, if any: Due to space constraints, designated areas could not be allotted in an efficient manner

2. SEGREGATION EFFICIENCY (AT DRC)

2.1 Segregation Table: Verify that the segregation table is in good condition and is being used for segregation.	Yes ☑	No ☐	NA ☐
2.2 Proper Segregation: Verify that waste is segregated in respective Bins (Wet Waste, Dry Waste, Inert etc.).	Yes ☑	No ☐	NA ☐
2.3 Waste Containers: Check that waste is stored in proper and labeled containers/bins.	Yes ☑	No ☐	NA ☐

Observations/Notes/ Corrective actions, if any: Due to power cuts, segregated waste could not be bailed timely.

Signed
10/08/24

1528

3. SAFETY MEASURES(AT DRC)

3.1 Protective Gears: Please check whether the workers have appropriate protection equipment/gears like Gloves, safety boots and mask etc.

Yes ☑ No ☐ NA ☐

3.2 CCTV coverage: Check whether CCTV is operational or not.

Yes ☑ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

Separate space / extension of DRC is required.
Coordination wrt increase in slip frequency is required.

4. COMPOSTING EFFICIENCY (APPLICABLE AT BROOKSHABAD, DRC)

4.1 Composting: Please check whether all the compositing capacity is being put to use

Yes ☐ No ☐ NA ☑

If no, then please mention details for idle capacity:

Shishal
10/08/24

Annexure-II

Inspection format for *Collection Route*

Ward No.	Collection Route (Please provide detail of location)	Collection is done in segregated manner or mostly mixed waste is being collected? (1.Segregated waste 2.Unsegregated waste 3.Mostly segregated waste)	Whether any vulnerable points exists nearby where unsegregated waste is being dumped/ noticed? (Yes/No) (If Yes, then please specify location)	Are the vehicles used for waste transportation from the collection point have separate dry or wet waste compartment? (1. Separate compartments exists 2. No Separate Compartments (Please specify vehicle number also)	Overall efficiency of the collection point in terms of coverage of households, collection of segregated waste etc. (Excellent/Good/Fair /Poor/Very Poor)	Remarks (If Any)
15	6	Mostly Segregated	No	No	Good	

Any general suggestion about improvement that can be done on collection route:

Punctuality in terms of waste collection and cooperation of citizenry to follow the timings strictly.

Any Garbage vulnerable points/location in the ward which needs to be cleaned by PBMC. Please specify location alongwith nearby landmark.

1530 1) Ms Purva Garg, Secy (IAS)
2) Aditya Kumar Jha (DAMCS)

Annexure-I

Inspection format for *Dry Resource Centers (DRCs)*

Dry Waste Resource Centre (DRC) Inspection Checklist

DRC Name/Location M/s Emerald Recycling Unit, Dollygunj

Date of Inspection 12/8/2024

INSTRUCTIONS:
Carefully review each item and mark the corresponding checkbox to indicate compliance or note any observations and areas for improvement. Use the "Notes/Observations" section to provide additional details, corrective actions, and any required follow-up.

1. WASTE STORAGE AND HANDLING (AT DRC)

1.1 Designated Areas: Check that space is designated and properly demarcated for receiving

(A) Unsegregated waste (New waste collection point)	Yes ☑	No ☐	NA ☐
(B) Bailed dry waste	Yes ☑	No ☐	NA ☐
(C) Segregated waste including wet waste (Segregated)	Yes ☐	No ☑	NA ☐
1.2 Weighing equipment: Check availability of weighing balance at DRC	Yes ☑	No ☐	NA ☐
1.3 Waste Transportation: Inspect that the outgoing transportation is being done in segregated manner.	Yes ☑	No ☐	NA ☐

Observations/Notes/ Corrective actions, if any: (i) Segregation is being done in open

2. SEGREGATION EFFICIENCY (AT DRC)

2.1 Segregation Table: Verify that the segregation table is in good condition and is being used for segregation.	Yes ☒	No ☑	NA ☐
2.2 Proper Segregation: Verify that waste is segregated in respective Bins (Wet Waste, Dry Waste, Inert etc.).	Yes ☑	No ☐	NA ☐
2.3 Waste Containers: Check that waste is stored in proper and labeled containers/bins.	Yes ☑	No ☐	NA ☐

Observations/Notes/ Corrective actions, if any:
(i) Segregation is being done in open space
(ii) Stocks are piled up.

1531

3. SAFETY MEASURES(AT DRC)

3.1 Protective Gears: Please check whether the workers have appropriate protection equipment/gears like Gloves, safety boots and mask etc. Yes ☑ No ☐ NA ☐

3.2 CCTV coverage: Check whether CCTV is operational or not. Yes ☑ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any: (1) Sufficient Safety boots are required.

4. COMPOSTING EFFICIENCY (APPLICABLE AT BROOKSHABAD, DRC)

4.1 Composting: Please check whether all the compositing capacity is being put to use Yes ☐ No ☐ NA ☑

If no, then please mention details for idle capacity:

1532

Annexure-II

Inspection format for *Collection Route*

Ward No.	Collection Route (Please provide detail of location)	Collection is done in segregated manner or mostly mixed waste is being collected?	Whether any vulnerable points exists nearby where unsegregated waste is being dumped/ noticed?	Are the vehicles used for waste transportation from the collection point have separate dry or wet waste compartment?	Overall efficiency of the collection point in terms of coverage of households, collection of segregated waste etc.	Remarks (If Any)
		1.Segregated waste 2.Unsegregated waste 3.Mostly segregated waste	(Yes/No) (If Yes, then please specify location)	1. Separate compartments exists 2. No Separate Compartments (Please specify vehicle number also)	(Excellent/Good/Fair /Poor/Very Poor)	
17	(14) Abn Int. Ma Kali Gursan Sewa Bharti FCI Godown	3	Yes Near Abn Int. Ma Kali, Sewa Bharti	NO	Fair	
(16)	(7) Haldhar Colony Telugu Basti, School Inter Bus stop	3	yes Telugu Basti School Inter Bus stop	NO	Fair	

Any general suggestion about improvement that can be done on collection route:

(I) Registers are not Maintained properly
(II) Segregated stocks are not being lifted from many days

Any Garbage vulnerable points/location in the ward which needs to be cleaned by PBMC. Please specify location alongwith nearby landmark.

I) Sewa Bharti area (III) Telugu Basti.
II) Ma Kali Gursan

1533

NA —

Annexure-III

Inspection format for *Landfill Site*

1. WASTE HANDLING AT LANDFILL SITE

INSTRUCTIONS: PBMC has designated areas for dumping different types of waste as mentioned below at landfill site:

i) Mix Waste
ii) Domestic Hazardous Waste
iii) Medical Waste
iv) Green Waste
v) Coconut Waste

The team has to refer to the designate site and make an assessment on following parameters

(A) Waste Dumping: Inspect that the waste is being dumped at designated place in landfill site. Yes ☐ No ☐ NA ☐

If No, then please explain the deviation in detail:

(B) Polythene/Plastic Waste: Inspect whether polythene waste is being dumped at the landfill site? Yes ☐ No ☐ NA ☐

(C) Composting: Inspect whether Pit Composting is being done or not at designated place in landfill site? Yes ☐ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

1534

3. SAFETY MEASURES(AT DRC)

3.1 Protective Gears: Please check whether the workers have appropriate protection equipment/gears like Gloves, safety boots and mask etc. Yes ☑ No ☐ NA ☐

3.2 CCTV coverage: Check whether CCTV is operational or not. Yes ☑ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

4. COMPOSTING EFFICIENCY (APPLICABLE AT BROOKSHABAD, DRC)

4.1 Composting: Please check whether all the compositing capacity is being put to use Yes ☐ No ☐ NA ☐

If no, then please mention details for idle capacity:



273

Annexure II

Inspection format for Collection Route

Ward No.	Collection Route (Please provide detail of locations)	Collection is done in segregated manner or "quietly mixed waste is being collected? 1. Segregated waste 2. Unsegregated waste 3. Mostly segregated waste	Whether any nuisance points nearby where unsegregated waste is being dumped/ pelted? Yes/No (If Yes, then please specify locations)	Are the vehicles used for waste transportation from the collection point have separate bin or not waste compartment? 1. Separate compartments exists 2. No Separate compartments (Please specify reasons wherever need)	Overall efficiency of the collection points in terms of coverage of households, collection of segregated waste etc Excellent/ Good/ Fair /Poor/Very Poor	Remarks (if Any)
18	17 routes	Mostly Segregated		No separate compartments	Good	
20	19 routes	"			Good	
21	25 routes	"			Good	
22	04 routes	"			Good	

Any general suggestion about improvement that can be done on collection route:

Any Garbage vulnerable points/locations in the ward which needs to be cleared by PHEI. Please specify location alongwith nearby landmark.

Inspection format for Dry Resource Centers (DRC)

Dry Waste Resource Centre (DRC) Inspection Checklist

DRC Name/Location M/s Andavaru 3R solution, Harachanoor, TB

Date of Inspection 14/05/24

INSTRUCTIONS:
Carefully review each item and mark the corresponding checkbox to indicate compliance or note any observations and areas for improvement. Use the "Notes/Observations" section to provide additional details, corrective actions, and any required follow-up.

1. WASTE STORAGE AND HANDLING (AT DRC)

1.1 Designated Areas: Check that space is designated and properly demarcated for receiving

(A) Unsegregated waste (New waste collection point) — Yes ☑ No ☐ NA ☐

(B) Baled dry waste — Yes ☑ No ☐ NA ☐

(C) Segregated waste including wet waste (Segregated) — Yes ☑ No ☐ NA ☐

1.2 Weighing equipment: Check availability of weighing balance at DRC — Yes ☑ No ☐ NA ☐

1.3 Waste Transportation: Inspect that the outgoing transportation is being done in segregated manner. — Yes ☑ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

* Power cut issue
* No separate containers in vehicle

2. SEGREGATION EFFICIENCY (AT DRC)

2.1 Segregation Table: Verify that the segregation table is in good condition and is being used for segregation. — Yes ☑ No ☐ NA ☐

2.2 Proper Segregation: Verify that waste is segregated in respective Bins (Wet Waste, Dry Waste, Inert etc.). — Yes ☑ No ☐ NA ☐

2.3 Waste Containers: Check that waste is stored in proper and labeled containers/bins. — Yes ☑ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

No. 1 1/Secy(Rev/Vig/Law/Agri)/PA/2024/746

अंडमान और निकोबार द्वीप समूह
ANDAMAN & NICOBAR ISLANDS
सचिवालय / SECRETARIAT

Port Blair, dated the 16th August, 2024

To

The Secretary (S&T)
A&N Administration
Port Blair

Sub: -Submission of Report in respect of Solid Waste Management Sites-reg.,
Ref:- Order No. CS/PS/03/2024 dt. 02.08.2024

Sir,

With reference to the above Order, undersigned inspected the designated Solid Waste Management Site as per Annexure IV on 16.08.2024.

The detailed report (Annexure I & Annexure II) is enclosed alongwith photographs of the site for further necessary action.

Yours faithfully

(B.S. Jaglan)
Secretary (Rev/Vig/Law/Agri)/
Chief Electoral Officer, ANI

Encl:- A/A

Copy to :- The OSD to Chief Secretary for kind information of Chief Secretary.

Secretary (Rev/Vig/Law/Agri)/
Chief Electoral Officer, ANI

Annexure-I

Inspection format for Dry Resource Centers (DRCs)

Dry Waste Resource Centre (DRC) Inspection Checklist

DRC Name/Location: M/s C M Scrap Traders, Sirakulam, Port Blair

Date of Inspection: 16/08/2024

INSTRUCTIONS:
Carefully review each item and mark the corresponding checkbox to indicate compliance or note any observations and areas for improvement. Use the "Notes/Observations" section to provide additional details, corrective actions, and any required follow-up.

1. WASTE STORAGE AND HANDLING (AT DRC)

1.1 Designated Areas: Check that space is designated and properly demarcated for receiving

(A) Unsegregated waste (New waste collection point)	Yes ☑	No ☐	NA ☐
(B) Bailed dry waste	Yes ☑	No ☐	NA ☐
(C) Segregated waste including wet waste (Segregated)	Yes ☑	No ☐	NA ☐
1.2 Weighing equipment: Check availability of weighing balance at DRC	Yes ☑	No ☐	NA ☐
1.3 Waste Transportation: Inspect that the outgoing transportation is being done in segregated manner.	Yes ☑	No ☐	NA ☐

Observations/Notes/ Corrective actions, if any:

1. Segregated waste is stored in large quantity & occupying large space.

---

2. SEGREGATION EFFICIENCY (AT DRC)

2.1 Segregation Table: Verify that the segregation table is in good condition and is being used for segregation.	Yes ☑	No ☐	NA ☐
2.2 Proper Segregation: Verify that waste is segregated in respective Bins (Wet Waste, Dry Waste, Inert etc.).	Yes ☑	No ☐	NA ☐
2.3 Waste Containers: Check that waste is stored in proper and labeled containers/bins.	Yes ☐	No ☑	NA ☐

Observations/Notes/ Corrective actions, if any:

1. Waste containers are quite small and are not labelled.

1539

3. SAFETY MEASURES(AT DRC)

3.1 Protective Gears:Please check whether the workers have appropriate protection equipment/gears like Gloves, safety boots and mask etc. Yes ☑ No ☐ NA ☐

3.2 CCTV coverage: Check whether CCTV is operational or not. Yes ☐ No ☑ NA ☐

Observations/Notes/ Corrective actions, if any:

1. CCTV is not operational. There is no monitoring for the same.

4. COMPOSTING EFFICIENCY (APPLICABLE AT BROOKSHABAD, DRC)

4.1 Composting:Please check whether all the compositing capacity is being put to use Yes ☐ No ☐ NA ☐

If no, then please mention details for idle capacity:

Annexure-II

Inspection format for Collection Route

Ward No.	Collection Route (Please provide detail of location)	Collection is done in segregated manner or mostly mixed waste is being collected? 1.Segregated waste 2.Unsegregated waste 3.Mostly segregated waste	Whether any vulnerable points exists nearby where unsegregated waste is being dumped/ noticed? (Yes/No) (If Yes, then please specify location)	Are the vehicles used for waste transportation from the collection point have separate dry or wet waste compartment? 1. Separate compartments exists 2. No Separate Compartments (Please specify vehicle number also)	Overall efficiency of the collection point in terms of coverage of households, collection of segregated waste etc. (Excellent/Good/Fair /Poor/Very Poor)	Remarks (If Any)
10	11	Mostly Segregated waste.	NO	Separate compartments exists	Good	

Any general suggestion about improvement that can be done on collection route:

1. Cameras should be fixed at collection points.
2. Most of the households/shops do not have separate bins for dry & wet waste.

Any Garbage vulnerable points/location in the ward which needs to be cleaned by PBMC. Please specify location alongwith nearby landmark.

Annexure-III

Inspection format for *Landfill Site*

1. WASTE HANDLING AT LANDFILL SITE N/A

INSTRUCTIONS: PBMC has designated areas for dumping different types of waste as mentioned below at landfill site:

i) Mix Waste
ii) Domestic Hazardous Waste
iii) Medical Waste
iv) Green Waste
v) Coconut Waste

The team has to refer to the designate site and make an assessment on following parameters

(A) **Waste Dumping:** Inspect that the waste is being dumped at designated place in landfill site. Yes ☐ No ☐ NA ☐

If No, then please explain the deviation in detail:

(B) **Polythene/Plastic Waste:** Inspect whether polythene waste is being dumped at the landfill site? Yes ☐ No ☐ NA ☐

(C) **Composting:** Inspect whether Pit Composting is being done or not at designated place in landfill site? Yes ☐ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:





















1545















Annexure-I

Inspection format for *Dry Resource Centers (DRCs)*

Dry Waste Resource Centre (DRC) Inspection Checklist

DRC Name/Location Sankla

Date of Inspection 17/8/24

INSTRUCTIONS:
Carefully review each item and mark the corresponding checkbox to indicate compliance or note any observations and areas for improvement. Use the "Notes/Observations" section to provide additional details, corrective actions, and any required follow-up.

1. WASTE STORAGE AND HANDLING (AT DRC)

1.1 Designated Areas: Check that space is designated and properly demarcated for receiving

(A) Unsegregated waste (New waste collection point)	Yes ☐	No ☑	NA ☐
(B) Bailed dry waste	Yes ☐	No ☑	NA ☐
(C) Segregated waste including wet waste (Segregated)	Yes ☐	No ☐	NA ☑
1.2 Weighing equipment: Check availability of weighing balance at DRC (Not seen)	Yes ☐	No ☐	NA ☑
1.3 Waste Transportation: Inspect that the outgoing transportation is being done in segregated manner. (Not observed on the day)	Yes ☐	No ☐	NA ☑

Observations/Notes/ Corrective actions, if any:

1. Space is less. Need to improve shed area.
2. Electricity supply needs to improve.
3. Need insect killer/Fly catcher
4.

2. SEGREGATION EFFICIENCY (AT DRC)

2.1 Segregation Table: Verify that the segregation table is in good condition and is being used for segregation.	Yes ☑	No ☐	NA ☐
2.2 Proper Segregation: Verify that waste is segregated in respective Bins (Wet Waste, Dry Waste, Inert etc.)	Yes ☑	No ☐	NA ☐
2.3 Waste Containers: Check that waste is stored in proper and labeled containers/bins	Yes ☑	No ☐	NA ☐

Observations/Notes/ Corrective actions, if any:

Segregation space is less.

3. SAFETY MEASURES(AT DRC)

3.1 Protective Gears: Please check whether the workers have appropriate protection equipment/gears like Gloves, safety boots and mask etc.

Yes ☑ No ☐ NA ☐

3.2 CCTV coverage: Check whether CCTV is operational or not.

Yes ☑ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

Improvement noticed in CCTV coverage.

4. COMPOSTING EFFICIENCY (APPLICABLE AT BROOKSHABAD, DRC)

4.1 Composting: Please check whether all the compositing capacity is being put to use

Yes ☐ No ☐ NA ☑

If no, then please mention details for idle capacity:

—

1549

Annexure-II

Inspection format for *Collection Route*

Ward No.	Collection Route (Please provide detail of location)	Collection is done in segregated manner or mostly mixed waste is being collected?	Whether any vulnerable points exists nearby where unsegregated waste is being dumped/ noticed?	Are the vehicles used for waste transportation from the collection point have separate dry or wet waste compartment?	Overall efficiency of the collection point in terms of coverage of households, collection of segregated waste etc.	Remarks (If Any)
Ward	Routes	1.Segregated waste 2.Unsegregated waste 3.Mostly segregated waste	(Yes/No) (If Yes, then please specify location)	1. Separate compartments exists 2. No Separate Compartments (Please specify vehicle number also)	(Excellent/Good/Fair /Poor/Very Poor)	
12	1: Sunrise Colony	✓	✓	/	Good	
	4. Durga mandir	✓	✓	/	Good	
	11. Typical APWD quarters Chalkhyadan	Sanitary waste on Road margins	✓	/	Good	

Any general suggestion about improvement that can be done on collection route:

1. Drains desilting/cleaning to be improved.
2. All APWD quarters/Gated campuses should be cleaned of Building waste once in a month at least

Any Garbage vulnerable points/location in the ward which needs to be cleaned by PSMC. Please specify location alongwit nearby landmark.

-Nil- At the time of the visit no Vulnerable point seen.

ASPS Ravi Prakash IAS

1550

F.No. CS/PS/08/2024

अण्डमानतथानिकोबारप्रशासन

ANDAMAN AND NICOBAR ADMINISTRATION

सचिवालय/SECRETARIAT

*****

Port Blair, dated the 19th Aug, 2024

ORDER

1. In continuation to Order No. CS/PS/06/2024 dated 18.06.2024, CS/PS/06/2024 dated 06.07.2024, CS/PS/07/2024 dated 20.07.2024 and CS/PS/08/2024 dated 02.08.2024 and with a view to ensure effective implementation of collection, processing and disposal of Solid Waste in PBMC area, teams of senior officers are hereby formed and assigned the duty of conducting inspections at designated Solid Waste Management Sites (Dry Resource Centres/Collection Routes/Landfill Site). The composition of teams alongwith their respective areas of inspection is mentioned in **Annexure-IV**.

2. The teams shall conduct inspection ***as per schedule*** in morning hours and assess the effectiveness of collection, transportation and segregation operations, as applicable.

3. As discussed in the Senior Officers Meeting, the teams shall also identify garbage vulnerable points where cleaning needs to be carried out by PBMC.

4. The teams shall document findings accurately using the designated inspection checklist as mentioned below

A.	**Inspection format for DRCs**	**: Annexure-I**
B.	**Inspection format for Collection Routes**	**: Annexure-II**
C.	**Inspection format for Landfill Site**	**: Annexure-III**

5. All teams shall submit report to Science & Technology, Department on or before every Saturday without fail. Secretary (S&T) shall compile the reports and submit a consolidated report to undersigned **every Monday @1100 Hrs without fail.**

(Keshav Chandra)
Chief Secretary
A&N Administration

To

All Officers as per the Annexure-IV.

1551

Annexure-I

Inspection format for *Dry Resource Centers (DRCs)*

Dry Waste Resource Centre (DRC) Inspection Checklist

DRC Name/Location _____

Date of Inspection _____

INSTRUCTIONS:
Carefully review each item and mark the corresponding checkbox to indicate compliance or note any observations and areas for improvement. Use the "Notes/Observations" section to provide additional details, corrective actions, and any required follow-up.

1. WASTE STORAGE AND HANDLING (AT DRC)

1.1 Designated Areas: Check that space is designated and properly demarcated for receiving

(A) Unsegregated waste (New waste collection point) Yes ☐ No ☐ NA ☐

(B) Bailed dry waste Yes ☐ No ☐ NA ☐

(C) Segregated waste including wet waste (Segregated) Yes ☐ No ☐ NA ☐

1.2 Weighing equipment: Check availability of weighing balance at DRC Yes ☐ No ☐ NA ☐

1.3 Waste Transportation: Inspect that the outgoing transportation is being done in segregated manner. Yes ☐ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

2. SEGREGATION EFFICIENCY (AT DRC)

2.1 Segregation Table: Verify that the segregation table is in good condition and is being used for segregation. Yes ☐ No ☐ NA ☐

2.2 Proper Segregation: Verify that waste is segregated in respective Bins (Wet Waste, Dry Waste, Inert etc.). Yes ☐ No ☐ NA ☐

2.3 Waste Containers: Check that waste is stored in proper and labeled containers/bins. Yes ☐ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

1552

3. SAFETY MEASURES(AT DRC)

3.1 Protective Gears: Please check whether the workers have appropriate protection equipment/gears like Gloves, safety boots and mask etc. Yes ☐ No ☐ NA ☐

3.2 CCTV coverage: Check whether CCTV is operational or not. Yes ☐ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

4. COMPOSTING EFFICIENCY (APPLICABLE AT BROOKSHABAD, DRC)

4.1 Composting: Please check whether all the compositing capacity is being put to use Yes ☐ No ☐ NA ☐

If no, then please mention details for idle capacity:

Annexure-II

Inspection format for *Collection Route*

Ward No.	Collection Route (Please provide detail of location)	Collection is done in segregated manner or mostly mixed waste is being collected?	Whether any vulnerable points exists nearby where unsegregated waste is being dumped/ noticed?	Are the vehicles used for waste transportation from the collection point have separate dry or wet waste compartment?	Overall efficiency of the collection point in terms of coverage of households, collection of segregated waste etc.	Remarks (If Any)
		1.Segregated waste 2.Unsegregated waste 3.Mostly segregated waste	(Yes/No) (If Yes, then please specify location)	1. Separate compartments exists 2. No Separate Compartments (Please specify vehicle number also)	(Excellent/Good/Fair /Poor/Very Poor)	

Any general suggestion about improvement that can be done on collection route:

Any Garbage vulnerable points/location in the ward which needs to be cleaned by PBMC. Please specify location alongwith nearby landmark.

Annexure-III

Inspection format for *Landfill Site*

1. WASTE HANDLING AT LANDFILL SITE

INSTRUCTIONS:PBMC has designated areas for dumping different types of waste as mentioned below at landfill site:

i) Mix Waste
ii) Domestic Hazardous Waste
iii) Medical Waste
iv) Green Waste
v) Coconut Waste

The team has to refer to the designate site and make an assessment on following parameters

(A) Waste Dumping: Inspect that the waste is being dumped at designated place in landfill site. Yes ☐ No ☐ NA ☐

If No, then please explain the deviation in detail:

(B) Polythene/Plastic Waste: Inspect whether polythene waste is being dumped at the landfill site? Yes ☐ No ☐ NA ☐

(C) Composting: Inspect whether Pit Composting is being done or not at designated place in landfill site? Yes ☐ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

1555

Annexure: IV

Sl No	Name of Officer	Day on which inspection is to be carried out	Name of DRC	Sanitary Inspector's Name, Ward No. and Contact Number	All Collection Routes of
1	Shri A.S.P.S Raviprakash, IAS Shri Anand Vardhan Mishra, DANICS	**20/08/2024 (Tuesday)**	M/s GreenwormsAnarkali, Near MP Theater, Port Blair	Shri. Sudeep Singh Ward No - 1 and 2 Mob: **9434289509** Shri. Lalit Kr. Ekka Ward No - 3 Mob: **9531873755**	Ward No. 1,2,3
2	Dr Satyendra Singh Dursawat, IAS Shri Abhishek Gulia, DANICS	**21/08/2024 (Wednesday)**	M/s Island Boy Tech Solutions, Mohanpura	Shri. Satish Kumar Ward No - 5 Mob: **9434260152** Shri. Deepak Behari Ward No – 11 Mob:**9434282714**	Ward No. 5,11
3	Shri Vishwendra, DANICS Shri Jatinder Sohal, DANICS	**22/08/2024 (Thursday)**	M/s Paperman Environmental Solution, Near KaithanKalyanMandappan, Junglighat, Port Blair	Shri. Vijay Kumar Ward No – 6 Mob: **9734481765** Shri. B.Rudraiah Ward No – 7 Mob: **9474204001**	Ward No. 6,7
4	Ms. Purva Garg, IAS Shri Aditya Kumar Jha, DANICS	**23/08/2024 (Friday)**	M/s Shakti Plastic, VIP Road, Port Blair	Shri. Salamat Khan Ward No – 4 Mob:**9434278916** Shri. B.Rudraiah Ward No – 7 Mob: **9474204001**	Ward No. 4,7

Sl No	Name of Officer	Day on which inspection is to be carried out	Name of DRC	Sanitary Inspector's Name, Ward No. and Contact Number	All Collection Routes of
5	Ms Smitha R, IAS Shri Shiv Singh Meena, DANICS	**24/08/2024 (Saturday)**	M/s Shakti Plastic, VIP Road, Port Blair	Shri. Lalit Kr. Ekka Ward No – 8 Mob: **9531873755** Shri. L.Karuppaiah Ward No - 9 Mob:**9933250181** Shri. S ShailendraBehari Ward No – 13 Mob:**9474252171**	Ward No. 8,9,13
6	Ms Ranjana Deswal, DANICS Shri Jatinder Sohal, DANICS	**26/08/2024 (Monday)**	M/s ATR Venture School Line, Near Ranchi Basthi, Port Blair.	Shri. B.Rudraiah Ward No – 14 Mob: **9474204001** Shri. Thomas Varghese Ward No - 15 Mob: **9434285993**	Ward No. 14,15
7	Dr Anil Agarwal, DANICS Shri Abhishek Bhukal, DANICS	**27/08/2024 (Tuesday)**	M/s Emerald Recycling Unit Dollygunj, Near ITI College, Port Blair	Shri. Thomas Varghese Ward No - 16 Mob: **9434285993** Shri. Amit Bhattacharaya Ward No – 17 Mob: **9933214316**	Ward No. 16,17
8	Shri Azharuddin Zahiruddin Quazi, IAS Shri Anand Vardhan Mishra, DANICS	**28/08/2024 (Wednesday)**	M/s KSR Scarp & Traders, Bhatubasthi Parking, Port Blair	Shri. JatanLall Ward No - 19 Mob: **9933257824** Shri. SatyajitNaskar Ward No – 23 and 24 Mob: **9679531286**	Ward No. 19,23,24

1557

Sl No	Name of Officer	Day on which inspection is to be carried out	Name of DRC	Sanitary Inspector's Name, Ward No. and Contact Number	All Collection Routes of
9	Ms Nandini Maharaj, IAS Dr Nitin Shakya, DANICS	**29/08/2024 (Thursday)**	M/s Andamans 3R Solution, Garacharma, Port Blair	Shri. Sameer Ch.Das Ward No – 20 Mob:**7063903921** Shri. Umarn Ali Ward No – 21 and 22 Mob:**9679516100** Shri. Amit Bhattacharaya Ward No – 18 Mob: **9933214316**	Ward No. 20,21,22,18
10	Shri Kale Amit Marutirao, IAS Shri Shiv Singh Meena, DANICS	**30/08/2024 (Friday)**	M/s CM Scrap Trader, Brookshabad, Port Blair	Shri. Sanjeev Kumar Ward No – 10 Mob:**9434266734**	Ward No. 10
11	Shri Kumar L, IAS Ms Sapna Priya, DANICS	**31/08/2024 (Saturday)**	M/s Sankla Enterprises, Brookshabad, Port Blair	Shri. S ShailendraBehari Ward No – 12 Mob:**9474252171**	Ward No. 12
12	Shri Arjun Sharma, IAS Shri Vinayak Chamadia, IAS	**02/09/2024 (Monday)**	Landfill site	----	All wards

email : dirtpt.and@nic.in

Ph/ Fax: 03192-230225/230235

No. PA/Secy(Tpt)/2024/ 57

अण्डमान तथा निकोबार प्रशासन

ANDAMAN & NICOBAR ADMINISTRATION

परिवहन निदेशालय / **DIRECTORATE OF TRANSPORT**

आज़ादी का अमृत महोत्सव

Port Blair, dated 20 Aug, 2024

To,

The Secretary (S&T),
Andaman and Nicobar Administration,
Secretariat, Port Blair

Sub: Submission of report in respect of Solid Waste Management Sites – reg.

Ref: Order No.CS/PS/08/2024 dated 02.08.2024.

Sir,

With reference to the above mentioned order, undersigned along with Dr. Jatinder Sohal, Director (Transport) inspected the designated Solid Waste Management site as per Annexure- IV on 19.08.2024 at 12.00 Noon.

The detailed report (Annexure III) is enclosed along with photographs of the site for further necessary action.

Encl: A/A.

Yours faithfully

Vishwendra

(Vishwendra)
Secretary (Tpt)

Copy to:- The OSD to the Chief Secretary for kind information of the Chief Secretary.

Vishwendra

Secretary (Tpt)

1559

Annexure-III

Inspection format for Landfill site

1. WASTE HANDLING AT LANDFILL SITE

INSTRUCTIONS: PBMC has designated areas for dumping different types of waste as mentioned below at landfill site:

i. Mix Waste
ii. Domestic Hazardous Waste
iii. Medical Waste
iv. Green Waste
v. Coconut Waste

The team has to refer to the designate site and make an assessment on following parameters

(A) **Waste Dumping:** Inspect that the waste is being dumped atdesignated place in landfill site. Yes ☐ No ■ NA ☐

If No, then please explain the deviation in detail:

1. There is no specific earmarked space at Landfill site.
2. Waste was burning due to fire caused by Gaseous elements in the waste.

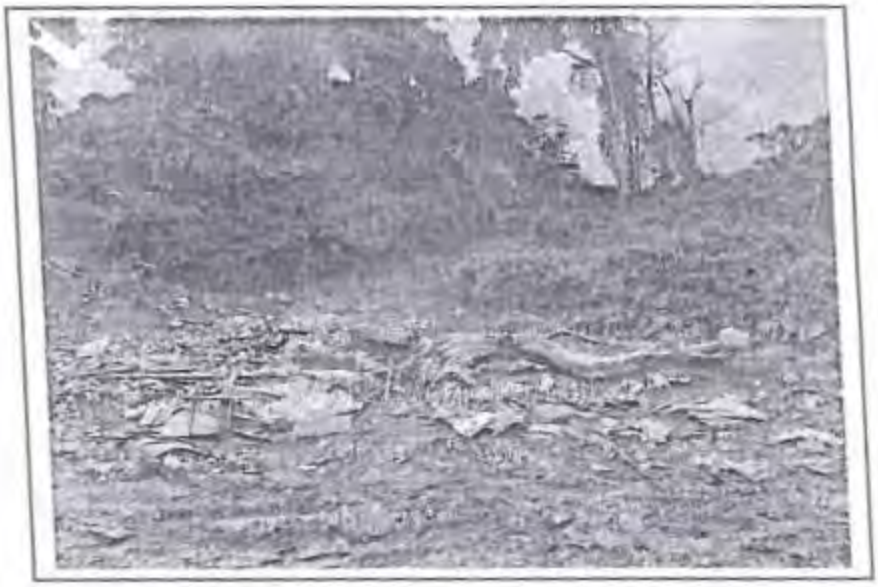


20-8-24

Vachinandha
20/08/2024

1560

3. Waste was scattered here and there, not contained at a particular place.



(B) **Polythene/plastic wastes:** Inspect whether Polythene waste is being dumped at the landfill site? Yes ■ No ☐ NA ☐

(C) **Composting:** Inspect whether Pit Composting is being done or not at designated place in landfill site? Yes ■ No ☐ NA ☐



Vadivendra
20/08/2024

1561

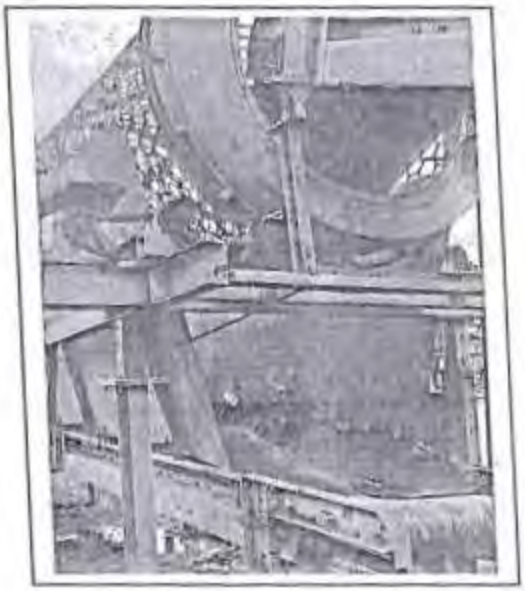
Observations/Notes/

Corrective actions, if any:

Observation-

Bioremediation/Biomining plant was found non-functional and machines were rotting due to expiry of the contract to Aqua Worlds Contractor. A heap of plastic bottles and waste was also found at the site.









Vishwanadha
20/08/2024

Corrective actions-

1. Biomining plant should be made functional at the earliest as it will lead to scientific segregation and management of waste
2. Landfill liners can be installed at the site for a designated dumping place as well as to prevent leachate to seep into the soil and groundwater.



3. For better management of Landfill, site can be divided into 4-5 blocks of approx. 20 meter length.
4. By forming different blocks, flammable material can be separated in 1-2 block and can be covered with soil, which will lead to less landfill fires and less Hazardous gas generation.
5. Composting at pits, on visual inspection was also not found scientific as septic or wet waste slurry was being used with pigs in the pit. In 1-2 pit, coconut dry waste was used to cover the pits. It should be combined with Bio-Composting.



20.8.24

Vadakumadom
20/08/2024

1563

email : dirtpt.and@nic.in

Ph/ Fax: 03192-230225/230235

No. PA/Secy(Tpt)/2024/ 58

अण्डमान तथा निकोबार प्रशासन

ANDAMAN & NICOBAR ADMINISTRATION

परिवहन निदेशालय / DIRECTORATE OF TRANSPORT

आज़ादी का अमृत महोत्सव

Port Blair, dated 23/29 Aug, 2024

To,

The Secretary (S&T),
Andaman and Nicobar Administration,
Secretariat, Port Blair

Sub: Submission of report in respect of Solid Waste Management Sites – reg.

Ref: Order No.CS/PS/08/2024 dated 19.08.2024.

Sir,

With reference to the above mentioned order, undersigned along with Dr. Jatinder Sohal, Director (Transport) inspected the designated Solid Waste Management site as per Annexure- IV on 22.08.2024 at 12.00 Noon.

The detailed report (Annexure I & II) is enclosed along with photographs of the site for further necessary action.

Yours faithfully

Vishwendra

(Vishwendra)
Secretary (Tpt)

Encl: A/A.

Copy to: - The OSD to the Chief Secretary for kind information of the Chief Secretary.

Vishwendra

Secretary (Tpt)

1564

Annexure-I

Inspection format for *Dry Resource Centers (DRCs)*

Dry Waste Resource Centre (DRC) Inspection Checklist

DRC Name/Location	**M/s Paperman Environmental Solution, Junglighat, Port Blair**
Date of Inspection	**22.08.2024**

INSTRUCTIONS:
Carefully review each item and mark the corresponding checkbox to indicate compliance or note any observations and areas for improvement. Use the 'Notes/Observations" section to provide additional details, corrective actions, and any required follow-up.

1. Waste storage and handing (at DRC)

1.1 Designated areas: check that space is designated and properly demarcated for receiving

(A)	Unsegregated waste (New waste collection point)	Yes ☐	No ■	NA ☐
(B)	Bailed dry waste	Yes ☐	No ■	NA ☐
(C)	Segregated waste including wet waste (Segregated)	Yes ☐	No ■	NA ☐
1.2	**Weighing equipment:** Check availability of weighing balance at DRC	Yes ■	No ☐	NA ☐
1.3	**Waste Transportation:** Inspect that the outgoing transportation is being done in segregated manner.	Yes ■	No ☐	NA ☐

Observations/Notes/Corrective actions, if any:





1. Designated places should be there for reception of waste material
2. No separate places for unsegregated, bailed and other wastes.

Jotinder 22.8.24

Vasumendra 22/08/2024

1565

2. Segregation Efficiency (at DRC)

2.1	**Segregation Table:** Verify that the segregation table is in good condition and is being used for segregation.	Yes ■	No ☐	NA ☐
2.2	**Proper Segregation:** Verify that waste is segregated in respective Bins (Wet Waste, Dry Waste, Inert etc)	Yes ☐	No ■	NA ☐
2.3	**Waste containers:** Check that waste is stored in proper and labeled containers/bins.	Yes ☐	No ■	NA ☐

Observations/Notes/Corrective actions, if any:

Segregation Table-



Observations-

1. Waste is not segregated in labeled bins and not stored in labeled containers

3. Safety Measures (at DRC)

3.1	**Protective Gears:** Please check whether the workers have appropriate protection equipment/gears like Gloves, Safety boots and mask etc.	Yes ■	No ☐	NA ☐
3.2	**CCTV coverage:** Check whether CCTV is operational or not.	Yes ■	No ☐	NA ☐

Observations/Notes/Corrective actions, if any:

4. Composting efficiency (Applicable at Brookshabad, DRC)

4.1	**Composting:** Please check whether all the composting capacity is being put to use	Yes ☐	No ☐	NA ■

If no, then please mention details for idle capacity:

Jatinder

Vishwendra
22/08/2024

1566

Annexure-II

Inspection format for Collection Rout

Ward No.	Collection Route (Please provide detail of location)	Collection is done in segregated manner or mostly mixed waste is being collected?	Whether any vulnerable points exist nearby where unsegregated waste is being dumped/ noticed?	Are the vehicles used for waste transportation from the collection points have separate dry or wet waste compartment?	Overall efficiency of the collection point in terms of coverage of households, collection of segregated waste etc.	Remarks (If Any)
		1.Segregated waste 2.Unsegregated waste 3.Mostly segregated waste	(Yes/No) (If Yes, then please specify location)	1.Separate compartments exists 2.No Separate compartments (Please specify vehicle number also)	(Excellent/Good/Fair / Poor/Very Poor)	
06	Route No. 03, NGO Colony	Mostly Mixed	Yes, Sunday Market Area**(1)- Pictures in GVP Section**	No Separate compartments	Fair	
06	Route No. 06 Middle Point, Opp. State Library	Mostly mixed	Yes, Opposite TGCE **(2)**	No Separate compartments	Good	
06	Route No.07 Phoenix Bay Road, Near Masjid	Mixed	Yes, Route No.02 , Near Masjid**(3)**	No Separate compartments	Good	

Jatinder

Vallimadhe

1567

07	Route No.10,11 ,12 Mubarak land, Delanipu r	Mostly mixed	Yes, in front of Collection center Residential Area**(4)**	No Separate compartments	Fair	
07	Route No. 07, 08, 09 Prem Nagar Junction	Mostly mixed	Yes, Near Electricity Site Office**(5)**	No Separate compartments	Good	
07	Route No. 01-06, Prem Nagar	Mostly mixed	Yes, in Prem Nagar, various points**(6)**	No Separate compartments	Good	

Jatinder

Vaishnavi
21/08/2024

1568

Any general suggestion about improvement that can be done on collection route:

1. Sunday Market in Ward No.06 contributes to a lot of waste generation and take around 2-3 days for clearance. Vendors can be strictly advised to take waste along with them, otherwise they would be challaned.
2. Collection points are not properly demarcated, in some places waste is being seeped into water and soil. Rainy season contributes to this even more, leading to harmful effects on soil and groundwater.
3. Residents in many places need to be made aware and sensitized as waste being thrown in drains and culvert, leading to permanent accumulation of waste, not being cleaned due to less approach.
4. Ward No.06 comprises of around 960 commercial establishment, which becomes more challenging to manage large amount of waste generation. Shopkeepers need to be sensitized and can be challaned , if repeatedly throwing waste in non-designated places.

Jatinder

Vishwanadhe
22/08/2024

1569

Any Garbage vulnerable points/location in the ward which needs to be cleaned by PBMC . Please specify location along with nearby landmark

1. Sunday Market Area-






2. Opposite State Library & Opp. TGCE




Jatinder

Vachanalaya
22/08/2024

1570

03. Route No. 02, Near Phoenix Bay Masjid



04. In front of Collection center Residential Area



05. Near Electricity Site Office



06. _Prem Nagar Residential Area



Jatinder 22.8.24

Vsehrawat 22/08/2024

1571

email : dirtpt.and@nic.in

Ph/ Fax: 03192-230225/230235

No. PA/Secy(Tpt)/2024/ 58

अण्डमान तथा निकोबार प्रशासन

ANDAMAN & NICOBAR ADMINISTRATION

परिवहन निदेशालय / DIRECTORATE OF TRANSPORT

आज़ादी का अमृत महोत्सव

Port Blair, dated 23/Aug, 2024

To,

The Secretary (S&T),
Andaman and Nicobar Administration,
Secretariat, Port Blair

Sub: Submission of report in respect of Solid Waste Management Sites – reg.

Ref: Order No.CS/PS/08/2024 dated 19.08.2024.

Sir,

With reference to the above mentioned order, undersigned along with Dr. Jatinder Sohal, Director (Transport) inspected the designated Solid Waste Management site as per Annexure- IV on 22.08.2024 at 12.00 Noon.

The detailed report (Annexure I & II) is enclosed along with photographs of the site for further necessary action.

Yours faithfully

Vishwendra

(Vishwendra)
Secretary (Tpt)

Encl: A/A.

Copy to: - The OSD to the Chief Secretary for kind information of the Chief Secretary.

Vishwendra

Secretary (Tpt)

1572

Annexure-I

Inspection format for *Dry Resource Centers (DRCs)*

Dry Waste Resource Centre (DRC) Inspection Checklist

DRC Name/Location	**M/s Paperman Environmental Solution, Junglighat, Port Blair**
Date of Inspection	**22.08.2024**

INSTRUCTIONS:
Carefully review each item and mark the corresponding checkbox to indicate compliance or note any observations and areas for improvement. Use the 'Notes/Observations" section to provide additional details, corrective actions, and any required follow-up.

1. Waste storage and handing (at DRC)

1.1 Designated areas: check that space is designated and properly demarcated for receiving

(A)	Unsegregated waste (New waste collection point)	Yes ☐	No ■	NA ☐
(B)	Bailed dry waste	Yes ☐	No ■	NA ☐
(C)	Segregated waste including wet waste (Segregated)	Yes ☐	No ■	NA ☐
1.2	**Weighing equipment:** Check availability of weighing balance at DRC	Yes ■	No ☐	NA ☐
1.3	**Waste Transportation:** Inspect that the outgoing transportation is being done in segregated manner.	Yes ■	No ☐	NA ☐

Observations/Notes/Corrective actions, if any:





1. Designated places should be there for reception of waste material
2. No separate places for unsegregated, bailed and other wastes

Jatinder 22.8.24

Venkumudra 22/08/2024

2. Segregation Efficiency (at DRC)

2.1	**Segregation Table:** Verify that the segregation table is in good condition and is being used for segregation.	Yes ■	No ☐	NA ☐
2.2	**Proper Segregation:** Verify that waste is segregated in respective Bins (Wet Waste, Dry Waste, Inert etc)	Yes ☐	No ■	NA ☐
2.3	**Waste containers:** Check that waste is stored in proper and labeled containers/bins.	Yes ☐	No ■	NA ☐

Observations/Notes/Corrective actions, if any:

Segregation Table-



Observations-

1. Waste is not segregated in labeled bins and not stored in labeled containers

3. Safety Measures (at DRC)

3.1	**Protective Gears:** Please check whether the workers have appropriate protection equipment/gears like Gloves, Safety boots and mask etc.	Yes ■	No ☐	NA ☐
3.2	**CCTV coverage:** Check whether CCTV is operational or not.	Yes ■	No ☐	NA ☐

Observations/Notes/Corrective actions, if any:

4. Composting efficiency (Applicable at Brookshabad, DRC)

4.1	**Composting:** Please check whether all the composting capacity is being put to use	Yes ☐	No ☐	NA ■

If no, then please mention details for idle capacity:

Jatinder

Vikramjeet
22/06/2024

1574

Annexure-II

Inspection format for Collection Rout

Ward No.	Collection Route (Please provide detail of location)	Collection is done in segregated manner or mostly mixed waste is being collected?	Whether any vulnerable points exist nearby where unsegregated waste is being dumped/ noticed?	Are the vehicles used for waste transportation from the collection points have separate dry or wet waste compartment?	Overall efficiency of the collection point in terms of coverage of households, collection of segregated waste etc.	Remarks (If Any)
		1.Segregated waste 2.Unsegregated waste 3.Mostly segregated waste	(Yes/No) (If Yes, then please specify location)	1.Separate compartments exists 2.No Separate compartments (Please specify vehicle number also)	(Excellent/Good/Fair / Poor/Very Poor)	
06	Route No. 03, NGO Colony	Mostly Mixed	Yes, Sunday Market Area**(1)- Pictures in GVP Section**	No Separate compartments	Fair	
06	Route No. 06 Middle Point, Opp. State Library	Mostly mixed	Yes, Opposite TGCE **(2)**	No Separate compartments	Good	
06	Route No.07 Phoenix Bay Road, Near Masjid	Mixed	Yes, Route No.02 , Near Masjid**(3)**	No Separate compartments	Good	

Jatinder

Vellumendra

07	Route No.10,11 ,12 Mubarak land, Delanipu r	Mostly mixed	Yes, in front of Collection center Residential Area**(4)**	No Separate compartments	Fair	
07	Route No. 07, 08, 09 Prem Nagar Junction	Mostly mixed	Yes, Near Electricity Site Office**(5)**	No Separate compartments	Good	
07	Route No. 01-06, Prem Nagar	Mostly mixed	Yes, in Prem Nagar, various points**(6)**	No Separate compartments	Good	

Jatinder

Vachumedia
22/08/2024

1576

Any general suggestion about improvement that can be done on collection route:

1. Sunday Market in Ward No.06 contributes to a lot of waste generation and take around 2-3 days for clearance. Vendors can be strictly advised to take waste along with them, otherwise they would be challaned.
2. Collection points are not properly demarcated, in some places waste is being seeped into water and soil. Rainy season contributes to this even more, leading to harmful effects on soil and groundwater.
3. Residents in many places need to be made aware and sensitized as waste being thrown in drains and culvert, leading to permanent accumulation of waste, not being cleaned due to less approach.
4. Ward No.06 comprises of around 960 commercial establishment, which becomes more challenging to manage large amount of waste generation. Shopkeepers need to be sensitized and can be challaned , if repeatedly throwing waste in non-designated places.

Jatinder

Vishwanadha
22/08/2024

1577

Any Garbage vulnerable points/location in the ward which needs to be cleaned by PBMC . Please specify location along with nearby landmark

1. Sunday Market Area-






2. Opposite State Library & Opp. TGCE




Jatinder

Vathsendra
22/08/2024

1578

03. Route No. 02, Near Phoenix Bay Masjid



04. In front of Collection center Residential Area



05. Near Electricity Site Office



06. _Prem Nagar Residential Area



Jatinder 22.8.24

Vaishnavi 22/08/2024

1579

F.No. CS/PS/08/2024
अण्डमानतथानिकोबारप्रशासन
ANDAMAN AND NICOBAR ADMINISTRATION
सचिवालय/SECRETARIAT
*****

Port Blair, dated the 19th Aug, 2024

ORDER

1. In continuation to Order No. CS/PS/06/2024 dated 18.06.2024, CS/PS/06/2024 dated 06.07.2024, CS/PS/07/2024 dated 20.07.2024 and CS/PS/08/2024 dated 02.08.2024 and with a view to ensure effective implementation of collection, processing and disposal of Solid Waste in PBMC area, teams of senior officers are hereby formed and assigned the duty of conducting inspections at designated Solid Waste Management Sites (Dry Resource Centres/Collection Routes/Landfill Site). The composition of teams alongwith their respective areas of inspection is mentioned in **Annexure-IV**.

2. The teams shall conduct inspection ***as per schedule*** in morning hours and assess the effectiveness of collection, transportation and segregation operations, as applicable.

3. As discussed in the Senior Officers Meeting, the teams shall also identify garbage vulnerable points where cleaning needs to be carried out by PBMC.

4. The teams shall document findings accurately using the designated inspection checklist as mentioned below

A.	**Inspection format for DRCs**	**: Annexure-I**
B.	**Inspection format for Collection Routes**	**: Annexure-II**
C.	**Inspection format for Landfill Site**	**: Annexure-III**

5. All teams shall submit report to Science & Technology, Department on or before every Saturday without fail. Secretary (S&T) shall compile the reports and submit a consolidated report to undersigned **every Monday @1100 Hrs without fail**.

(Keshav Chandra)
Chief Secretary
A&N Administration

To

All Officers as per the Annexure-IV.

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1580 Ms Purva Garg IAS
Aditya Kr. Jha DANICS

Annexure-I

Inspection format for *Dry Resource Centers (DRCs)*

Dry Waste Resource Centre (DRC) Inspection Checklist

DRC Name/Location Shakti Plastic, UIP Road

Date of Inspection 23/2/2024

INSTRUCTIONS:
Carefully review each item and mark the corresponding checkbox to indicate compliance or note any observations and areas for improvement. Use the "Notes/Observations" section to provide additional details, corrective actions, and any required follow-up.

1. WASTE STORAGE AND HANDLING (AT DRC)

1.1 Designated Areas: Check that space is designated and properly demarcated for receiving

(A) Unsegregated waste (New waste collection point)	Yes ☑	No ☐	NA ☐
(B) Bailed dry waste	Yes ☑	No ☐	NA ☐
(C) Segregated waste including wet waste (Segregated)	Yes ☐	No ☑	NA ☐
1.2 Weighing equipment: Check availability of weighing balance at DRC	Yes ☑	No ☐	NA ☐
1.3 Waste Transportation: Inspect that the outgoing transportation is being done in segregated manner.	Yes ☑	No ☐	NA ☐

Observations/Notes/ Corrective actions, if any:
(i) Space constraint for segregation
(ii) Space constraint for bailed item
(iii) table is small.

2. SEGREGATION EFFICIENCY (AT DRC)

2.1 Segregation Table: Verify that the segregation table is in good condition and is being used for segregation.	Yes ☐	No ☑	NA ☐
2.2 Proper Segregation: Verify that waste is segregated in respective Bins (Wet Waste, Dry Waste, Inert etc.).	Yes ☑	No ☐	NA ☐
2.3 Waste Containers: Check that waste is stored in proper and labeled containers/bins.	Yes ☑	No ☐	NA ☐

Observations/Notes/ Corrective actions, if any:
(i) Segregation table is small.
(ii) Space constraint for segregation

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1581

3. SAFETY MEASURES(AT DRC)

3.1 Protective Gears: Please check whether the workers have appropriate protection equipment/gears like Gloves, safety boots and mask etc. Yes ☑ No ☐ NA ☐

3.2 CCTV coverage: Check whether CCTV is operational or not. Yes ☑ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

(1) toilet facility is not there.
(2) Electricity Power cut issue

4. COMPOSTING EFFICIENCY (~~APPLICABLE AT BROOKSHABAD, DRC~~)

4.1 Composting: Please check whether all the compositing capacity is being put to use Yes ☑ No ☐ NA ☐

If no, then please mention details for idle capacity:

1) There must be Minimum No of staff.
2) Manpower deployed by DRC should be defined by PBMC in the tender doc prop. to the amount of waste being received at DRC.
(3) overall cleanliness and Maintenance of DRC should be Maintained by the DRC contractor.

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Annexure-II

Inspection format for *Collection Route*

Ward No.	Collection Route (Please provide detail of location)	Collection is done in segregated manner or mostly mixed waste is being collected?	Whether any vulnerable points exists nearby where unsegregated waste is being dumped/ noticed?	Are the vehicles used for waste transportation from the collection point have separate dry or wet waste compartment?	Overall efficiency of the collection point in terms of coverage of households, collection of segregated waste etc.	Remarks (If Any)
		1.Segregated waste 2.Unsegregated waste 3.Mostly segregated waste	(Yes/No) (If Yes, then please specify location)	1. Separate compartments exists 2. No Separate Compartments (Please specify vehicle number also)	(Excellent/Good/Fair /Poor/Very Poor)	
4	(13) Bazar area Digambar, Shastri Nagar	3	Mohanpura Mkt.	No	Good	W/13 – Daily ~~Daily~~ / Half Garbage M/Pura
	Mohan Pura, VIP Road					Alternate waste W/5
57	(12) Jhungalkhad Prem Nagar	3	Delanipura Near Community Hall	NO	Good	The waste W/no-7 clear
	Delanipura		Near Amar Store P/Nagar			HQ best transfer hand

Any general suggestion about improvement that can be done on collection route:

(I) Cover in Collection area
(II) Gate
(III) Washroom
(IV) Bigger segregation table
(V) Segregated items are picked up
(VI) Health checkup & Health card to workers (Ayush Mandal)

Any Garbage vulnerable points/location in the ward which needs to be cleaned by PBMC. Please specify location alongwith nearby landmark.

(I) Mohanpura Market
(II) Venkateshwara.
(III) Opp. St Thomas Church W/no-6 – Spl- Cleanliness drive near Garbage area

NA ☐

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Annexure-III

Inspection format for *Landfill Site*

1. WASTE HANDLING AT LANDFILL SITE

INSTRUCTIONS: PBMC has designated areas for dumping different types of waste as mentioned below at landfill site:

i) Mix Waste
ii) Domestic Hazardous Waste
iii) Medical Waste
iv) Green Waste
v) Coconut Waste

The team has to refer to the designate site and make an assessment on following parametera

(A) Waste Dumping: Inspect that the waste is being dumped at designated place in landfill site. Yes ☐ No ☐ NA ☐

If No, then please explain the deviation in detail:

(B) Polythene/Plastic Waste: Inspect whether polythene waste is being dumped at the landfill site? Yes ☐ No ☐ NA ☐

(C) Composting: Inspect whether Pit Composting is being done or not at designated place in landfill site? Yes ☐ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

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26/08/2024 330

F. No. PS/Secy(GA/Power/CS & CA& CA)/2023-24

अंडमान तथा निकोबार प्रशासन

ANDAMAN & NICOBAR ADMINISTRATION

सचिवालय/**SECRETARIAT**

******

Port Blair, Dated the 29th August, 2024

To,

The Secretary (Sci. & Tech)
A & N Administration
Port Blair

Sub: Submission of Report in respect of Solid Waste Management Sites.

Ref: Order No. CS/PS/08/2024 dated 19.08.2024

Sir,

With reference to the above Order, undersigned alongwith Sh. Manoj, Supervisor (PBMC) & Sh. Jesuraj, Supervisor (PBMC) inspected M/s ATR Venture, School Line and routes of Ward No. 14 & 15 as per Annexure IV on 29.08.2024 at 10.00 AM.

The detailed report (Annexure I & II) alongwith are enclosed for further necessary action.

Yours faithfully

(Ranjana Deswal)
Secretary (GA/Power/CS & CA)

Encl: A/A
Copy to: The OSD to Chief Secretary for kind information of Chief Secretary.

Secretary (GA /Power/CS &CA)

Annexure-I

Inspection format for Dry Resource Centers (DRCs)

Dry Waste Resource Centre (DRC) Inspection Checklist

DRC Name/Location: M/s ATR Venture, School line

Date of Inspection: 29/08/2024

INSTRUCTIONS:
Carefully review each item and mark the corresponding checkbox to indicate compliance or note any observations and areas for improvement. Use the "Notes/Observations" section to provide additional details, corrective actions, and any required follow-up.

1. WASTE STORAGE AND HANDLING (AT DRC)

1.1 Designated Areas: Check that space is designated and properly demarcated for receiving

(A) Unsegregated waste (New waste collection point) — Yes ☐ No ☑ NA ☐

(B) Bailed dry waste — Yes ☑ No ☐ NA ☐

(C) Segregated waste including wet waste (Segregated) — Yes ☑ No ☐ NA ☐

1.2 Weighing equipment: Check availability of weighing balance at DRC — Yes ☐ No ☑ NA ☐

1.3 Waste Transportation: Inspect that the outgoing transportation is being done in segregated manner. — Yes ☑ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

- Tetra pack, MLP & cloth waste are zero value and dumped outside the DRC, not transporting to mainland.

2. SEGREGATION EFFICIENCY (AT DRC)

2.1 Segregation Table: Verify that the segregation table is in good condition and is being used for segregation. — Yes ☐ No ☑ NA ☐

2.2 Proper Segregation: Verify that waste is segregated in respective Bins (Wet Waste, Dry Waste, Inert etc.). — Yes ☐ No ☑ NA ☐

2.3 Waste Containers: Check that waste is stored in proper and labeled containers/bins. — Yes ☐ No ☑ NA ☐

Observations/Notes/ Corrective actions, if any:

- Separate table to be provided to Sanitary workers at DRC
- Separate bins to be installed as for Wet, DRY etc.
- Waste Bins to be labelled
- No Space at DRC Almost a week waste of 50 Tonnes lying outside in open.

1586

3. SAFETY MEASURES(AT DRC)

3.1 **Protective Gears:**Please check whether the workers have appropriate protection equipment/gears like Gloves, safety boots and mask etc. Yes ☐ No ☑

3.2 **CCTV coverage:** Check whether CCTV is operational or not. Yes ☑ No ☐

Observations/Notes/ Corrective actions, if any:

- Sanitary workers to wear appropriate protection gears
- Monitors to be installed for CCTV coverage.

4. COMPOSTING EFFICIENCY (APPLICABLE AT BROOKSHABAD, DRC)

4.1 **Composting:**Please check whether all the compositing capacity is being put to use Yes ☐ No ☐ ✓

If no, then please mention details for idle capacity:

Annexure-II

Inspection format for Collection Route

Ward No.	Collection Route (Please provide detail of location)	Collection is done in segregated manner or mostly mixed waste is being collected? 1.Segregated waste 2.Unsegregated waste 3.Mostly segregated waste	Whether any vulnerable points exists nearby where unsegregated waste is being dumped/ noticed? (Yes/No) (If Yes, then please specify location)	Are the vehicles used for waste transportation from the collection point have separate dry or wet waste compartment? 1. Separate compartments exists 2. No Separate Compartments (Please specify vehicle number also)	Overall efficiency of the collection point in terms of coverage of households, collection of segregated waste etc. (Excellent/Good/Fair /Poor/Very Poor)	Remarks (If Any)
14	Route No:10	Mostly segregated.	(Yes) Route No 10	- No -	- Good -	-
15	Route No 6	Mostly segregated	(No)	- No -	- Good -	-
	Jawahar colony	"	(No)	- No -	- Good -	-
	Hucko colony					

Any general suggestion about improvement that can be done on collection route:

- Shortage of Staff in both the wards.
- Protective gears to be provided to Sanitary workers.
- Shed with boundary required at collection point (in all collection points)
- Strictly fines to be imposed for the households those are not providing segregate wastes.
- Suitable Alternative for carrying waste from Households to Collection Pt. be given to Sanitary Staff.

31/08/2024

Annexure-I

Inspection format for Dry Resource Centers (DRCs)

Dry Waste Resource Centre (DRC) Inspection Checklist

DRC Name/Location M/s Saukla Enterprises, Brookshabad, Port Blair.

Date of Inspection 30/08/2024

INSTRUCTIONS:
Carefully review each item and mark the corresponding checkbox to indicate compliance or note any observations and areas for improvement. Use the "Notes/Observations" section to provide additional details, corrective actions, and any required follow-up.

1. WASTE STORAGE AND HANDLING (AT DRC)

1.1 Designated Areas: Check that space is designated and properly demarcated for receiving

(A) Unsegregated waste (New waste collection point)	Yes ☑	No ☐	NA ☐
(B) Bailed dry waste	Yes ☑	No ☐	NA ☐
(C) Segregated waste including wet waste (Segregated)	Yes ☑	No ☐	NA ☐
1.2 Weighing equipment: Check availability of weighing balance at DRC	Yes ☑	No ☐	NA ☐
1.3 Waste Transportation: Inspect that the outgoing transportation is being done in segregated manner.	Yes ☐	No ☐	NA ☑

Observations/Notes/ Corrective actions, if any:

DRC is not operational since 27th Aug'24.
Reason cited: 1) Economically unviable
2) Workers unwilling to work
3) Dumping of altogether unsegregated waste.

2. SEGREGATION EFFICIENCY (AT DRC)

2.1 Segregation Table: Verify that the segregation table is in good condition and is being used for segregation.	Yes ☐	No ☑	NA ☐
2.2 Proper Segregation: Verify that waste is segregated in respective Bins (Wet Waste, Dry Waste, Inert etc.)	Yes ☐	No ☐	NA ☑
2.3 Waste Containers: Check that waste is stored in proper and labeled containers/bins.	Yes ☐	No ☐	NA ☑

Observations/Notes/ Corrective actions, if any:

DRC not operational.

329

3. SAFETY MEASURES(AT DRC)

3.1 Protective Gears: Please check whether the workers have appropriate protection equipment/gears like Gloves, safety boots and mask etc.

Yes ☑ No ☐ NA ☐

3.2 CCTV coverage: Check whether CCTV is operational or not.

Yes ☑ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

Hygiene issue crops up as although at source waste is segregated, while when brought to DRC it's again mixed/ unsegregated resulting into insect-infestations in no time.

4. COMPOSTING EFFICIENCY (APPLICABLE AT BROOKSHABAD, DRC)

4.1 Composting: Please check whether all the compositing capacity is being put to use

Yes ☑ No ☐ NA ☐

If no, then please mention details for idle capacity:

Annexure-II

Inspection format for *Collection Route*

Ward No.	Collection Route (Please provide detail of location)	Collection is done in segregated manner or mostly mixed waste is being collected? 1.Segregated waste 2.Unsegregated waste 3.Mostly segregated waste	Whether any vulnerable points exists nearby where unsegregated waste is being dumped/ noticed? (Yes/No) (If Yes, then please specify location)	Are the vehicles used for waste transportation from the collection point have separate dry or wet waste compartment? 1. Separate compartments exists 2. No Separate Compartments (Please specify vehicle number also)	Overall efficiency of the collection point in terms of coverage of households, collection of segregated waste etc. (Excellent/Good/Fair /Poor/Very Poor)	Remarks (If Any)
12	H Routes	Mostly segregated.	Yes, near Type IV quarters	No separate compartments.	Fair.	

Any general suggestion about improvement that can be done on collection route:

—

Any Garbage vulnerable points/location in the ward which needs to be cleaned by PBMC. Please specify location alongwith nearby landmark.

—

1591

Annexure-III

Inspection format for *Landfill Site*

1. WASTE HANDLING AT LANDFILL SITE

N/A.

INSTRUCTIONS: PBMC has designated areas for dumping different types of waste as mentioned below at landfill site:

i) Mix Waste
ii) Domestic Hazardous Waste
iii) Medical Waste
iv) Green Waste
v) Coconut Waste

The team has to refer to the designate site and make an assessment on following parameters

(A) Waste Dumping: Inspect that the waste is being dumped at designated place in landfill site. Yes ☐ No ☐ NA ☐

If No, then please explain the deviation in detail:

(B) Polythene/Plastic Waste: Inspect whether polythene waste is being dumped at the landfill site? Yes ☐ No ☐ NA ☐

(C) Composting: Inspect whether Pit Composting is being done or not at designated place in landfill site? Yes ☐ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

1592

F No. SPS/1/Secy(SW/AH&VS/Edn)/2024/1247

अण्डमान तथा निकोबार प्रशासन

Andaman & Nicobar Administration

समाज कल्याण निदेशालय

Office of Secretary Social Welfare

गोल घर पोर्ट ब्लेयर

Goal Ghar, Port Blair

Port Blair, dated the 31st Aug, 2024.

To

The Secretary(S&T)
A & N Administration,
Secretariat,
Port Blair.

Sub: Submission of Report in respect of Solid Waste Management sites-reg.
Ref: Order No. CS/PS/08/2024 dated 19/08/2024.

Sir,

With reference to the above order, undersigned inspected the designated Solid Waste Management Site as per Annexure- IV on 31/08/2024.

The detailed report (Annexure-I & Annexure-II) is enclosed for further necessary action.

Yours faithfully,

31/8/24

(L.Kumar)
Secretary(SW/AH&VS/Edn.&Sports)

Copy to:-

✓ The OSD to Chief Secretary for kind information of Chief Secretary.

Secretary(SW/AH&VS/Edn.&Sports)

Annexure-I

Inspection format for Dry Resource Centers (DRC's)

Dry Waste Resource Centre (DRC) Inspection Checklist

DRC Name/Location: M/s Sankla Enterprises, Brookebabad, Post Bhiwadi.

Date of Inspection: 30/08/2024

INSTRUCTIONS:
Carefully review each item and mark the corresponding checkbox to indicate compliance or note any observations and areas for improvement. Use the "Notes/Observations" section to provide additional details, corrective actions, and any required follow-up.

1. WASTE STORAGE AND HANDLING (AT DRC)

1.1 Designated Areas: Check that space is designated and properly demarcated for storing

(A) Unsegregated waste (New waste collection point) — Yes ✓ No ☐ NA ☐

(B) Bailed dry waste — Yes ✓ No ☐ NA ☐

(C) Segregated waste including wet waste (Segregated) — Yes ✓ No ☐ NA ☐

1.2 Weighing equipment: Check availability of weighing balance in DRC — Yes ✓ No ☐ NA ☐

1.3 Waste Transfer: Confirm waste transfer and documentation is being done in segregated manner — Yes ☐ No ☐ NA —

Observations/Notes/
Corrective actions, if any:

DRC is not operational since 27th Aug'24
Reason cited: 1) Economically unviable
2) Workers unwilling to work
3) Dumping of altogether unsegregated waste.

2. SEGREGATION EFFICIENCY (AT DRC)

2.1 Segregation Table: Verify that the segregation table is in good condition and is being used for segregation. — Yes ☐ No ✓ NA ☐

2.2 Proper Segregation: Verify that waste is segregated in respective Bins (Wet Waste, Dry Waste, Inert etc.) — Yes ☐ No ☐ NA —

2.3 Waste Containers: Check that waste is stored in proper and labeled containers/bins. — Yes ☐ No ☐ NA —

Observations/Notes/
Corrective actions, if any:

DRC not operational.

1594

3. SAFETY MEASURES(AT DRC)

3.1 Protective Gears:Please check whether the workers have appropriate protection equipment/gears like Gloves, safety boots and mask etc

Yes ✓ No ☐ NA ☐

3.2 CCTV coverage: Check whether CCTV is operational or not

Yes ✓ No ☐ NA ☐

Observations/Notes/ Corrective actions, if any:

Hygiene issue crops up as although at source waste is segregated, while when brought to DRC it's again mixed/ unsegregated resulting into Fecal-Infected in nature.

4. COMPOSTING EFFICIENCY (APPLICABLE AT BHOOMSHABAD, DRC)

4.1 Composting:Please check whether all the composting capacity is being put to use

Yes ✓ No ☐ NA ☐

If no, then please mention details for idle capacity:

1595

Ward No.	Collection Route (Please provide detail of location)	Collection is done in segregated manner or mostly mixed waste is being collected? 1.Segregated waste 2.Unsegregated Waste 3.Mostly segregated waste	W w e m u w d n (/ (I s
12.	LL Rules	Mostly segregated.	

Any general suggestion about improvement that c

—

Any Garbage vulnerable points/location in the w nearby landmark.

—

1596

Annexure-IV

Inspection format for Landfill Site

1. WASTE HANDLING AT LANDFILL SITE

N/A.

INSTRUCTION: PMC has designated areas for dumping different types of waste as mentioned below at landfill site:

i) Mix Waste
ii) Domestic Hazardous Waste
iii) Medical Waste
iv) Green Waste
v) Coconut Waste

The team has to refer to the designate site and make an assessment on following parameters

(A) **Waste Dumping:** Inspect that the waste is being dumped at designated place in landfill site. Yes ☐ No ☐ NA ☐

If No, then please explain the deviation in detail:

(B) **Polythene/Plastic Waste:** Inspect whether polythene waste is being dumped at the landfill site? Yes ☐ No ☐ NA ☐

(C) **Composting:** Inspect whether Pit Composting is being done or not at designated place in landfill site? Yes ☐ No ☐ NA ☐

Observations/Notes/
Corrective actions, if any:

1597

ANNEXURE-I A

Waste Collection details for the month of May 2024

Date	Total (kg)	Dry waste (kg)	Wet waste (kg)	Domestic Hazardous Waste & Sanitary Waste (kg)	Inert/ reject waste(kg)
01-05-2024	41,530.00	18,143	21,847	80	1,460
02-05-2024	78,619.00	34,347	41,358	150	2,764
03-05-2024	72,639.00	31,733	38,213	139	2,554
04-05-2024	72,669.00	31,747	38,228	139	2,555
05-05-2024	26,497.00	11,576	13,938	51	932
06-05-2024	78,110.00	34,125	41,090	149	2,746
07-05-2024	70,745.00	30,907	37,216	135	2,487
08-05-2024	62,981.00	27,515	33,132	120	2,214
09-05-2024	46,494.00	20,312	24,458	89	1,635
10-05-2024	73,550.00	32,132	38,691	141	2,586
11-05-2024	70,446.00	30,776	37,058	135	2,477
12-05-2024	27,551.00	12,036	14,493	53	969
13-05-2024	77,932.00	34,047	40,996	149	2,740
14-05-2024	64,043.00	27,979	33,690	122	2,252
15-05-2024	58,114.00	25,389	30,571	111	2,043
16-05-2024	73,340.00	32,041	38,581	140	2,578
17-05-2024	46,505.00	20,317	24,464	89	1,635
18-05-2024	65,936.00	28,806	34,686	126	2,318
19-05-2024	29,386.00	12,838	15,459	56	1,033
20-05-2024	65,383.00	28,564	34,395	125	2,299
21-05-2024	54,231.00	23,692	28,528	104	1,907
22-05-2024	51,542.00	22,517	27,114	99	1,812
23-05-2024	48,891.00	21,359	25,719	94	1,719
24-05-2024	59,794.00	26,123	31,455	114	2,102
25-05-2024	50,322.00	21,985	26,472	96	1,769
26-05-2024	36,134.00	15,786	19,008	69	1,271
27-05-2024	76,838.00	33,569	40,421	147	2,701
28-05-2024	52,905.00	23,113	27,831	101	1,860
29-05-2024	57,016.00	24,909	29,993	109	2,005
30-05-2024	44,478.00	19,431	23,398	85	1,564
31-05-2024	55,615.00	24,297	29,257	106	1,955
Total waste (kg)	**17,90,236.00**	**7,82,111.00**	**9,41,760.00**	**3,423.00**	**62,942.00**
Average TPD	**57.75**	**25.23**	**30.38**	**0.11**	**2.03**

1598

Waste Collection details for the month of June 2024

Date	Total (kg)	Dry waste (kg)	Wet waste (kg)	Domestic Hazardous Waste & Sanitary Waste (kg)	Inert/ reject waste(kg)
01-06-2024	61,972	27,609	30,920	175	3,268
02-06-2024	25,594	11,403	12,769	72	1,350
03-06-2024	68,389	30,468	33,899	205	3,817
04-06-2024	47,406	21,120	23,597	137	2,552
05-06-2024	42,198	18,800	21,498	97	1,803
06-06-2024	42,048	18,733	21,257	105	1,953
07-06-2024	50,440	22,472	25,165	143	2,660
08-06-2024	54,216	24,154	27,050	153	2,859
09-06-2024	25,624	11,416	12,785	72	1,351
10-06-2024	63,603	28,336	31,234	205	3,828
11-06-2024	57,943	25,814	28,910	164	3,055
12-06-2024	47,555	21,186	23,726	135	2,508
13-06-2024	49,766	22,171	24,886	138	2,571
14-06-2024	52,143	23,230	26,017	147	2,749
15-06-2024	58,856	26,221	29,366	166	3,103
16-06-2024	23,470	10,456	11,711	66	1,237
17-06-2024	43,574	19,413	21,740	123	2,298
18-06-2024	54,147	24,123	27,016	153	2,855
19-06-2024	48,322	21,528	24,109	137	2,548
20-06-2024	74,157	33,037	37,000	210	3,910
21-06-2024	49,145	21,895	24,520	139	2,591
22-06-2024	59,941	26,704	29,906	170	3,161
23-06-2024	24,042	10,711	11,995	68	1,268
24-06-2024	73,537	32,761	36,691	208	3,877
25-06-2024	48,445	21,583	24,171	137	2,554
26-06-2024	46,577	20,751	23,238	132	2,456
27-06-2024	45,931	20,463	22,916	130	2,422
28-06-2024	55,520	24,735	27,701	157	2,927
29-06-2024	61,248	27,286	30,560	173	3,229
30-06-2024	29,291	13,050	14,614	83	1,544
Total waste (kg)	**14,85,100.00**	**6,61,629.00**	**7,40,967.00**	**4,200.00**	**78,304.00**
Average TPD	**49.50**	**22.05**	**24.70**	**0.14**	**2.61**

1599

Waste Collection details for the month of July 2024

Date	Total (kg)	Dry waste (kg)	Wet waste (kg)	Domestic Hazardous Waste & Sanitary Waste (kg)	Inert/ reject waste(kg)
01-07-2024	66,462	25,774	34,599	132	5,957
02-07-2024	57,579	22,329	29,975	114	5,161
03-07-2024	60,080	23,299	31,277	119	5,385
04-07-2024	59,171	22,947	30,804	117	5,303
05-07-2024	61,954	24,026	32,252	123	5,553
06-07-2024	58,070	22,520	30,230	115	5,205
07-07-2024	28,803	11,170	14,994	57	2,582
08-07-2024	63,804	24,743	33,215	127	5,719
09-07-2024	59,401	23,036	30,923	118	5,324
10-07-2024	68,755	26,664	35,793	136	6,162
11-07-2024	66,487	25,784	34,612	132	5,959
12-07-2024	69,124	26,807	35,985	137	6,195
13-07-2024	67,295	26,097	35,033	134	6,031
14-07-2024	28,083	10,891	14,619	56	2,517
15-07-2024	76,528	29,678	39,839	152	6,859
16-07-2024	64,191	24,894	33,417	127	5,753
17-07-2024	38,693	15,005	20,143	77	3,468
18-07-2024	76,832	29,796	39,998	152	6,886
19-07-2024	71,041	27,550	36,983	141	6,367
20-07-2024	66,197	25,672	34,461	131	5,933
21-07-2024	31,624	12,264	16,463	63	2,834
22-07-2024	75,073	29,114	39,082	149	6,728
23-07-2024	69,434	26,927	36,146	138	6,223
24-07-2024	65,838	25,532	34,274	131	5,901
25-07-2024	62,606	24,279	32,592	124	5,611
26-07-2024	62,328	24,171	32,447	124	5,586
27-07-2024	66,223	25,682	34,475	131	5,935
28-07-2024	39,966	15,499	20,805	80	3,582
29-07-2024	75,246	29,181	39,172	149	6,744
30-07-2024	66,458	25,773	34,597	132	5,956
31-07-2024	60,963	23,642	31,736	121	5,464
Total waste (kg)	**18,84,309.00**	**7,30,746.00**	**9,80,941.00**	**3,739.00**	**1,68,883.00**
Average TPD	**60.70**	**23.54**	**31.60**	**0.12**	**5.44**

1600

Waste Collection details for the month of August 2024

Date	Total (kg)	Dry waste (kg)	Wet waste (kg)	Domestic Hazardous Waste & Sanitary Waste (kg)	Inert/ reject waste(kg)
01-08-2024	98,844	40,049	50,862	188	7,745
02-08-2024	1,01,229	41,015	52,089	193	7,932
03-08-2024	90,108	36,509	46,367	172	7,060
04-08-2024	42,926	17,392	22,088	82	3,364
05-08-2024	85,161	34,505	43,821	162	6,673
06-08-2024	85,252	34,542	43,868	162	6,680
07-08-2024	76,808	31,121	39,523	146	6,018
08-08-2024	90,495	36,666	46,566	172	7,091
09-08-2024	82,592	33,464	42,499	157	6,472
10-08-2024	81,199	32,900	41,782	155	6,362
11-08-2024	46,188	18,714	23,767	88	3,619
12-08-2024	95,588	38,730	49,186	182	7,490
13-08-2024	95,840	38,832	49,316	182	7,510
14-08-2024	1,00,951	40,940	51,993	102	7,916
15-08-2024	4,476	1,776	2,256	99	345
16-08-2024	1,02,119	41,376	52,547	194	8,002
17-08-2024	1,02,064	41,354	52,519	194	7,997
18-08-2024	70,931	28,739	36,499	135	5,558
19-08-2024	53,564	21,703	27,562	102	4,197
20-08-2024	91,845	37,213	47,260	175	7,197
21-08-2024	77,953	31,585	40,112	148	6,108
22-08-2024	64,313	26,058	33,093	123	5,039
23-08-2024	56,094	22,728	28,864	107	4,395
24-08-2024	65,047	26,355	33,471	124	5,097
25-08-2024	32,164	13,032	16,550	62	2,520
26-08-2024	61,244	24,814	31,514	117	4,799
27-08-2024	65,027	26,347	33,461	124	5,095
28-08-2024	60,147	24,370	30,949	115	4,713
29-08-2024	65,420	26,506	33,663	125	5,126
30-08-2024	75,782	30,705	38,995	144	5,938
31-08-2024	65,580	26,571	33,745	125	5,139
Total waste (kg)	**22,86,951.00**	**9,26,611.00**	**11,76,787.00**	**4,356.00**	**1,79,197.00**
Average TPD	**73.77**	**29.89**	**37.96**	**0.14**	**5.78**

1601

Waste Collection details for the month of September 2024

Date	Total (kg)	Dry waste (kg)	Wet waste (kg)	Domestic Hazardous Waste & Sanitary Waste (kg)	Inert/ reject waste(kg)
01-09-2024	36,180	15,218	17,805	72	3,085
02-09-2024	73,604	30,938	36,243	145	6,278
03-09-2024	76,604	32,223	37,699	151	6,531
04-09-2024	67,579	28,427	33,258	133	5,761
05-09-2024	79,436	33,414	39,093	157	6,772
06-09-2024	77,416	32,564	38,099	153	6,600
07-09-2024	61,598	25,911	30,314	122	5,251
08-09-2024	43,239	18,188	21,280	85	3,686
09-09-2024	91,450	38,468	45,006	180	7,796
10-09-2024	71,783	30,195	35,326	142	6,120
11-09-2024	74,037	31,143	36,436	146	6,312
12-09-2024	69,418	29,200	34,163	137	5,918
13-09-2024	66,285	27,882	32,621	131	5,651
14-09-2024	55,325	23,272	27,227	109	4,717
15-09-2024	39,749	16,720	19,561	79	3,389
16-09-2024	45,336	19,070	22,311	90	3,865
17-09-2024	77,002	32,390	37,895	152	6,565
18-09-2024	69,773	29,349	34,338	138	5,948
19-09-2024	78,787	33,141	38,774	155	6,717
20-09-2024	69,073	29,055	33,993	136	5,889
21-09-2024	75,913	31,932	37,359	150	6,472
22-09-2024	40,864	17,189	20,110	81	3,484
23-09-2024	86,544	36,404	42,591	171	7,378
24-09-2024	68,930	28,995	33,923	136	5,876
25-09-2024	78,060	32,835	38,416	154	6,655
26-09-2024	71,356	30,015	35,117	141	6,083
27-09-2024	71,604	30,120	35,239	141	6,104
28-09-2024	56,474	23,755	27,793	111	4,815
29-09-2024	30,328	12,757	14,925	60	2,586
30-09-2024	81,171	34,144	39,947	160	6,920
Total waste (kg)	**19,84,918.00**	**8,34,914.00**	**9,76,862.00**	**3,918.00**	**1,69,224.00**
Average TPD	**66.16**	**27.83**	**32.56**	**0.13**	**5.64**

1602

Waste Collection details for the month of October 2024

Date	Total (kg)	Dry waste (kg)	Wet waste (kg)	Domestic Hazardous Waste & Sanitary Waste (kg)	Inert/ reject waste(kg)
01-10-2024	66,520	30,221	32,901	158	3,240
02-10-2024	44,937	20,415	22,226	107	2,189
03-10-2024	67,213	30,536	33,244	159	3,274
04-10-2024	80,941	36,772	40,034	192	3,943
05-10-2024	76,139	34,591	37,659	180	3,709
06-10-2024	33,834	15,371	16,735	80	1,648
07-10-2024	84,252	38,277	41,672	199	4,104
08-10-2024	61,259	27,831	30,299	145	2,984
09-10-2024	78,131	35,496	38,644	185	3,806
10-10-2024	77,676	35,289	38,419	184	3,784
11-10-2024	56,906	25,853	28,146	135	2,772
12-10-2024	67,953	30,872	33,610	161	3,310
13-10-2024	35,284	16,030	17,451	84	1,719
14-10-2024	94,126	42,763	46,555	223	4,585
15-10-2024	84,477	38,379	41,783	200	4,115
16-10-2024	74,658	33,918	36,926	177	3,637
17-10-2024	80,682	36,655	39,906	191	3,930
18-10-2024	73,327	33,313	36,268	174	3,572
19-10-2024	85,524	38,855	42,301	202	4,166
20-10-2024	45,077	20,479	22,295	107	2,196
21-10-2024	89,679	40,742	44,356	212	4,369
22-10-2024	75,358	34,236	37,273	178	3,671
23-10-2024	69,110	31,397	34,182	164	3,367
24-10-2024	75,939	34,500	37,560	180	3,699
25-10-2024	69,884	31,749	34,565	166	3,404
26-10-2024	71,964	32,694	35,594	170	3,506
27-10-2024	39,095	17,761	19,336	93	1,905
28-10-2024	79,212	35,987	39,178	188	3,859
29-10-2024	68,828	31,269	34,043	163	3,353
30-10-2024	63,097	28,665	31,208	150	3,074
31-10-2024	29,350	13,334	14,516	70	1,430
Total waste (kg)	**21,00,432.00**	**9,54,250.00**	**10,38,885.00**	**4,977.00**	**1,02,320.00**
Average TPD	**67.75**	**30.78**	**33.51**	**0.16**	**3.30**

1603

OCTOBER 2024

Solid Waste Management:

Total number of Local Bodies and their Population: 70 Gram Panchayats & 2,17,231 Population.

S.No	BLOCK	DRY WASTE	WET WASTE	MIXED WASTE	TOTAL SOLID WASTE PROCESSED
1	Prothrapur	0.5	0.15	0.02	
2	Ferrargunj	0.8	0.10	0.02	
3	Little Andaman	0.2	0.05	0.01	
4	Rangat	0.4	0.10	0.02	
5	Diglipur	1.4	0.10	0.02	**1.33 TPD**
6	Mayabunder	0.6	0.05	0.05	
7	Campbell bay	0.4	0.03	0.05	
		4.3 TPD	**0.58 TPD**	**0.10 TPD**	
	TOTAL- 4.98 TPD				

1604

SEPTEMBER, 2024

Solid Waste Management:

Total number of Local Bodies and their Population: 70 Gram Panchayats & 2, 17,231 Population.

- **Current Solid Waste Generation (In Tons): 309.65 MT/ 10.32 TPD** Solid Wastes Generated during SEPTEMBER, 2024 Month.

SL. NO	Block	DRY	WET	MIXED	TOTAL SOLID WASTE GENERATION	TOTAL SOLID WASTE PROCESSED
1	PROTHRAPUR	60.423	3.752	1.240	65.388	21.6MT/ 0.72TPD
2	FERRARGUNJ	64.970	10.434	0	75.404	
3	L/ANDAMAN	7.965	2.200	4.301	14.466	
4	RANGAT	21.658	1.514	0	23.172	
5	MAYABUNDER	54.419	0.01	0	54.429	
6	DIGLIPUR	75.685	0.24	0	75.925	
7	CAMPBELL BAY	0.881	0	0	0.881	
TOTAL		286/ 9.54TPD	18.15/ 0.61TPD	5.5/ 0.18TPD	309.65/ 10.32TPD	

1605

AUGUST 2024

Solid Waste Management:

SL. NO	Block	DRY	WET	MIXED	TOTAL SOLID WASTE GENERATION	TOTAL SOLID WASTE PROCESSED
1	PROTHRAPUR	49.826	3.752	0	53.578	30.4MT/ 0.98TPD
2	FERRARGUNJ	76	4	0	80	
3	L/ANDAMAN	8.734	1.05	3.814	13.598	
4	RANGAT	18.513	1.3465	0.184	20.0435	
5	MAYABUNDER	52.367	0.011	0	52.378	
6	DIGLIPUR	123.308	0.2875	0	123.5955	
7	CAMPBELL BAY	2.208	8	0	10.208	
TOTAL		330/ 10.64TPD	18.03/ 0.58TPD	4/ 0.13TPD	352.03/ 11.36TPD	

1606

JULY 2024

Solid Waste Management:

Total number of Local Bodies and their Population: 70 Gram Panchayats & 2, 17,231 Population.

- **Current Solid Waste Generation (In Tons): 542.6 MT/ 17.5TPD** Solid Wastes Generated during JULY, 2024 Month.

SL. NO	Block	DRY	WET	MIXED	TOTAL SOLID WASTE GENERATION	TOTAL SOLID WASTE PROCESSED
1	**PROTHRAPUR**	63.397	3.752	0	67.149	**39MT/ 1.26TPD**
2	**FERRARGUNJ**	68.022	9.934	0	77.117	
3	**L/ANDAMAN**	8.908	3.700	40	52.608	
4	**RANGAT**	18.095	0	0.238	18.333	
5	**MAYABUNDER**	54.302	0.11	0	54.412	
6	**DIGLIPUR**	270.088	0.287	0	270.38	
7	**CAMPBELL BAY**	2.263	0	0	2.263	
TOTAL		**485/ 15.645TPD**	**17.6/ 0.567TPD**	**40/ 1.29TPD**	**542.6/ 17.5TPD**	

1607

JUNE 2024

Solid Waste Management:

Total number of Local Bodies and their Population: 70 Gram Panchayats & 2, 17,231 Population.

- **Current Solid Waste Generation (In Tons): 332.98 MT/ 11.1 TPD** Solid Wastes Generated during JUNE, 2024 Month.

SL. NO	Block	DRY	WET	MIXED	TOTAL SOLID WASTE GENERATION	TOTAL SOLID WASTE PROCESSED
1	**PROTHRAPUR**	49.088	7	1.240	57.328	**16.4MT/ 16.88TPD**
2	**FERRARGUNJ**	58.568	0	0	58.568	
3	**L/ANDAMAN**	3.0612	6	5.10	14.161	
4	**RANGAT**	15.099	4	0.237	19.336	
5	**MAYABUNDER**	54.005	0.34	0	54.345	
6	**DIGLIPUR**	125.373	1	0	126.37	
7	**CAMPBELL BAY**	2.905	0.015	0	1.92	
TOTAL		**308/ 10.3TPD**	**18.485/ 0.62TPD**	**6.5/ 0.22TPD**	**332.98/ 11.1TPD**	

1608

Solid Waste Management:

Total number of Local Bodies and their Population: 70 Gram Panchayats & 2, 17,231 Population.

- **Current Solid Waste Generation (In Tons): 506.5 MT/ 16.34 TPD** Solid Wastes Generated during May, 2024 Month.

SL. NO	Block	DRY	WET	MIXED	TOTAL SOLID WASTE GENERATION	TOTAL SOLID WASTE PROCESSED
1	**PROTHRAPUR**	115	8	1.320	124.32	**12.83MT/ 0.42TPD**
2	**FERRARGUNJ**	93.101	19	0	112.1	
3	**L/ANDAMAN**	12.048	7.96	.5.100	25.108	
4	**RANGAT**	32	0	0	32	
5	**MAYABUNDER**	60	0.034	0	60.034	
6	**DIGLIPUR**	142.4275	1	0	147.43	
7	**CAMPBELL BAY**	10	0	0	10	
TOTAL		**464/14.96 TPD**	**35.9/1.16 TPD**	**6.4/.21 TPD**	**506.5MT/16.34 TPD**	

1609

OFFICE OF THE GRAM PANCHAYAT

CAMPBELL BAY

Format for Submission of MONTHLY PROGRESS REPORT in the NGT Matter No. 673 of 2018 (in compliance to NGT order dated 24.09.2020)s

(Report for the month of OCTOBER 2024)

Name of the Gram Panchayat	CAMPBELL BAY
Block	CAMPBELL BAY
District	NICOBAR

Total population	113
No. of households	450
No. of commercial establishments/private institutions	17
No. of Government Institutions	23
No. of households covered by door to door collection system	450
No. of households covered by door to door collection system practicing segregation at source	450
No .of households covered for collection of User-Fees	131
Total amount collected from HHs as User-Fees **(I)**	6750
No. of commercial establishments/private institution covered by door to door collection system	17
No. of commercial establishments/ private institutions covered by door to door collection system practicing segregation at source	17
No. of commercial establishments/ private institutions covered for collection of User-Fees	17
Total amount collected from commercial establishment/private institutions as User Fees **(II)**	6750
No. of Government Institutions covered by door to door collection system	13
No. of Government Institutions covered by door to door collection system practicing segregation at source	13
No. of Government Institutions covered for collection of User-Fees	01
Total amount collected from Government Institutions as User Fees **(III)**	1300

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1610

Total Amount of User-fee collected **(I+II+III)**	453000
Total quantity of waste collected through door to door collection **(A) (in Kg) (Per month)**	
Dry	[illegible]
Wet	Nil
No. of public garbage sites	
Total quantity of waste collected from public garbage bins **(B) (in Kg) (Per month)**	
Dry	173
Wet	
Total quantity of waste collected from door to door collection and public garbage site **(A+B) (Per month)**	
Dry	925
Wet	Nil

I. SOLID WASTE GENERATION

Total generation of Solid Waste (Estimation) Both Dry & Waste	
Total collection of Solid Waste (TPD) – [A]+[B]+[C]	0.0298(TPD)
Existing Segregation Facilities with capacity	SI WM Cluster at Vijay Nagar
Proposed Segregation Facilities with capacity	Nil

(A) DRY Waste:

Out of the total Solid Waste collected, Quantity of Dry waste (in Kg) **(In month)**	PET	Nil
	All type of Plastics	151
	Multi Layer Plastics(MLP)	167
	Paper(Cardboard)	93
	Tetra pack	17
	Glass	275
	Metals(All types)	61
	E-Waste	Nil
	Cloth	95
	Footwear	34
	Total (A)	**925**

AnyScanner

1611

Quantity of dry waste sent for recycling locally	Nil
Quantity of dry waste sent to mainland	Nil
Quantity of dry waste landfill	Nil

(A.1) Details of Segregation centers:

Sl No	Name /Location	Design/Installed capacity (in Kg per Day)	Facilities/machines (No of shredding, Bailing machines with individual capacity)	Capacity Utilization (in Kg per Day)
1	Primary Segregation Centre at W.No 03 under GP Campbell Bay	30Kg/Day	NIL	NIL
2	SI WM Cluster at Vijay Nagar,18KM	50Kg/Day	Bailing Machine	NIL

(B) Wet Waste

Out of the total Solid Waste collected, Quantity of Segregated wet waste(TPD) –[B] **(Per month)**	NIL
Quantity of wet waste sent for composting etc.	NIL
Quantity of wet waste sent for Biomethanation	NIL
Quantity of wet waste sent to landfill	NIL
No. of Processing Facilities Available with individual Capacity	NIL
No. of Proposed Facilities with individual Capacity	NIL

(B) Details of wet waste processing units

S. No	Name /Location/Technology	Design Capacity	Capacity utilization
	NIL	NIL	NIL

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(C) Mixed Waste

Out of the total Solid Waste collected. Quantity of Segregated Mixed waste(TPD)-[C] **(Per month in Kg)**	-
Quantity of mixed waste sent to landfills	

- List of proposed land fills with capacity and utilization:
- List of proposed land fills with capacity:

(D) Bulk Waste Generators as defined in SWM Rules-2016 (Average Waste generation rate 100kg/day)

(D.I)List of Bulk Waste generators

Sl. no	Name	Address	Waste generated per day	Composting / Bio-methanation with existing capacity
	-	-	-	-

II. SEWAGE GENERATION :

(I)Estimated sewage generation (MLD)-[A] + [B] +[C] = 5.91(MLD)

(A)Sewage flowing through Sewerage System

Out of total sewage generated. Quantity of sewage flowing to sewerage system-[A]	-
No. of Proposed STPs with individual capacity in MLD	-

(B)Sewage flowing through Septic tank

Out of total sewage generated. Quantity of sewage treated in Septic Tank(MLD): [B]	1.159(MLD)
Quantity of Sludge generated:	-
No. of FSTP and Quantity of sludge processed in FSTP:	-
No. and Capacity of sludge Tanks:	-

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(C)Sewage flowing through Open drains:

Out of total sewage generated, Quantity of sewage flowing to open drains (MLD): [C]

Component	Quantity of Sewage flowing(in MLD)	No. of HHs Covered
Soak Pits/Magic Pits/Leach Pits		
Drainage Channels with Soak Pits		
Drainage Channels without Soak Pits	3.7980(MLD)	
Kitchen/Cooked Food	0.0961(MLD)	
Total	3.7941(MLD)	350

III. PLASTIC WASTE:

Quantity of Waste in Tons	During the Month
Total Dry waste segregated	0.925
Total plastic waste segregated	0.363
Total non-plastic waste segregated	0.562
Amount of waste sent to mainland for recycling	-
Amount of waste used for road construction	-

(A) Information incorporated in the SWM bye laws:

Provisions to collect spot fines from violators in production, distribution, storage sale and use of banned plastic & other items	Yes.
Penalty for littering of waste	Rs. 500 Fine
Penalty for open burning of plastics	Rs. 500 Fine

(B) Details of Open burning incidents:

	No of team enforcing ban of burning plastic	No of inspections conducted	No of incidents identified	Fine imposed/recovered	No of complaints received	Action taken against the violators
During the month						

AnyScanner

1614

(C) Creating Awareness among all stakeholders:

During the Month	No. of awareness programs conducted	Departments/stakeholders participated	No. of people participated	Number of Awareness programs of solid waste
October 2024	5	19	195	2

(D) Details of Civil societies or group working with waste pickers:

No. of Self Helping Groups(SHGs)	No. of people in SHGs	No. of people engaged in waste
15	150	NIL

(E) Enforcement of SUP ban:

During the Month	No of teams for enforcement of SUP ban	No of field inspections	No of violations observed	No. of challans issued	Quantity of plastic seized (in Kg.)	Amount of fine collected (in Rs.)
October 2024	NIL	NIL	NIL	NIL	NIL	NIL

(F) Elaborate on the gaps, if any, with reasons and justification.

Pradhan
Gram Panchayat
Campbell Bay

Pradhan
Gram Panchayat
Campbell Bay

AnyScanner

1615

F.No. 2-90/BDO/PP/SBM/GC/2023-24/~~346~~ 373
OFFICE OF THE BLOCK DEVELOPMENT OFFICER
CD BLOCK, PROTHRAPUR
****

Dated 05/11 November, 2024

To,

The Director (RD/PRIs)
Andaman & Nicobar Administration
Marine Hill, Sri Vijaya Puram

Sub: Submission of NGT Report- reg.

Sir,

I am furnishing herewith the Monthly Progress Report of NGT for the month of October, 2024 in respect of all Gram Panchayats under the jurisdiction of CD Block, Prothrapur for further course of action please.

Encl: A/A

Yours faithfully

8/11/24

Block Development Officer
C.D Block Prothrapur

05/11

1616

Format for Submission of MONTHLY PROGRESS REPORT in the NGT Matter No. 673 of 2018 (in compliance to NGT order dated 24.09.2020)

(Report for the month of October 2024)

Name of the Block: Prothrapur

District: South Andaman

1.	**SOLID WASTE GENERATION**	
Total population		26183
No. of households		6266
No. of commercial establishments/private institutions		766
No. of Government Institutions		95
No. of households covered by door to door collection system		4941
No. of households covered by door to door collection system practicing segregation		3622
No. of households covered for collection of User-Fees (certain households have been paying user fees for multiple months instead of a single month, so the figure might vary a little bit)		3721
Total amount collected from HHs as User-Fees **(I)**		117900
No. of commercial establishments/private institution covered by door to door collection system		719
No. of commercial establishments/ private institutions covered by door to door collection system practicing segregation at source		719
No. of commercial establishments/ private institutions covered for collection of User-Fees		642
Total amount collected from commercial establishment/private institutions as User Fees **(II)**		595981
No. of Government Institutions covered by door to door collection system		89
No. of Government Institutions covered by door to door collection system		89
No. of Government Institutions covered for collection of User-Fees		12
Total amount collected from Government Institutions as User Fees **(III)**		0
Total Amount of User-Fee collected **(I+II+III)**		713881
Total quantity of waste collected through door to door collection **(A) (in Kg) (Per month)**		45996
	Dry	31409
	Wet	14587
No of public garbage sites		216
Total quantity of waste collected from public garbage bins **(B) (in Kg) (Per month)**		108356
	Dry	95756
	Wet	12600
Total quantity of waste collected from door to door collection and public garbage site		154352
	Dry	127165
	Wet	27187
Total generation of Solid Waste (Estimation) Both Dry & Waste		6266x0.1=626.6 TPD
Total collection of Solid Waste (TPD) – [A]+[B]+[C]		81
Existing Segregation Facilities with capacity		1 facility 4000kg
Proposed Segregation Facilities with capacity		Shed with 2 TPD/Day

(A) Dry Waste:		
Out of the total Solid Waste collected, Quantity of Dry waste (in Kg) (In **month)**	PET	5282
	All type of Plastics	6440
	Multi Layer	9715
	Paper/Cardboard)	7596
	Tetrapack	4119
	Glass	30465
	Metals(All type)	2795
	E-Waste	185
	Cloth	1274
	Footwear	503
	Total (A)	**68374**
Quantity of dry waste sent for recycling locally		0
Quantity of dry waste sent to mainland		0
Quantity of dry waste landfill		0

(A.1) Details of Segregation centres:

Sl No	Name /Location	Design/Installed capacity (in Kg per Day)	Facilities/machines (No of shredding, Bailing machines with individual capacity)	Capacity Utilization (in Kg per Day)
1	Sippighat	0	0	

1617

3	Gaurav	900 kg	2 times Baling Machine	Managed by GP Beednabad
4	Neil Society(SWM's under Hmn)	40	1 nos Baling Machine with 2HP	90 Kg
5	SWM Cluster Peerbhoyal	Baling Machine	1 nos Baling Machine	270 Kg
6	Govind Nagar(SWM Cluster Niwas Nagar	0	0	0
8		100	1 Baling Machine	200 Kg Baling machine Unoperation al since two

(B) Wet Waste

Out of the total Solid Waste collected, Quantity of Segregated wet waste(TPD)	3752
Quantity of wet waste sent for composting etc.	3452
Quantity of wet waste sent for Biomethanation	Nil
Quantity of wet waste sent to landfill	Nil
No. of Processing Facilities Available with individual Capacity	6 nos vermi compost pit
No. of Proposed Facilities with individual Capacity	Nil

(B) Details of wet waste processing units

Sl.	Name	Design Capacity	Capacity utilization
01	SWM Cluser managed by GP Beednabad	6 Nos Vermi compost	-

(C) Mixed Waste

Out of the total Solid Waste collected, Quantity of Segregated Mixed waste(TPD)-[C] ((Per	
Quantity of mixed waste sent to landfills	1240
List of proposed land fills with capacity and utilization:	
List of proposed land fills with capacity:	

(D) Bulk Waste Generators as defined in SWM Rules-2016 (Average Waste generation rate 100kg/day)

(D.1)List of Bulk Waste generators

Sl. no	Name	Address	Waste generated per day	Composting Units/ Bio-methanation with existing capacity
1	Aqua's Beach Resort	Govind Nagar	48 Kg	Compost Pit
2	Lemon Grass Resort	Govind Nagar	44 Kg	Nil
3	Symphony Palm Beach Resort	Govind Nagar	62 Kg	Nil

II. SEWAGE GENERATION :

(1)Estimated sewage generation (MLD)-[A]+[B]+[C] = 6266x55x80%=275.704/MLD

(A)Sewage flowing through Sewerage System

Out of total sewage generated, Quantity of sewage flowing to sewerage system-[A]	Nil
No. of Proposed STPs with individual capacity in MLD	Nil

(B)Sewage flowing through Septic tank-0.28x20%=0.056 MLD

Out of total sewage generated, Quantity of sewage treated in Septic Tank(MLD): [B]	Nil
Quantity of Sludge generated:	Nil
No. of FSTP and Quantity of sludge processed in FSTP:	Nil
No. and Capacity of sludge Tanks:	Nil

(C)Sewage flowing through Open drains:0.28x80%=0.22MLD

Out of total sewage generated, Quantity of sewage flowing to open drains (MLD):[C]:0.76 MLD

Component	Quantity of Sewage flowing (in	No.of HH Covered
Soak Pits/Magic Pits/ Leach Pits	0	Nil
Drainage Channel with Soak Pits	0	Nil
Drainage Channel without Soak Pits	0.05 MLD	Nil
Kitchen Garden/ Farm	0.17 MLD	Nil
Total	(C) = 0.22 MLD	Nil

III. PLASTIC WASTE:

Quantity of Waste in Tons	During the Month
Total Dry waste segregated	70.062
Total plastic waste segregated	17.14
Total non-plastic waste segregated	52.922
Amount of waste sent to mainland for recycling	14.867
Amount of waste used for road construction	208.463

(A) Information incorporated in the SWM bye laws:

1618

Authority to collect spot fines from violations in production, distribution, storage, sale and use of banned plastic & other items	Yes
Penalty for littering of waste	Rs. 500 Fine
Penalty for open burning of plastics	Rs. 500 Fine

(B) Details of Open burning incidents

	No of teams enforcing ban of burning plastic	No of inspections conducted	No of incidents identified	Fine imposed/recovered	No of complaints received	Action taken against the violators
During the month	4	05	Nil	Nil	Nil	Nil

(C) Creating Awareness among all stakeholders:

	No of awareness programs conducted	Departments/stakeholders participated	No of people participated	Number of Beach Clean-up drive Conducted
During the Month	11	33	258	9

(D) Details of Civil societies or group working with waste pickers:

No of Self Helping Groups(SHGs)	No. of people in SHGs	No. of people engaged in waste
21	180	17

(E) Enforcement of SUP ban:

	No of teams for enforcement of	No of field inspections	No of violations	No of challans	Quantity of plastic seized	Amount of fine collected
During the Month	5	10	Nil	Nil	Nil	Nil

8/11/24

खण्ड विकास अधिकारी
Block Development Officer
ब्लॉक अमरापुर
Block Amrapur

No.6-75/NGT/NAB/DI/2024-25/612

1619

खण्ड विकास अधिकारी का कार्यालय

OFFICE OF THE BLOCK DEVELOPMENT OFFICER

सामुदायिक विकासखण्ड, डिगलीपुर, उत्तरी अण्डमान

C.D. BLOCK, DIGLIPUR, NORTH ANDAMAN

****

Diglipur dated the 06th November, 2024

To

The Director
Directorate of RD, PRIs &ULBs
A&N Administration, Marine Hill

Sub: - Submission of Monthly Progress Report on Solid waste Management under NGT Matter No.673 of 2018 for the Month of October 2024 reg:

Sir,

Please find enclosed herewith the Monthly Progress Report on Solid waste Management under NGT Matter No. 673 of 2018 (in compliance to NGT Order dated 24.09.2020) for the Month of October, 2024 in respect of C.D. Block Diglipur along with the copy of Monthly report received from following Gram Panchayat for further necessary action at your end please.

Sl No.	Name of Gram Panchayat	Remarks
1.	Diglipur	Received
2.	Subashgram	Received
3.	R.K. Gram	Received
4.	Shibpur	Received
5.	Gandhinagar	Received
6.	Keralapuram	Received
7.	Laxmipur	Received
8.	Madhupur	Not Received
9.	Radhanagar	Received
10.	Sitanagar	Not Received
11.	Nabagram	Received
12.	Ramnagar	Received
13.	Kalighat	Received
14.	Paschimsagar	Received
15.	Kishorinagar	Received

Yours faithfully,

6/11/24

खण्ड विकास अधिकारी
Block Development Officer
सामुदायिक विकासखण्ड, डिगलीपुर
C.D. Block, Diglipur

Copy to:-

1. PA to DC, N&MA, for information of the Deputy Commissioner Mayabunder please.
2. The Assistant Commissioner, Diglipur for kind information please.

6/11/24

खण्ड विकास अधिकारी
Block Development Officer
सामुदायिक विकासखण्ड, डिगलीपुर
C.D. Block, Diglipur

1620

Format for Submission of MONTHLY PROGRESS REPORT in the NGT Matter No. 673 of 2018 (in compliance to NGT order dated 24.09.2020)

(Report for the Month of September 2024)

Name of the Block:**Diglipur**

District: **North & Middle Andaman**

1.	Total population	40784
2.	No. of households	10666
3.	No. of commercial establishments/private institutions	909
4.	No. of Government Institutions	290
5.	No. of households covered by door to door collection system	9657
6.	No.of households covered by door to door collection system practicing segregation at source	8975
7.	No .of households covered for collection of User-Fees	6320
8.	Total amount collected from HHs as User-Fees**(I)**	393850
9.	No. of commercial establishments/private institution covered by door to door collection system	906
10.	No. of commercial establishments/ private institutions covered by door to door collection system practicing segregation at source	863
11.	No.of commercial establishments/ private institutions covered for collection of User-Fees	895
12.	Total amount collected from commercial establishment/private institutions as User Fees**(II)**	154430
13.	No. of Government Institutions covered by door to door collection system	261
14.	No. of Government Institutions covered by door to door collection system practicing segregation at source	210
15.	No.of Government Institutions covered for collection of User-Fees	46
16.	Total amount collected from Government Institutions as User Fees**(III)**	34220
17.	Total Amount of User-Fee collected **(I+II+III)**	**582500**
18.	Total quantity of waste collected through door to door collection**(A) (in Kg) (Per month)**	**25347**
19.	Dry	25347
20.	Wet	0
21.	No of public garbage sites	863

1621

.	Total quantity of waste collected from public garbage bins (B) (in Kg) (Per month)	117104
23.	Dry	105064
24.	Wet	12040
25.	Total quantity of waste collected from door to door collection and public garbage site(A+B) (Per month)	**142451**
26.	Dry	130411
27.	Wet	12040

I. SOLID WASTE GENERATION		
1	Total generation of Solid Waste (Estimation) Both Dry & Waste	6399.6
2	Total collection of Solid Waste (TPD) -[A]+[B]+[C]	130.751
3	Existing Segregation Facilities with capacity	2000
4	Proposed Segregation Facilities with capacity	3

(A) Dry Waste:

1	Out of the total Solid Waste collected, Quantity of Dry waste (in Kg)(In month)	PET	4267
		All type of Plastics	6836
		Multi Layer Plastics(MLP)	6729
		Paper/Cardboard)	42778
		Tetrapack	11922
		Glass	46375
		Metals(All type)	2649
		E-Waste	1588
		Cloth	4651
		Footwear	2616
		Total (A)	**130411**
2	Quantity of dry waste sent for recycling locally		2748
3	Quantity of dry waste sent to mainland		5366
4	Quantity of dry waste landfill		0

(A.1) Details of Segregation centres:

1622

Sl No	Name /Location	Design/Installed capacity(in Kg per Day)	Facilities/machines (No of shredding, Bailing machines with individual capacity)	Capacity Utilization (in Kg per Day)
1	Radhanagar Cluster	500	(1.5) 01	100
2	Gandhinagar (Radhanagar Cluster)	500	(1.5) 01	0
3	Diglipur (Madhupur Cluster)	0	0	0
4	Madhupur Cluster	500	1	300
5	Ramnagar (Nabagram Cluster)	0	1	0
6	Sitanagar (Madhupur Cluster)	0	0	0
7	Laxmipur	0	0	0
8	Nabagram Cluster	500	1 (2 toncapt.)	0
9	Kalighat (Nabagram Cluster)	500	1 (2 toncapt.)	0
10	R.K. Gram Madhupur Cluster	0	0	0
11	Keralapuram	500	1	400
12	Kishorinagar Cluster	400	1.5 (ton)	0
13	Paschimsagar (Kishorinagar Cluster)	0	0	0
14	Shibpur	0	0	0
15	Subashgram(Madhupur Cluster)	0	(2 t) 1	0

(B) Wet Waste		
1	Out of the total Solid Waste collected, Quantity of Segregated wet waste:(TPD) -[B](Per month)	0.34
2	Quantity of wet waste sent for composting etc.	1.065
3	Quantity of wet waste sent for Biomethanation	0
4	Quantity of wet waste sent to landfill	0
5	No. of Processing Facilities Available with individual Capacity	4 Nos. compost pit with 3cbm capacity per tank
6	No. of Proposed Facilities with individual Capacity (sqm)	100

(B) Detailes of wet waste processing units			
Sl. No.	Name	Design capacity	Capacity utilization

1	Radhanagar Cluster	12 cbm compose pit (3 Cbm per tanks total 4 Nos.	0
2	Gandhinagar (Radhanagar Cluster)	13 cbm compose pit (3 Cbm per tanks total 4 Nos.	0%
3	Digliput (Madhupur Cluster)	0	0
4	Madhupru Cluster	10 cbm compose pit (3 Cbm per tanks	0
5	Ramnagar (Nabagram Cluster)	2 cbm compose pit (3 Cbm per tanks	0
6	Sitanagar (Madhupur Cluster)	0	0
7	Laxmipur	0	0
8	Nabagram Cluster	2 cbm compose pit (3 Cbm per tanks	0
9	Kalighat (Nabagram Cluster)	2 cbm compose pit (3 Cbm per tanks	0
10	R.K. Gram Madhupur Cluster	0	20%
11	Keralapuram	4 Nos. CC compose pit with 02 cbm Capacity	0
12	Kishorinagar Cluster	0	0
13	Paschimsagar (Kishorinagar Cluster)	0	0
14	Shibpur	0	0
15	Subashgram(Madhupur Cluster)	12 Nos. 2 cbm vermi compose tank	0

(C) Mixed Waste		
1	Out of the total Solid Waste collected, Quantity of Segregated Mixed waste(TPD)-[C] **((Per month in Kg)**	0
2	Quantity of mixed waste sent to landfills	0

- List of proposed land fills with capacity and utilization:
- List of proposed land fills with capacity:

(D) Bulk Waste Generators as defined in SWM Rules-2016 (Average Waste generation rate 100kg/day)

(D.1)List of Bulk Waste generators

Sl.no	Name	Address	Waste generated per day	Composting Units/ Bio-methanation with existing capacity
1	Vegitable Market	Subashgram	1000 KG	0

II. SEWAGE GENERATION :

1624

mated sewage generation (MLD)-[A]+[B]+[C] =1787544	
wage flowing through Sewerage System	
1 Out of total sewage generated, Quantity of sewage flowing to sewerage system-[A]	0
2 No. of Proposed STPs with individual capacity in MLD	0
(B)Sewage flowing through Septic tank	
1 Out of total sewage generated, Quantity of sewage treated in Septic Tank(MLD): [B]	358899.2
2 Quantity of Sludge generated:	0
3 No. of FSTP and Quantity of sludge processed in FSTP:	0
4 No. and Capacity of sludge Tanks:	0
(C)Sewage flowing through Open drains:	
Out of total sewage generated, Quantity of sewage flowing to open drains (MLD): [C]:	
1 Kitchen Garden/Farm	1274251
2 Soak Pit/Magic Pits/Leach Pits	87120.2
3 Drainage Channels with Soak Pits	0
4 Drainage Channels without Soak Pits	68664

III. PLASTIC WASTE:

1	Quantity of Waste **in Tons**	During the Month
2	Total Dry waste segregated	116.035
3	Total plastic waste segregated	13.035
4	Total non-plastic waste segregated	103.102
5	Amount of waste sent to mainland for recycling	0
6	Amount of waste used for road construction	0

(A) Information incorporated in the SWM bye laws:		
1	Provisions to collect spot fines from violators in production, distribution, storage sale and use of banned plastic & other items	Yes exist as per SWM Bye laws 2019.
2	Penalty for littering of waste	0
3	Penalty for open burning of plastics	0

1625

(B) Details of Open burning incidents:					
	No of team enforcing ban of burning plastic	No of inspections conducted	No of incidents identified	Fine imposed/recovered	Action taken against the violators
During the month	5	5	0	0	0

(C) Creating Awareness among all stakeholders:				
	No of awareness programs conducted	Departments/stakeholders participated	No of people participated	Number of Beach
During the Month	10	3	328	No Beach under the

(D) Details of Civil societies or group working with waste pickers:		
No of Self Helping Groups(SHGs)	No. of people in SHGs	No. of people engaged in waste
0	0	0

(E) Enforcement of SUP ban:					
	No of teams for enforcement of SUP ban	No of field inspections	No of violations observed	No of challans issued	Amount of fine collected (In Rs.)
During the Month	7	4	0	0	0

Note:- **For Gap kindly refer report of concerned Gram Panchayat**

12/11/24

Signature & Seal of the BDO

Block Development Officer

1626

Format for Submission of MONTHLY PROGRESS REPORT in the NGT Matter No. 673 of 2018 (in compliance to NGT order dated 24.09.2020)

(Report for the month of **October 2024**)

Name of the Block : BDO, CD Block, Mayabunder
District : N&M Andaman District

1.	Total population	26327
2.	No. of households	6500
3.	No. of commercial establishments/private institutions	527
4.	No. of Government Institutions	122
5.	No. of households covered by door to door collection system	3016
6.	No. of households covered by door to door collection system practicing segregation at source	2468
7.	No .of households covered for collection of User-Fees	1465
8.	Total amount collected from HHs as User-Fees(I)	92600
9.	No. of commercial establishments/private institution covered by door to door collection system	472
10.	No. of commercial establishments/ private institutions covered by door to door collection system practicing segregation at source	241
11.	No. of commercial establishments/ private institutions covered for collection of User-Fees	330
12.	Total amount collected from commercial establishment/private institutions as User Fees(II)	59250
13.	No. of Government Institutions covered by door to door collection system	62
14.	No. of Government Institutions covered by door to door collection system practicing segregation at source	55
15.	No.of Government Institutions covered for collection of User-Fees	31
16.	Total amount collected from Government Institutions as User Fees(III)	11850
17.	Total Amount of User-Fee collected **(I+II+III)**	165300
18.	Total quantity of solid waste collected through door to door collection**(A) (in Kg) (Per month)**	23579
19	Dry	23479
20	Wet	100

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1627

21.	No of public garbage sites	197
22.	Total quantity of solid waste collected from public garbage bins (B) (in Kg) (Per month)	7024
23.	Dry	6874
24.	Wet	150
25.	Total quantity of solid waste collected from door to door collection and public garbage site(A+B) (Per month)	30603
26.	Dry	30353
27.	Wet	250

I. SOLID WASTE GENERATION

Total generation of Solid Waste (Estimation) Both Dry & Wet (TPD)	3.90
Total collection of Solid Waste (TPD) – [A]+[B]+[C]	1.02
Existing Segregation Facilities with capacity	1. SLWM Karmatang 2. SLWM Pahalgaon 3. SLWM Basantipur
Proposed Segregation Facilities with capacity (Describe any additional work planned for improving the facilities.)	1. Proposed in MNREGA to develop the site for segregation under GP Rampur 2. 200 sq.m land area proposed for segregation purpose under GP Basantipur 3. Site for segregation shed is proposed and the land allotment is under process under GP Harinagar

(A) Dry Waste:

Out of the total Solid Waste collected, Quantity of Dry waste (in Kg)(In month)	PET	1043
	All type of Plastics	2780
	Multi Layer Plastics(MLP)	1316
	Paper/Cardboard)	15524
	Tetrapack	2176
	Glass	4680
	Metals(All type)	917
	E-Waste	681
	Cloth	637.5
	Footwear	598.5
	Total (A)	30353
Quantity of dry waste sent for recycling locally (Get the information from Cluster GPs)		-
Quantity of dry waste sent to mainland		-

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1628

(Get the information from Cluster GPs)	
Quantity of dry waste landfill (Get the information from all GPs)	-

(A.1) Details of Segregation centres:

Sl No	Name /Location	Design/Installed capacity(in Kg per Day)	Facilities/machines (No of shredding, Bailing machines with individual capacity)	Capacity Utilization (in Kg per Day)
1.	SLWM cluster, Rampur at Karmatang	500 kg	1 No. Bailing Machine	200 kg
2.	SLWM cluster, Pahalgaon at Tugapur- 7	500 kg	1 No. Bailing Machine	140 kg
3.	SLWM cluster, Basantipur at Govindapur	500kg	1 No. Bailing Machine(0.5 TPD)	300 kg
4.	SLWM cluster, Shivapuram	500 kg	1 No. Bailing Machine (0.5 TPD)	60 kg

(B) Wet Waste

Out of the total Solid Waste collected, Quantity of Segregated wet waste:(TPD) –[B](**Per month**)	0.010
Quantity of wet waste sent for composting etc.	**0.025**
Quantity of wet waste sent for Biomethanation	-
Quantity of wet waste sent to landfill	-
No. of Processing Facilities Available with individual Capacity (Describe the facility, attach separate sheet if required)	-
No. of Proposed Facilities with individual Capacity	-

(B) Details of wet waste processing units

S. No	Name /Location/Technology	Design Capacity	Capacity utilization
-	-	-	-

(C) Mixed Waste

Out of the total Solid Waste collected, Quantity of Segregated Mixed waste(TPD)–[C] ((**Per month in Kg**)	-
Quantity of mixed waste sent to landfills	-

- List of proposed land fills with capacity and utilization:
- List of proposed land fills with capacity:

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(D) Bulk Waste Generators as defined in SWM Rules-2016 (Average Waste generation rate 100kg/day)

(D.1)List of Bulk Waste generators

Sl no	Name	Address	Waste generated per day	Composting Units/ Bio-methanation with existing capacity
-	-	-	-	-

II. SEWAGE GENERATION :

(1)Estimated sewage generation (MLD)-[A]+[B]+[C] = 0.16

(A)Sewage flowing through Sewerage System

Out of total sewage generated, Quantity of sewage flowing to sewerage system-[A]	Nil
No. of Proposed STPs with individual capacity in MLD	-

(B)Sewage flowing through Septic tank

Out of total sewage generated, Quantity of sewage treated in Septic Tank(MLD): [B]	0.032
Quantity of Sludge generated:	-
No. of FSTP and Quantity of sludge processed in FSTP:	-
No. and Capacity of sludge Tanks:	-

(C)Sewage flowing through Open:

Out of total sewage generated, Quantity of sewage flowing through open (MLD): [C]:

Component	Quantity of Sewage flowing (in MLD)	No. of HHs covered
Soak Pits/Magic Pits/Leach Pits	0.005	11
Drainage Channels with Soak Pits	0.006	0
Drainage Channels without Soak Pits	0.007	325
Kitchen Garden/Farm	0.11	1700
Total	**[C] = 0.128**	2036

(Any additional planned works i.e. Drainage channels, Soak Pits constructions under MGNREGA or GIA for Grey Water Management may be elaborated here)

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III. **PLASTIC WASTE:**

Quantity of Waste In Tons	During the Month
Total Dry waste segregated	28.80
Total plastic waste segregated	7.105
Total non-plastic waste segregated	21.775
Amount of waste sent to mainland for recycling	-
Amount of waste used for road construction	-

(A) Information incorporated in the SWM bye laws:

Provisions to collect spot fines from violators in production, distribution, storage sale and use of banned plastic & other items	Yes, exist as per SWM Bye Laws, 2019
Penalty for littering of waste (as per SWM Bye Laws) - Actual Fine imposed during the month (in Rs.)	-
Penalty for open burning of plastics (actual fine imposed per month)	-

(B) Details of Open burning incidents:

	No of team enforcing ban of burning plastic	No of inspections conducted	No of incidents identified	Fine imposed/recovered	No of complaints received	Action taken against the violators
During the month	01	02	-	-	-	-

(C) Creating Awareness among all stakeholders:

	No of awareness programs conducted	Departments/stakeholders participated	No of people participated	Number of Beach Clean-up drive Conducted
During the Month	01	02	15	-

(D) Details of Civil societies or group working with waste pickers:

No of Self Helping Groups(SHGs)	No. of people in SHGs	No. of people engaged in waste
-	-	-

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(E) Enforcement of SUP ban:

	No of teams for enforcement of SUP ban	No of field inspections	No of violations observed	No of challans issued	Quantity of plastic seized (in Kg.)	Amount of fine collected (In Rs.)
During the Month	05	07	-	-	-	-

(F) Elaborate on the gaps, if any, with reasons and justification.

Less households are covered under door to door collection system due to inadequate road connectivity, dispersed settlement of households, insufficient number of sanitation staff. Further, many villagers are unwilling to pay the user fee. Also, many commercial establishments are either closed most of the time or their owners are out of station. So, the GPs are unable to collect user fee from these establishments. Government institutions are also refusing to pay user fee stating that they have not received any direction from their respective department for paying user fee to the GP.

6/11/24

Name and Signature of the Block Development Officer with Seal

CU Block, Mayabunder

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F.No.2-3(90)/CDBFG/SBM PHASE-II/2023-24/484
OFFICE OF THE BLOCK DVELOPMENT OFFICER
C.D.BLOCK, FERRARGUNJ

Ferrargunj, Dated 05th November' 2024

To

The Director (RD/P)
Directorate of RD, PRIs & ULBs
Sri Vijayapuram.

Sub: Submission of NGT Report-reg:

Sir,

I am furnishing herewith the monthly progress report of NGT for the month of October, 2024 received from all Gram Panchayats, under the jurisdiction of this Block (Copy enclosed) duly compiled for further necessary action at your end please.

Yours faithfully

05/11/2024

Block Development Officer
C.D.Block, Ferrargunj.

Encl: A/A

Format for Submission of MONTHLY PROGRESS REPORT in the NGT Matter No. 673 of 2018 (in compliance to NGT order dated 24.09.2020)

(Report for the month of October 2024)

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Block : FERRARGUNJ

District : SOUTH ANDAMAN

1.	Total population	59340
2.	No. of households	13937
3.	No. of commercial establishments/private institutions	1006
4.	No. of Government Institutions	198
5.	No. of households covered by door to door collection system	12005
6.	No of households covered by door to door collection system practicing segregation at source	10253
7.	No. of households covered for collection of User- Fees	6107
8.	Total amount collected from HHs as User-Fees(I)	349050
9.	No. of commercial establishments/private institution covered by door to door collection system	1017
10.	No. of commercial establishments/ private institutions covered by door to door collection system practicing segregation at source	1017
11.	No.of commercial establishments/ private institutions covered for collection of User-Fees	831
12.	Total amount collected from commercial establishment/private institutions as User Fees(II)	129600
13.	No. of Government Institutions covered by door to door collection system	183
14.	No. of Government Institutions covered by door to door collection system practicing segregation at source	134
15.	No.of Government Institutions covered for collection of User-Fees	12
16.	Total amount collected from Government Institutions as User Fees(III)	4200
17.	Total Amount of User-Fee collected (I+II+III)	482850
18.	Total quantity of solid waste collected through door to door collection(A) (in Kg) (Per month)	41803
19.	Dry	39758
20.	Wet	2045
21.	No of public garbage sites	77
22.	Total quantity of solid waste collected from public garbage bins (B) (in Kg) (Per month)	38198
23.	Dry	31707
24.	Wet	6491
25.	Total quantity of solid waste collected from door to door collection and public garbage site(A+B) (Per month)	80001
26.	Dry	71465
27.	Wet	8536

I. SOLID WASTE GENERATION

Total generation of Solid Waste (Estimation) Both Dry & Wet (TPD)	8.36 TPD
Total collection of Solid Waste (TPD) – [A]+[B]+[C]	
Existing Segregation Facilities with capacity	0
Proposed Segregation Facilities with capacity (Describe any additional work planned for improving the facilities.)	2

(A) Dry Waste:

Out of the total Solid Waste collected, Quantity of Dry waste (in Kg)(In month)	PET	5954
	All type of Plastics	14626
	Multi Layer Plastics(MLP)	8234
	Paper/Cardboard)	13586
	Tetrapack	6572
	Glass	14394
	Metals(All type)	4189
	E-Waste	557
	Cloth	3329
	Footwear	2091
	Total (A)	73532
Quantity of dry waste sent for recycling locally		0
Quantity of dry waste sent to mainland		713
Quantity of dry waste landfill		0

(A.1) Details of Segregation centres:

1634

Sl No	Name /Location	Design/Installed capacity(in Kg per Day)	Facilities/machin ery like Baling machines with individual	Capacity Utilization (in Kg per Day)
1	SWM Cluster Shorepoint	400	1	220
2	SWM Mainaghat	500	1	210
3	SWM Cluster Collitpur	15	1	15
4	SWM Cluster Wandoor	400	Baling Machine	300
5	SWM Cluster Choaldhan	400	01 Shredding Machine(not functioning), 01 Baling machine	400

(B) Wet Waste

Out of the total Solid Waste collected, Quantity of Segregated wet waste (TPD) –[2]**(Per month)**	0
Quantity of wet waste sent for composting etc.	0
Quantity of wet waste sent for Biomethanation	0
Quantity of wet waste sent to landfill	0
No. of Processing Facilities Available with individual Capacity (Describe the facility, attach separate sheet if required)	SLWM Choaldan, Shore Point
No. of Proposed Facilities with individual Capacity	0

(B) Details of wet waste processing units

S. No	Name /Location/Technology	Design Capacity	Capacity utilization
1	Shorepoint	(5*5*2) cubic metre	(5*5*2) cubic metre
2	Choaldhan	(5*5*2) cubic metre	(5*5*2) cubic metre

(C) Mixed Waste

Out of the total Solid Waste collected, Quantity of Segregated Mixed waste(TPD)–[C] **((Per month in Kg)**	0
Quantity of mixed waste sent to landfills	0

- List of proposed land fills with capacity and utilization:
- List of proposed land fills with capacity:

(D) Bulk Waste Generators as defined in SWM Rules-2016

(Average Wastegeneration rate 100kg/day)

(D.1)List of Bulk Waste generators

Sl.no	Name	Address	Waste generated per day	Composting Units/ Bio- methanation with existing capacity
Nil	Nil	Nil	Nil	Nil

II. **SEWAGE GENERATION :**

(1)Estimated sewage generation (MLD)-[A]+[B]+[C] = 0.08703 MLD

(A)Sewage flowing through Sewerage System

Out of total sewage generated, Quantity of sewage flowing to sewerage system [A]	0
No. of Proposed STPs with individual capacity in MLD	

(B)Sewage flowing through Septic tank

Out of total sewage generated, Quantity of sewage treated in Septic Tank(MLD): [B]	0.0174 MLD
Quantity of Sludge generated:	
No. of FSTP and Quantity of sludge processed in FSTP:	
No. and Capacity of sludge Tanks:	

(C)Sewage flowing through Open:

Out of total sewage generated, Quantity of sewage flowing through open (MLD): [C]:

Kitchen Garden/Farm - 0.0557 MLD
Soak Pits/Magic Pits/Leach Pits -
Drainage Channels with Soak Pits -
Drainage Channels without Soak Pits - 0.01391 MLD

III. **PLASTIC WASTE:**

Quantity of Waste in Tons	During the Month

1635

Total Dry waste segregated	58.568
Total plastic waste segregated	23.497
Total non-plastic waste segregated	35.071
Amount of waste sent to mainland for recycling	0
Amount of waste used for road construction	0

(A) Information incorporated in the SWM bye laws:

Provisions to collect spot fines from violators in production, distribution, storage sale and use of banned plastic & other items	Yes, exist as per SWM Bye Laws, 2019
Penalty for littering of waste (as per SWM Bye Laws) - Actual Fine imposed during the month (in Rs.)	2500
Penalty for open burning of plastics (actual fine imposed per month)	2500

(B) Details of Open burning incidents:

	No of team enforcing ban of burning plastic	No of inspections conducted	No of incidents identified	Fine imposed/recovered	No of complaints received	Action taken against the violators
During the month	3	4	0	0	0	0

(C) Creating Awareness among all stakeholders:

	No of awareness programs conducted	Departments/stakeholders participated	No of people participated	Number of Beach Clean-up drive Conducted
During the Month	5	30	203	2

(D) Details of Civil societies or group working with waste pickers:

No of Self Helping Groups(SHGs)	No. of people in SHGs	No. of people engaged in waste
60	310	0

(E) Enforcement of SUP ban:

	No of teams for enforcement of SUP ban	No of field inspections	No of violations observed	No of challans issued	Quantity of plastic seized (in Kg.)	Amount of fine collected (In Rs.)
During the Month	6	6	Nil	nil	Nil	Nil

(F) Elaborate on the gaps, if any, with reasons and justification.

05/11/2024

Block Development Officer
खंड विकास अधिकारी
CD Block, Ferargunj
सी.डी. ब्लॉक, फरारगंज

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Format for Submission of MONTHLY PROGRESS REPORT in the NGT Matter

673 of 2018 (in compliance to NGT order dated 24.09.2020)

(Report for the month of **November 2024**)

Name of the Block: CD Block Ehle Andaman

District: South Andaman

1.	Total population	25101
2.	No. of households	4964
3.	No. of commercial establishments/private institutions	296
4.	No. of Government Institutions	48
5.	No. of households covered by door to door collection system	1956
6.	No. of households covered by door to door collection system practicing segregation at source	1509
7.	No .of households covered for collection of User-Fees	1079
8.	Total amount collected from HHs as User-Fees(I)	57350.00
9.	No. of commercial establishments/private institution covered by door to door collection system	277
10.	No. of commercial establishments/ private institutions covered by door to door collection system practicing segregation at source	245
11.	No. of commercial establishments/ private institutions covered for collection of User-Fees	272
12.	Total amount collected from commercial establishment/private institutions as User Fees(II)	41100.00
13.	No. of Government Institutions covered by door to door collection system	48
14.	No. of Government Institutions covered by door to door collection system practicing segregation at source	40
15.	No.of Government Institutions covered for collection of User-Fees	0
16.	Total amount collected from Government Institutions as User Fees(III)	0
17.	Total Amount of User-Fee collected (I+II+III)	98450.00
18.	Total quantity of**solid waste** collected through door to door collection**(A) (In Kg) (Per month)**	3870
19.	Dry	5930
20.	Wet	415
21.	No of public garbage sites	60
22.	Total quantity of **solid waste** collected from public garbage bins **(B) (In Kg) (Per month)**	1310
23.	Dry	2045
24.	Wet	475
25.	Total quantity of **solid waste** collected from door to door collection and public garbage site**(A+B) (Per month)**	5180
26.	Dry	7775
27.	Wet	1090

I. SOLID WASTE GENERATION

Total generation of Solid Waste (Estimated) Dry &Wet	7585

(TPD)	
Total collection of Solid Waste (TPD) –**[A]+[B]+[C]**	6205
Existing Segregation Facilities with capacity	1350Kg per Day
Proposed Segregation Facilities with capacity (Describe any additional work planned for improving the facilities.)	1000Kg

(A) Dry Waste:

Out of the total Solid Waste collected, Quantity of Dry waste (in Kg)**(In month)**	PET	225
	All type of Plastics	1786
	Multi Layer Plastics(MLP)	185 Kg
	Paper/Cardboard)	1302 Kg
	Tetrapack	463 Kg
	Glass	1850 Kg
	Metals(All type)	270 Kg
	E-Waste	22
	Cloth	64
	Footwear	6 Kg
	Others (Bushes,etc)	1955
	Total (A)	8128.00
Quantity of dry waste sent for recycling locally (Get the information from Cluster GPs)		No
Quantity of dry waste sent to mainland (Get the information from Cluster GPs)		No
Quantity of dry waste landfill (Get the information from all GPs)		1955

(A.1) Details of Segregation centres:

Sl No	Name /Location	Design/Installed capacity(in Kg per Day)	Facilities/machines (No of shredding, Bailing machines with individual capacity)	Capacity Utilization (in Kg per Day)
1.	Netaji Nagar Cluster	20 Kg	Shedding Machine – 01	20 Kg
2.	SWM Cluster Rabindra Nagar	350 Kg	Baling machine -01 Weighing Machine-01	240 Kg
3.	SLWM Cluster Rabindra Nagar		Baling Machine-01	
4.	SLWM Cluster Netaji Nagar	200 Kg	Shredding machine-01	100 Kg
5.	Rabindra Nagar	150-200 Kg	Baling Machine-01	250-300 Kg

(B) Wet Waste

Out of the total Solid Waste collected, Quantity of Segregated wet waste.(TPD) –[B]**(Per month)**	690
Quantity of wet waste sent for composting etc.	

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Quantity of wet waste sent for Biomethanation	
Quantity of wet waste sent to landfill	500
No. of Processing Facilities Available with individual Capacity (Describe the facility, attach separate sheet if required)	00
No. of Proposed Facilities with individual Capacity	00

(B) Details of wet waste processing units

S. No	Name /Location/Technology	Design Capacity	Capacity utilization
1.	N/A	N/A	N/A

(C) Mixed Waste

Out of the total Solid Waste collected, Quantity of Segregated Mixed waste(TPD)–[C] ((**Per month in Kg**)	1951Kg
Quantity of mixed waste sent to landfills	2900Kg

- List of proposed land fills with capacity and utilization:
- List of proposed land fills with capacity:

(D) Bulk Waste Generators as defined in SWM Rules-2016 (Average Waste generation rate 100kg/day)

(D.1)List of Bulk Waste generators

Sl.no	Name	Address	Waste generated per day	Composting Units/ Bio-methanation with existing capacity
1.	ANIIDCO, Hut Bay	Hathi Dera, Hut Bay	105 Kg	
2.	Lovely Bar, Hut Bay	Hathi Dera, Hut Bay	135 Kg	
3.	Nandini Bar, Hut Bay	Indra Bazar, Hut Bay	85 Kg	

II. SEWAGE GENERATION :

(1)Estimated sewage generation (MLD)-[A]+[B]+[C] = 588104

(A)Sewage flowing through Sewerage System
(1)Estimated sewage generation (MLD)-[A]+[B]+[C] =

(A)Sewage flowing through Sewerage System

Out of total sewage generated, Quantity of sewage flowing to sewerage system-[A]	200482-200532
No. of Proposed STPs with individual capacity in MLD	

(B)Sewage flowing through Septic tank:

Out of total sewage generated, Quantity of sewage treated in Septic Tank(MLD): [B]	24937
Quantity of Sludge generated:	
No. of FSTP and Quantity of sludge processed in FSTP:	
No. and Capacity of sludge Tanks:	

(C)Sewage flowing through Open:

Out of total sewage generated, Quantity of sewage flowing through open (MLD): [C]

Component	Quantity of Sewage flowing (in MLD)	No. of HHs covered
Soak Pits/Magic Pits/Leach Pits		
Drainage Channels with Soak Pits	948	948
Drainage Channels without Soak Pits	50	50
Kitchen Garden/Farm	100	36179
Total	**[C] = 1098**	136177

(Any additional planned works i.e. Drainage channels, Soak Pits constructions under MGNREGA or GIA for Grey Water Management may be elaborated here)

III. PLASTIC WASTE:

Quantity of Waste **in Tons**	During the Month
Total Dry waste segregated	1400.388
Total plastic waste segregated	2100.037
Total non-plastic waste segregated	1490.351
Amount of waste sent to mainland for recycling	-
Amount of waste used for road construction	-

(A) Information incorporated in the SWM bye laws:

Provisions to collect spot fines from violators in production, distribution, storage sale and use of banned plastic & other items	Yes, exist as per SWM Bye Laws, 2019
Penalty for littering of waste (as per SWM Bye Laws) - Actual Fine imposed during the month (in Rs.)	Rs.500 Fine
Penalty for open burning of plastics (actual fine imposed per month)	Rs. 500 Fine

(B) Details of Open burning incidents:

	No of team	No of inspections	No of incidents	Fine imposed/recovered	No of complaints	Action taken

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	enforcing ban of burning plastic	conducted	identified		received	against the violators
During the month	5	0	Nil	Nil	Nil	

(C) Creating Awareness among all stakeholders:

	No of awareness programs conducted	Departments/stakeholders participated	No of people participated	Number of Beach Clean-up drive Conducted
During the Month	4	30	135	2

(D) Details of Civil societies or group working with waste pickers:

No of Self Helping Groups(SHGs)	No. of people in SHGs	No. of people engaged in waste
19	190	

(E) Enforcement of SUP ban:

	No of teams for enforcement of SUP ban	No of field inspections	No of violations observed	No of challans issued	Quantity of plastic seized (in Kg.)	Amount of fine collected (In Rs.)
During the Month	3	4				

(F) Elaborate on the gaps, if any, with reasons and justification.

Name and Signature of the Block Development Officer with Seal

CD Block, Little Andaman

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Format for Submission of MONTHLY PROGRESS REPORT in the NGT Matter No. 673 of 2018 (in compliance to NGT order dated 24.09.2020)

(Report for the month of **October, 2024**)

Name of the Block : Rangat

District : N & M Andaman

1.	Total population	**35550**
2.	No. of households	**9130**
3.	No. of commercial establishments/private institutions	**800**
4.	No. of Government Institutions	**235**
5.	No. of households covered by door to door collection system	**8064**
6.	No.of households covered by door to door collection system practicing segregation at source	**6897**
7.	No .of households covered for collection of User-Fees	**5028**
8.	Total amount collected from HHs as User-Fees**(I)**	**210480**
9.	No. of commercial establishments/private institution covered by door to door collection system	**799**
10.	No. of commercial establishments/ private institutions covered by door to door collection system practicing segregation at source	**760**
11.	No.of commercial establishments/ private institutions covered for collection of User-Fees	**487**
12.	Total amount collected from commercial establishment/private institutions as User Fees**(II)**	**60269**
13.	No. of Government Institutions covered by door to door collection system	**193**
14.	No. of Government Institutions covered by door to door collection system practicing segregation at source	**161**
15.	No.of Government Institutions covered for collection of User-Fees	**117**
16.	Total amount collected from Government Institutions as User Fees**(III)**	**11400**
17.	Total Amount of User-Fee collected **(I+II+III)**	**282149**
18.	Total quantity of **solid waste** collected through door to door collection**(A) (in Kg) (Per month)**	**10848.66**
19.	Dry	**11025.08**

1642

20.	Wet	**752.8**
21.	No of public garbage sites	**413**
22.	Total quantity of **solid waste** collected from public garbage bins **(B)** **(in Kg) (Per month)**	**8210.49**
23.	Dry	**7868.97**
24.	Wet	**649**
25.	Total quantity of **solid waste** collected from door to door collection and public garbage site**(A+B) (Per month)**	**19059.35**
26.	Dry	**18894.05**
27.	Wet	**1422.8**

I. SOLID WASTE GENERATION

Total generation of Solid Waste (Estimation) Both Dry & Wet (TPD)	**5.6246**
Total collection of Solid Waste (TPD) – **[A]+[B]+[C]**	**1.972992**
Existing Segregation Facilities with capacity	**0.5**
Proposed Segregation Facilities with capacity (Describe any additional work planned for improving the facilities.)	**0**

(A) Dry Waste:

Out of the total Solid Waste collected, Quantity of Dry waste (in Kg)**(In month)**	PET	**501.7**
	All type of Plastics	**3097.7**
	Multi Layer Plastics(MLP)	**2071.4**
	Paper/Cardboard)	**6951.8**
	Tetrapack	**787.6**
	Glass	**6343.6**
	Metals(All type)	**1518.55**
	E-Waste	**124.8**
	Cloth	**1127.6**
	Footwear	**420.1**
	Total (A)	**18599.05**
Quantity of dry waste sent for recycling locally		**1891**

1643

(Get the information from Cluster GPs)	
Quantity of dry waste sent to mainland (Get the information from Cluster GPs)	4261.9
Quantity of dry waste landfill (Get the information from all GPs)	174

(A.1) Details of Segregation centres:

Sl No	Name /Location	Design/Installed capacity(in Kg per Day)	Facilities/machines (No of shredding, Bailing machines with individual capacity)	Capacity Utilization (in Kg per Day)
	NA	NA	NA	NA

(B) Wet Waste

Out of the total Solid Waste collected, Quantity of Segregated wet waste:(TPD) –[B]**(Per month)**	580.8
Quantity of wet waste sent for composting etc.	580.8
Quantity of wet waste sent for Biomethanation	0
Quantity of wet waste sent to landfill	0
No. of Processing Facilities Available with individual Capacity (Describe the facility, attach separate sheet if required)	0
No. of Proposed Facilities with individual Capacity	0

(B) Details of wet waste processing units

1644

S. No	Name /Location/Technology	Design Capacity	Capacity utilization
	NA	NA	300

(C) Mixed Waste

Out of the total Solid Waste collected, Quantity of Segregated Mixed waste(TPD)–[C] (**(Per month in Kg)**	**174**
Quantity of mixed waste sent to landfills	**174**

- List of proposed land fills with capacity and utilization:
- List of proposed land fills with capacity:

(D) Bulk Waste Generators as defined in SWM Rules-2016 (Average Waste generation rate 100kg/day)

(D.1)List of Bulk Waste generators

Sl.no	Name	Address	Waste generated per day	Composting Units/ Bio-methanation with existing capacity
	NA	NA	NA	NA

II. <u>SEWAGE GENERATION :</u>

(1)Estimated sewage generation (MLD)-[A]+[B]+[C] = 1.842936

(A)Sewage flowing through Sewerage System

Out of total sewage generated, Quantity of sewage flowing to sewerage system-[A]	**1.842936**
No. of Proposed STPs with individual capacity in MLD	**1.842936**

1645

(B)Sewage flowing through Septic tank

Out of total sewage generated, Quantity of sewage treated in Septic Tank(MLD): [B]	**1.842936**
Quantity of Sludge generated:	**0.4037072**
No. of FSTP and Quantity of sludge processed in FSTP:	**0**
No. and Capacity of sludge Tanks:	**0**

(C)Sewage flowing through Open:

Out of total sewage generated, Quantity of sewage flowing through open (MLD): [C]:

Component	Quantity of Sewage flowing (in MLD)	No. of HHs covered
Soak Pits/Magic Pits/Leach Pits	NA	**0**
Drainage Channels with Soak Pits	NA	**0**
Drainage Channels without Soak Pits	NA	**4587.09366**
Kitchen Garden/Farm	NA	**663.7961**
Total	**[C] =**	**2386.38025**

(Any additional planned works i.e. Drainage channels, Soak Pits constructions under MGNREGA or GIA for Grey Water Management may be elaborated here)

III. PLASTIC WASTE:

Quantity of Waste **in Tons**	During the Month
Total Dry waste segregated	17.94
Total plastic waste segregated	8.41
Total non-plastic waste segregated	13.85
Amount of waste sent to mainland for recycling	0
Amount of waste used for road construction	0

1646

(A) Information incorporated in the SWM bye laws:

Provisions to collect spot fines from violators in production, distribution, storage sale and use of banned plastic & other items	Yes, exist as per SWM Bye Laws, 2019
Penalty for littering of waste (as per SWM Bye Laws) - Actual Fine imposed during the month (in Rs.)	2500
Penalty for open burning of plastics (actual fine imposed per month)	2500

(B) Details of Open burning incidents:

	No of team enforcing ban of burning plastic	No of inspections conducted	No of incidents identified	Fine imposed/recovered	No of complaints received	Action taken against the violators
During the month	NA	NA	NA	NA	NA	NA

(C) Creating Awareness among all stakeholders:

	No of awareness programs conducted	Departments/stakeholders participated	No of people participated	Number of Beach Clean-up drive Conducted
During the Month	10	9	270	1

(D) Details of Civil societies or group working with waste pickers:

No of Self Helping Groups(SHGs)	No. of people in SHGs	No. of people engaged in waste

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11	115	NA
NA	NA	NA

(E) Enforcement of SUP ban:

	No of teams for enforcement of SUP ban	No of field inspections	No of violations observed	No of challans issued	Quantity of plastic seized (in Kg.)	Amount of fine collected (In Rs.)
During the Month	9	8	0	0	0	0

(F) Elaborate on the gaps, if any, with reasons and justification.

Name and Signature of the Block Development Officer with Seal

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Points to be considered while filling up of the monthly report:

1. Nos. covered by Door to Door system at S. No. 5, 9, 13 should match with S. No. 2, 3 and 4 respectively i.e. 100% collection is to be ensured or else public garbage bins is to be ensured for HHs not collected through Door to Door system.
2. Data at S. No. 6,10,14 should match with data t S. No. 5,9,13 i.e. 100 percent practicing segregation at source, if gap in data, measures taken by the Panchayat of fine imposed needs to be appropriately mentioned.
3. Per Day Per capita solid waste generation as per National average is estimated to be 0.5 to 1 Kg in rural. In the Islands, the estimation is taken minimum as 600 gm per Household per day (Dry Waste) and 200 gm (Wet Waste).
   Date reported at S. No. 18 should therefore be in conformity to the above assumption considering the number of HHs, commercial establishments and institutions that are covered.
   Short of data in the above column, should be substantiated with remarks of concerned GP.
4. For HHs, commercial establishments and Govt. Institutions not covered through Door to Door system, sufficient number of public garbage sites/bins should be clearly shown in the report.
5. Total generation of Solid Waste (Estimation) Both Dry & Wet should be calculated as follows –
   No. of HHs x 0.600 Kg = X
6. Sewage Generation –
   55 Litre x Population x 80% = Y
   Y = A+B+C
   C – Open Drain – 80% of Y
   B – 20% of Y
   C- Zero as no Sewerage system exist in rural presently

7. Any ongoing projects, proposed projects in pipeline or planning stage to bridge the gaps may also be mentioned in the report.

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Format for Submission of MONTHLY PROGRESS REPORT in the NGT Matter No. 673 of 2018

(in compliance to NGT order dated 24.09.2020)

(Report for the month of **September 2024**)

Name of the Block : Rangat

District : N & M Andaman

1.	Total population	35550
2.	No. of households	9130
3.	No. of commercial establishments/private institutions	843
4.	No. of Government Institutions	235
5.	No. of households covered by door to door collection system	8064
6.	No.of households covered by door to door collection system practicing segregation at source	6897
7.	No .of households covered for collection of User-Fees	5314
8.	Total amount collected from HHs as User-Fees**(I)**	213350
9.	No. of commercial establishments/private institution covered by door to door collection system	799
10.	No. of commercial establishments/ private institutions covered by door to door collection system practicing segregation at source	728
11.	No.of commercial establishments/ private institutions covered for collection of User-Fees	606
12.	Total amount collected from commercial establishment/private institutions as User Fees**(II)**	79250
13.	No. of Government Institutions covered by door to door collection system	193
14.	No. of Government Institutions covered by door to door collection system practicing segregation at source	181
15.	No.of Government Institutions covered for collection of User-Fees	120
16.	Total amount collected from Government Institutions as User Fees**(III)**	33150
17.	Total Amount of User-Fee collected **(I+II+III)**	332520
18.	Total quantity of **solid waste** collected through door to door collection**(A) (in Kg) (Per month)**	11601.8
19.	Dry	10822.82
20.	Wet	779
21.	No of public garbage sites	414
22.	Total quantity of **solid waste** collected from public garbage bins **(B)** **(in Kg) (Per month)**	8425.08
23.	Dry	7690.08

24.	Wet	735
25.	Total quantity of **solid waste** collected from door to door collection and public garbage site**(A+B) (Per month)**	20026.05
26.	Dry	18512.15
27.	Wet	1514

I. SOLID WASTE GENERATION

Total generation of Solid Waste (Estimation) Both Dry & Wet (TPD)	5.344
Total collection of Solid Waste (TPD) – **[A]+[B]+[C]**	1.129
Existing Segregation Facilities with capacity	0
Proposed Segregation Facilities with capacity (Describe any additional work planned for improving the facilities.)	0

(A) Dry Waste:

Out of the total Solid Waste collected, Quantity of Dry waste (in Kg)**(In month)**	PET	424.2
	All type of Plastics	3934.8
	Multi Layer Plastics(MLP)	2343.72
	Paper/Cardboard)	3064.06
	Tetrapack	894.5
	Glass	5603.22
	Metals(All type)	3158.8
	E-Waste	73
	Cloth	1295.42
	Footwear	867.92
	Total (A)	21659.64
Quantity of dry waste sent for recycling locally (Get the information from Cluster GPs)		0
Quantity of dry waste sent to mainland (Get the information from Cluster GPs)		0
Quantity of dry waste landfill (Get the information from all GPs)		196

(A.1) Details of Segregation centres:

Sl No	Name /Location	Design/Installed capacity(in Kg per Day)	Facilities/machines (No of shredding, Bailing machines with individual capacity)	Capacity Utilization (in Kg per Day)
	NA	NA	NA	NA

(B) Wet Waste

Out of the total Solid Waste collected, Quantity of Segregated wet waste:(TPD) –[B]**(Per month)**	1514
Quantity of wet waste sent for composting etc.	1514
Quantity of wet waste sent for Biomethanation	NA
Quantity of wet waste sent to landfill	NA
No. of Processing Facilities Available with individual Capacity (Describe the facility, attach separate sheet if required)	NA
No. of Proposed Facilities with individual Capacity	NA

(B) Details of wet waste processing units

S. No	Name /Location/Technology	Design Capacity	Capacity utilization
	NA	NA	NA

(C) Mixed Waste

Out of the total Solid Waste collected, Quantity of Segregated Mixed waste(TPD)–[C] (**(Per month in Kg)**	NA
Quantity of mixed waste sent to landfills	NA

- List of proposed land fills with capacity and utilization:
- List of proposed land fills with capacity:

(D) Bulk Waste Generators as defined in SWM Rules-2016 (Average Waste generation rate 100kg/day)

(D.1)List of Bulk Waste generators

Sl.no	Name	Address	Waste generated per day	Composting Units/ Bio-methanation with existing capacity
	NA	NA	NA	NA

II. SEWAGE GENERATION :

(1)Estimated sewage generation (MLD)-[A]+[B]+[C] = 1.5642 MLD

(A)Sewage flowing through Sewerage System

Out of total sewage generated, Quantity of sewage flowing to sewerage system-[A]	1.25136 MLD
No. of Proposed STPs with individual capacity in MLD	NA

(B)Sewage flowing through Septic tank

Out of total sewage generated, Quantity of sewage treated in Septic Tank(MLD): [B]	0.31284 MLD
Quantity of Sludge generated:	NA
No. of FSTP and Quantity of sludge processed in FSTP:	NA
No. and Capacity of sludge Tanks:	NA

(C)Sewage flowing through Open:

Out of total sewage generated, Quantity of sewage flowing through open (MLD): [C]:

Component	Quantity of Sewage flowing (in MLD)	No. of HHs covered
Soak Pits/Magic Pits/Leach Pits	NA	NA
Drainage Channels with Soak Pits	NA	NA
Drainage Channels without Soak Pits	NA	NA
Kitchen Garden/Farm	NA	NA
Total	**[C] =**	NA

(Any additional planned works i.e. Drainage channels, Soak Pits constructions under MGNREGA or GIA for Grey Water Management may be elaborated here)

III. PLASTIC WASTE:

Quantity of Waste **in Tons**	During the Month

Total Dry waste segregated	21.65964
Total plastic waste segregated	6.70272
Total non-plastic waste segregated	14.95692
Amount of waste sent to mainland for recycling	NA
Amount of waste used for road construction	NA

(A) Information incorporated in the SWM bye laws:

Provisions to collect spot fines from violators in production, distribution, storage sale and use of banned plastic & other items	Yes, exist as per SWM Bye Laws, 2019
Penalty for littering of waste (as per SWM Bye Laws) - Actual Fine imposed during the month (in Rs.)	500
Penalty for open burning of plastics (actual fine imposed per month)	500

(B) Details of Open burning incidents:

	No of team enforcing ban of burning plastic	No of inspections conducted	No of incidents identified	Fine imposed/recovered	No of complaints received	Action taken against the violators
During the month	7	4	NA	NA	NA	NA

(C) Creating Awareness among all stakeholders:

	No of awareness programs conducted	Departments/stakeholders participated	No of people participated	Number of Beach Clean-up drive Conducted
During the Month	27	11	439	9

(D) Details of Civil societies or group working with waste pickers:

No of Self Helping Groups(SHGs)	No. of people in SHGs	No. of people engaged in waste
23	127	NA
NA	NA	NA

(E) Enforcement of SUP ban:

	No of teams for enforcement of SUP ban	No of field inspections	No of violations observed	No of challans issued	Quantity of plastic seized (in Kg.)	Amount of fine collected (In Rs.)
During the Month	13	16	NA	NA	NA	NA

(F) Elaborate on the gaps, if any, with reasons and justification.

- Insufficient manpower and non-availability of vehicle restricts coverage to only 8064 out of 9130 households.
- Around 6897 households practice segregation while others demand separate dustbins following a previous government initiative of distributing colour coded bins for dry and wet waste segregation highlighting a significant challenge of leading a mindset shift.
- Low user fee collection as many residents cite financial constraints while others condition payment on the receipt of collection services.
- Government institutions notified about the timely monthly user fee payment and outstanding dues.
- Low capacity utilisation of bailing machine constrained by insufficient manpower for daily collection and intermittent segregation.
- Underutilization of compost pits as Households manage their wet waste internally resulting in no collection of wet waste.
- Glass vendors have visited the site. Next shipment to be done soon.

Name and Signature of the Block Development Officer with Seal

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F.No. 2-3(90)/CDBFG/SBM PHASE-II/2023-24/415
OFFICE OF THE BLOCK DVELOPMENT OFFICER
C.D. BLOCK, FERRARGUNJ

Ferrargunj, 05th ~~September~~ October, 2024

To

The Director (RD/P)
Directorate of RD, PRIs & ULBs
Sri Vijayapuram

Sub: Submission of NGT Report- reg.

Sir,

I am furnishing herewith the monthly progress report of NGT for the month of September, 2024 received from all Gram Panchayats, under the jurisdiction of this Block (copy enclosed) duly compiled for further necessary action at your end please.

Yours faithfully

Encl:A/A

07/10/2024

Block Development Officer
C.D.Block, Ferrargunj

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Format for Submission of MONTHLY PROGRESS REPORT in the NGT Matter No. 673 of 2018 (in compliance to NGT order dated 24.09.2020)

(Report for the month of September 2024)

Block : FERRARGUNJ

District : SOUTH ANDAMAN

1.	Total population	59340
2.	No. of households	13937
3.	No. of commercial establishments/private institutions	1006
4.	No. of Government Institutions	198
5.	No. of households covered by door to door collection system	12005
6.	No.of households covered by door to door collection system practicing segregation at source	10253
7.	No .of households covered for collection of User-Fees	6107
8.	Total amount collected from HHs as User-Fees(I)	329750
9.	No. of commercial establishments/private institution covered by door to door collection system	1001
10.	No. of commercial establishments/ private institutions covered by door to door collection system practicing segregation at source	906
11.	No.of commercial establishments/ private institutions covered for collection of User-Fees	774
12.	Total amount collected from commercial establishment/private institutions as User Fees(II)	135610
13.	No. of Government Institutions covered by door to door collection system	172
14.	No. of Government Institutions covered by door to door collection system practicing segregation at source	134
15.	No.of Government Institutions covered for collection of User-Fees	9
16.	Total amount collected from Government Institutions as User Fees(III)	600
17.	Total Amount of User-Fee collected (I+II+III)	465960
18.	Total quantity of **solid waste** collected through door to	39940
19.	Dry	38320
20.	Wet	1720
21.	No of public garbage sites	165
22.	Total quantity of **solid waste** collected from public garbage bins **(B)**	46077
23.	Dry	37621
24.	Wet	8456

25.	Total quantity of **solid waste** collected from door to door collection and public garbage site**(A+B) (Per**	86017
26.	Dry	75941
27.	Wet	10176

I. SOLID WASTE GENERATION

Total generation of Solid Waste (Estimation) Both Dry & Wet	9.32 TPD
Total collection of Solid Waste (TPD) – **[A]+[B]+[C]**	3.89 TPD
Existing Segregation Facilities with capacity	0
Proposed Segregation Facilities with capacity	0

(A) Dry Waste:

Out of the total Solid Waste collected, Quantity of Dry waste (in Kg)**(In month)**	PET	6417
	All type of Plastics	13644
	Multi Layer Plastics(MLP)	7656
	Paper/Cardboard)	10255
	Tetrapack	5488
	Glass	9489
	Metals(All type)	5360
	E-Waste	1067
	Cloth	3443
	Footwear	2151
	Total (A)	64970
Quantity of dry waste sent for recycling locally		35892
Quantity of dry waste sent to mainland		734
Quantity of dry waste landfill		0

(A.1) Details of Segregation centres:

Sl No	Name /Location	Design/Installed capacity(in Kg per	Facilities/machines (No of shredding, Bailing	Capacity Utilization (in Kg per Day)
1	SLWM Cluster	400	1	220
2	SLWM Mannarghat	500	1	Machine under repair
3	SLWM Cluster	15	1	15
4	SLWM Cluster	400	Bailing Machine	400
5	Chouldari SWM	400	01 Shredding Machine(not	Data not available

(B) Wet Waste

Out of the total Solid Waste collected, Quantity of	10525
Quantity of wet waste sent for composting etc	1130
Quantity of wet waste sent for Biomethanation	0
Quantity of wet waste sent to landfill	50
No. of Processing Facilities Available with individual Capacity (Describe the facility, attach separate sheet if required)	SLWM Chouldari
No. of Proposed Facilities with individual Capacity	02 Nos plts

(B) Details of wet waste processing units

S.	Name	Design Capacity	Capacity utilization
1.	Shorepoint	(5*5*2) cubic metre	(5*5*2) cubic metre

2	Mannarghat	(5*5*2) cubic metre	(5*5*2) cubic metre
3	Chouldari	(5*5*2) cubic metre	(5*5*2) cubic metre
4	Collimpur	(5*5*2) cubic metre	(5*5*2) cubic metre
5	Brindaban	(5*5*2) cubic metre	(5*5*2) cubic metre
6	Wandoor	(5*5*2) cubic metre	(5*5*2) cubic metre

(C) Mixed Waste

Out of the total Solid Waste collected, Quantity of Segregated Mixed waste(TPD)–[C]	0
Quantity of mixed waste sent to landfills	0

- List of proposed land fills with capacity and utilization:
- List of proposed land fills with capacity:

(D) Bulk Waste Generators as defined in SWM Rules-2016 (Average Waste generation rate 100kg/day)

(D.1)List of Bulk Waste generators

Sl.no	Name	Address	Waste	Composting Units/ Bio- methanation with
Nil	Nil	Nil	Nil	Nil

II. SEWAGE GENERATION :

(1)Estimated sewage generation (MLD)-[A]+[B]+[C] 73684.037

(A)Sewage flowing through Sewerage System

Out of total sewage generated, Quantity of sewage flowing to	29113.29
No. of Proposed STPs with individual capacity in MLD	

(B)Sewage flowing through Septic tank

Out of total sewage generated, Quantity of sewage treated in Septic	44570.35
Quantity of Sludge generated:	
No. of FSTP and Quantity of sludge processed in FSTP:	
No. and Capacity of sludge Tanks:	

(C)Sewage flowing through Open:

Out of total sewage generated, Quantity of sewage flowing through open (MLD): [C]:

Kitchen Garden/Farm - 0.66 MLD
Soak Pits/Magic Pits/Leach Pits -
Drainage Channels with Soak Pits -
III. Drainage Channels without Soak Pits - 0.022 MLD

Quantity of Waste in Tons	During the Month
Total Dry waste segregated	54.89
Total plastic waste segregated	21.44
Total non-plastic waste segregated	60.19
Amount of waste sent to mainland for recycling	0
Amount of waste used for road construction	0

(A) Information incorporated in the SWM bye laws:

Provisions to collect spot fines from violators in production,	Yes, exist as per SWM Bye Laws,
Penalty for littering of waste (as per SWM Bye Laws) - Actual	500
Penalty for open burning of plastics (actual fine imposed per	500

(B) Details of Open burning incidents:

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	No of team enforcing ban of burning plastic	No of inspection s conducted	No of incident s identifie d	Fine imposed/recovere d	No of complaint s received	Action taken against the violator s
During	4	5	0	0	0	0

(C) Creating Awareness among all stakeholders:

	No of	Departments/stakeholders	No of people participated	Number of
During	11	48	435	3

(D) Details of Civil societies or group working with waste pickers:

No of Self Helping	No. of people in SHGs	No. of people engaged in waste
95	615	0

(E) Enforcement of SUP ban:

	No of teams	No of field	No of	No of	Quantity of plastic seized (in	Amount of
During	5	7	Nil	nil	Nil	Nil

(F) Elaborate on the gaps, if any, with reasons and justification.

खण्ड विकास अधिकारी
Block Development Officer
फुलपरास / Phulparas
P.D. Block, Phulparas

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4-91/BDO/CD[illegible]GT/2024/229

खण्ड विकास अधिकारी का कार्यालय

OFFICE OF THE BLOCK DEVELOPMENT OFFICER

सामुदायिक विकास खण्ड, लिटिल अण्डमान

C.D. BLOCK, LITTLE ANDAMAN

Hut Bay dated 07th October, 2024

To

The Director (RD/Panch.)
Directorate of RD,PRIs & ULBs
Sri Vijaya Puram

Sub:- submission of NGT Report, reg.

Sir,

I am furnishing herewith the monthly progress report of NGT for the month of September, 2024 received from all Gram Panchayats, under the Jurisdiction of this Block (copy enclosed) duly complied for further necessary action at your end please.

Your Faithfully

Encl:A/A

07/10/24

खण्ड विकास अधिकारी
Block Development Officer
सामुदायिक विकास खण्ड, लिटिल अण्डमान
CD Block, Little Andaman

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Format for Submission of MONTHLY PROGRESS REPORT in the NGT Matter No. 673 of 2018 (in compliance to NGT order dated 27.09.2021)

(Report for the month of September 2024)

Name of the Block: C.I Block Sthe Andaman

District: South Andaman

1	Total population	25101
2	No of households	4664
3	No of commercial establishments/private institutions	296
4	No. of Government Institutions	48
5	No of households covered by door to door collection system	2313
6	No of households covered by door to door collection system practicing segregation at source	1514
7.	No of households covered for collection of User-Fees	1265
8.	Total amount collected from HHs as User-Fees(I)	66950.00
9.	No. of commercial establishments/private institution covered by door to door collection system	271
10.	No. of commercial establishments/ private institutions covered by door to door collection system practicing segregation at source	239
11.	No.of commercial establishments/ private institutions covered for collection of User-Fees	254
12.	Total amount collected from commercial establishment/private institutions as User Fees(II)	36500.00
13.	No. of Government Institutions covered by door to door collection system	48
14.	No. of Government Institutions covered by door to door collection system practicing segregation at source	40
15.	No.of Government Institutions covered for collection of User-Fees	0
16.	Total amount collected from Government Institutions as User Fees(III)	0
17.	Total Amount of User-Fee collected (I+II+III)	103450
18.	Total quantity ofsolid waste collected through door to door collection(A) (in Kg) (Per month)	13720
19.	Dry	8666
20.	Wet	790
21.	No of public garbage sites	55
22.	Total quantity of solid waste collected from public garbage bins (B) (in Kg) (Per month)	800
23.	Dry	3495

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24.			
25.	Total quantity of solid waste collected from door to door collection and public garbage site(**A+B**) **(Per month)**	Wet	555 4720
26.		Dry	12161
27.		Wet	1345

I. SOLID WASTE GENERATION

Total generation of Solid Waste (Estimation) Both Dry &Wet (TPD)	13086
Total collection of Solid Waste (TPD) –**[A]+[B]+[C]**	13506
Existing Segregation Facilities with capacity	1350Kg per Day
Proposed Segregation Facilities with capacity (Describe any additional work planned for improving the facilities.)	1600Kg

(A) Dry Waste:

Out of the total Solid Waste collected, Quantity of Dry waste (in Kg)**(In month)**	PET	198
	All type of Plastics	2462
	Multi Layer Plastics(MLP)	168 Kg
	Paper/Cardboard)	1595Kg
	Tetrapack	345 Kg
	Glass	1770 Kg
	Metals(All type)	451Kg
	E-Waste	22
	Cloth	117
	Footwear	11 Kg
	Others (Bushes,etc)	2355
	Total (A)	9303
Quantity of dry waste sent for recycling locally (Get the information from Cluster GPs)		No
Quantity of dry waste sent to mainland (Get the information from Cluster GPs)		No
Quantity of dry waste landfill (Get the information from all GPs)		2505

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(A.1) Details of Segregation centres:

Sl No	Name /Location	Design/Installed capacity(in Kg per Day)	Facilities/machines (No of shredding, Baling machines with individual capacity)	Capacity Utilization (in Kg per Day)
1.	Netaji Nagar Cluster	20Kg	Shedding Machine – 01	20 Kg
2	SWM Cluster Rabindra Nagar	350 Kg	Baling machine -01 Weighing Machine-01 Baling Machine-01	350 Kg
3	SLWM Cluster Rabindra Nagar			
4	SLWM Cluster Netaji Nagar	200 Kg	Shredding machine-01	100 Kg
5	Rabindra Nagar	150-200 Kg	Baling Machine-01	250-300 Kg

(B) Wet Waste

Out of the total Solid Waste collected, Quantity of Segregated wet waste:(TPD) –[B]**(Per month)**	2200
Quantity of wet waste sent for composting etc	
Quantity of wet waste sent for Biomethanation	
Quantity of wet waste sent to landfill	500
No. of Processing Facilities Available with individual Capacity (Describe the facility, attach separate sheet if required)	Required 02 Nos shed for composting of wet waste.
No. of Proposed Facilities with individual Capacity	02 Nos ,Vermi compost pit may be constructed at SWM.

(B) Details of wet waste processing units

S No	Name /Location/Technology	Design Capacity	Capacity utilization
1.	N/A	N/A	N/A

(C) Mixed Waste

Out of the total Solid Waste collected, Quantity of Segregated Mixed waste(TPD)–[C] **((Per month in Kg)**	4301Kg

Quantity of mixed waste sent to landfills **1664**	2800Kg

- List of proposed land fills with capacity and utilization
- List of proposed land fills with capacity

(D) Bulk Waste Generators as defined in SWM Rules 2016 (Average Waste generation rate 100kg/day)

(D.1)List of Bulk Waste generators

Sl.no	Name	Address	Waste generated per day	Composting/ Units/ Bio-methanation with existing capacity
1	ANIIDCO, Hut Bay	HathiDera, Hut Bay	85 Kg	
2	Lovely Bar, Hut Bay	HathiDera, Hut Bay	160 Kg	
3.	Nandini Bar, Hut Bay	IndraBazar, Hut Bay	100 Kg	

II. SEWAGE GENERATION :

(1)Estimated sewage generation (MLD)-[A]+[B]+[C] = 532840

(A)Sewage flowing through Sewerage System
(1)Estimated sewage generation (MLD)-[A]+[B]+[C] =

(A)Sewage flowing through Sewerage System

Out of total sewage generated, Quantity of sewage flowing to sewerage system-[A]	473282-473783
No. of Proposed STPs with individual capacity in MLD	

(B)Sewage flowing through Septic tank

Out of total sewage generated, Quantity of sewage treated in Septic Tank(MLD): [B]	41987
Quantity of Sludge generated:	
No. of FSTP and Quantity of sludge processed in FSTP:	
No. and Capacity of sludge Tanks:	

(C)Sewage flowing through Open:

Out of total sewage generated, Quantity of sewage flowing through open (MLD) [C]
429369.6

Component	Quantity of Sewage flowing (in MLD)	No. of HHs covered
Soak Pits/Magic Pits/Leach Pits		
Drainage Channels with Soak Pits	948	948
Drainage Channels without Soak Pits	50	50
Kitchen Garden/Farm	100	35179
Total	**[C] = 1098**	36177

(Any additional planned works i.e. Drainage channels, Soak Pits / constructions under MGNREGA or GIA for Grey Water Management may be elaborated here)

III. PLASTIC WASTE:

Quantity of Waste in Tons	During the Month
Total Dry waste segregated	4500.375
Total plastic waste segregated	3070.47
Total non-plastic waste segregated	3570.328
Amount of waste sent to mainland for recycling	-
Amount of waste used for road construction	-

(A) Information incorporated in the SWM bye laws:

Provisions to collect spot fines from violators in production, distribution, storage sale and use of banned plastic & other items	Yes, exist as per SWM Bye Laws, 2019
Penalty for littering of waste (as per SWM Bye Laws) - Actual Fine imposed during the month (in Rs.)	Rs.500 Fine
Penalty for open burning of plastics (actual fine imposed per month)	Rs. 500 Fine

(B) Details of Open burning incidents:

	No of team enforcing ban of	No of inspections	No of incidents identifie	Fine imposed/recovered	No of complaints received	Action taken against the

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	burning plastic	conducted	d			violator s
During the month	5	3	Nil	Nil	Nil	

(C) Creating Awareness among all stakeholders:

	No of awareness programs conducted	Departments/stakeholders participated	No of people participated	Number of Beach Clean-up drive Conducted
During the Month	4	17	110	2

(D) Details of Civil societies or group working with waste pickers:

No of Self Helping Groups(SHGs)	No. of people in SHGs	No. of people engaged in waste
19	190	

(E) Enforcement of SUP ban:

	No of teams for enforcement of SUP ban	No of field inspections	No of violations observed	No of challans issued	Quantity of plastic seized (in Kg.)	Amount of fine collected (In Rs.)
During the Month	3	2				

(F) Elaborate on the gaps, if any, with reasons and justification.

Name and Signature of the Block Development Officer with Seal

Block Development Officer

1667

OFFICE OF THE GRAM PANCHAYAT

CAMPBELL BAY

Format for Submission of MONTHLY PROGRESS REPORT in the NGT Matter No. 673 of 2018 (in compliance to NGT order dated 24.09.2020)s

(Report for the month of SEPTEMBER 2024)

Name of the Gram Panchayat : **CAMPBELL BAY**

Block : CAMPBELL BAY

District : NICOBAR

Total population	4155
No. of households	450
No. of commercial establishments/private institutions	52
No. of Government Institutions	23
No. of households covered by door to door collection system	450
No. of households covered by door to door collection system practicing segregation at source	430
No .of households covered for collection of User-Fees	128*
Total amount collected from HHs as User-Fees **(I)**	6500
No. of commercial establishments/private institution covered by door to door collection system	52
No. of commercial establishments/ private institutions covered by door to door collection system practicing segregation at source	52
No. of commercial establishments/ private institutions covered for collection of User-Fees	39*
Total amount collected from commercial establishment/private institutions as User Fees **(II)**	8880
No. of Government Institutions covered by door to door collection system	18
No. of Government Institutions covered by door to door collection system practicing segregation at source	18
No. of Government Institutions covered for collection of User-Fees	01
Total amount collected from Government Institutions as User Fees **(III)**	34200

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Total Amount of User-Fee collected **(I+II+III)**	**49580**
Total quantity of waste collected through door to door collection **(A) (in Kg) (Per month)**	
Dry	712
Wet	NIL
No. of public garbage sites	
Total quantity of waste collected from public garbage bins **(B) (in Kg) (Per month)**	
Dry	169
Wet	-
Total quantity of waste collected from door to door collection and public garbage site **(A+B) (Per month)**	
Dry	**881**
Wet	NIL

I. SOLID WASTE GENERATION

Total generation of Solid Waste (Estimation) Both Dry & Waste	
Total collection of Solid Waste (TPD) – [A]+[B]+[C]	0.0297(TPD)
Existing Segregation Facilities with capacity	SLWM Cluster at Vijay Nagar
Proposed Segregation Facilities with capacity	NIL

(A) DRY Waste:

Out of the total Solid Waste collected, Quantity of Dry waste (in Kg) **(In month)**	PET	Nil
	All type of Plastics	164
	Multi Layer Plastics(MLP)	139
	Paper/Cardboard)	98
	Tetra pack	34
	Glass	279
	Metals(All type)	47
	E-Waste	Nil
	Cloth	78
	Footwear	42
	Total (A)	**881**

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Quantity of dry waste sent for recycling locally	Nil
Quantity of dry waste sent to mainland	Nil
Quantity of dry waste landfill	Nil

(A.1) Details of Segregation centers:

Sl No	Name /Location	Design Installed capacity (in Kg per Day)	Facilities/machines (No of shredding, Bailing machines with individual capacity)	Capacity Utilization (in Kg per Day)
1.	Primary Segregation Centre at W No 04 under GP Campbell Bay	30Kg/Day	NIL	NIL
2.	SLWM Cluster at Vijay Nagar,18KM	50Kg/Day	Bailing Machine	NIL

(B) Wet Waste

Out of the total Solid Waste collected, Quantity of Segregated wet waste:(TPD) –[B] **(Per month)**	NIL
Quantity of wet waste sent for composting etc	NIL
Quantity of wet waste sent for Biomethanation	NIL
Quantity of wet waste sent to landfill	NIL
No. of Processing Facilities Available with individual Capacity	NIL
No. of Proposed Facilities with individual Capacity	NIL

(B) Details of wet waste processing units

S. No	Name /Location/Technology	Design Capacity	Capacity utilization
	NIL	NIL	NIL

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(C) Mixed Waste

Out of the total Solid Waste collected, Quantity of Segregated Mixed waste(TPD)–[C] **((Per month in Kg)**	-
Quantity of mixed waste sent to landfills	-

- List of proposed land fills with capacity and utilization:
- List of proposed land fills with capacity:

(D) Bulk Waste Generators as defined in SWM Rules-2016 (Average Waste generation rate 100kg/day)

(D.1)List of Bulk Waste generators

Sl. no	Name	Address	Waste generated per day	Composting Units/ Bio-methanation with existing capacity
	-	-	-	-

II. SEWAGE GENERATION :

(1)Estimated sewage generation (MLD)-[A] + [B] +[C] = 5.91(MLD)

(A)Sewage flowing through Sewerage System

Out of total sewage generated, Quantity of sewage flowing to sewerage system-[A]	-
No. of Proposed STPs with individual capacity in MLD	-

(B)Sewage flowing through Septic tank

Out of total sewage generated, Quantity of sewage treated in Septic Tank(MLD): [B]	1.159(MLD)
Quantity of Sludge generated:	-
No. of FSTP and Quantity of sludge processed in FSTP:	-
No. and Capacity of sludge Tanks:	-

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(C)Sewage flowing through Open drains:

Out of total sewage generated, Quantity of sewage flowing to open drains (MLD): [C].

Component	Quantity of Sewage flowing(in MLD)	No. of HHs Covered
Soak Pits/Magic Pits/Leach Pits		
Drainage Channels with Soak Pits		
Drainage Channels without Soak Pits	3.790(MLD)	
Kitchen Garden/Farm	0.0961(MLD)	
Total	4.721(MLD)	450

III. PLASTIC WASTE:

Quantity of Waste in Tons	During the Month
Total Dry waste segregated	0.708
Total plastic waste segregated	0.137
Total non-plastic waste segregated	0.744
Amount of waste sent to mainland for recycling	-
Amount of waste used for road construction	-

(A) Information incorporated in the SWM bye laws:

Provisions to collect spot fines from violators in production, distribution, storage sale and use of banned plastic & other items	Yes.
Penalty for littering of waste	Rs. 500 Fine
Penalty for open burning of plastics	Rs. 500 Fine

(B) Details of Open burning incidents:

	No of team enforcing ban of burning plastic	No of inspections conducted	No of incidents identified	Fine imposed/recovered	No of complaints received	Action taken against the violators
During the month	-	-	-	-	-	-

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(C) Creating Awareness among all stakeholders:

During the Month	No. of awareness programs conducted	Departments/stakeholders participated	No. of people participated	Number of Awareness programs of solid waste
September2024	2	6	200	127

(D) Details of Civil societies or group working with waste pickers:

No. of Self Helping Groups(SHGs)	No. of people in SHGs	No. of people engaged in waste
15	150	NIL

(E) Enforcement of SUP ban:

During the Month	No of teams for enforcement of SUP ban	No of field inspections	No of violations observed	No. of challans issued	Quantity of plastic seized (in Kg.)	Amount of fine collected (In Rs.)
September2024	NIL	NIL	NIL	NIL	NIL	NIL

(F) Elaborate on the gaps, if any, with reasons and justification.

1*

2*user fee could not collected as some of the commercial establishment was found closed for entire month.

Pradhan
Gram Panchayat

Pradhan
Gram Panchayat
Campbell Bay

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No.6-75/NGT/NAB/DP/2024-25/551

खण्ड विकास अधिकारी का कार्यालय

1673

OFFICE OF THE BLOCK DEVELOPMENT OFFICER

सामुदायिक विकासखण्ड, डिगलीपुर, उत्तरी अण्डमान

C.D. BLOCK, DIGLIPUR, NORTH ANDAMAN

Diglipur dated the 07th October, 2024

To

The Director
Directorate of RD, PRIs &ULBs
A&N Administration, Marine Hill

Sub: - Submission of Monthly Progress Report on Solid waste Management under NGT Matter No .673 of 2018 for the Month of October 2024 reg.

Sir,

Please find enclosed herewith the Monthly Progress Report on Solid waste Management under NGT Matter No. 673 of 2018 (in compliance to NGT Order dated 24.09.2020) for the Month of October, 2024 in respect of C.D. Block Diglipur along with the copy of Monthly report received from following Gram Panchayat for further necessary action at your end please.

Sl No.	Name of Gram Panchayat	Remarks
1.	Diglipur	Received
2.	Subashgram	Received
3.	R.K. Gram	Received
4.	Shibpur	**Not Received**
5.	Gandhinagar	Received
6.	Keralapuram	Received
7.	Laxmipur	Received
8.	Madhupur	Received
9.	Radhanagar	Received
10.	Sitanagar	Received
11.	Nabagram	Received
12.	Ramnagar	Received
13.	Kalighat	Received
14.	Paschimsagar	Received
15.	Kishorinagar	Received

Yours faithfully

07.10.24

खण्ड विकास अधिकारी
Block Development Officer
सामुदायिक विकासखण्ड, डिगलीपुर
C.D. Block, Diglipur

Copy to:-

1. PA to DC, N&MA, for information of the Deputy Commissioner Mayabunder please.
2. The Assistant Commissioner, Diglipur for kind information please.

07.10.24

खण्ड विकास अधिकारी
Block Development Officer
सामुदायिक विकासखण्ड, डिगलीपुर
C.D. Block, Diglipur

Format for Submission of MONTHLY PROGRESS REPORT in the NGT Matter No. 673 of 2018 (in compliance to NGT order dated 24.09.2020)		
(Report for the Month of September 2024)		
Name of the Block:**Diglipur**		
District: **North & Middle Andaman**		
1.	Total population	38040
2.	No. of households	10007
3.	No. of commercial establishments/private institutions	898
4.	No. of Government Institutions	268
5.	No. of households covered by door to door collection system	9230
6.	No.of households covered by door to door collection system practicing segregation at source	8930
7.	No .of households covered for collection of User-Fees	5483
8.	Total amount collected from HHs as User-Fees**(I)**	353390
9.	No. of commercial establishments/private institution covered by door to door collection system	867
10.	No. of commercial establishments/ private institutions covered by door to door collection system practicing segregation at source	855
11.	No.of commercial establishments/ private institutions covered for collection of User-Fees	788
12.	Total amount collected from commercial establishment/private institutions as User Fees**(II)**	108830
13.	No. of Government Institutions covered by door to door collection system	239
14.	No. of Government Institutions covered by door to door collection system practicing segregation at source	210
15.	No.of Government Institutions covered for collection of User-Fees	40
16.	Total amount collected from Government Institutions as User Fees**(III)**	44570
17.	Total Amount of User-Fee collected **(I+II+III)**	**506790**
18.	Total quantity of waste collected through door to door collection**(A) (in Kg) (Per month)**	**18722**
19.	Dry	18722

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20.	Wet	0
21.	No of public garbage sites	769
22.	Total quantity of waste collected from public garbage bins **(B) (in Kg) (Per month)**	85173
23.	Dry	76963
24.	Wet	8210
25.	Total quantity of waste collected from door to door collection and public garbage site**(A+B) (Per month)**	**103895**
26.	Dry	95685
27.	Wet	8210

	I. SOLID WASTE GENERATION	
1	Total generation of Solid Waste (Estimation) Both Dry & Waste	6004.2
2	Total collection of Solid Waste (TPD) -[A]+[B]+[C]	95.925
3	Existing Segregation Facilities with capacity	2000
4	Proposed Segregation Facilities with capacity	3

27

	(A) Dry Waste:		
1	Out of the total Solid Waste collected, Quantity of Dry waste (in Kg)(In month)	PET	3079
		All type of Plastics	4359
		Multi Layer Plastics(MLP)	4306
		Paper/Cardboard)	28627
		Tetrapack	10300
		Glass	39033
		Metals(All type)	1655
		E-Waste	349
		Cloth	2699
		Footwear	1278
		Total (A)	**95685**
2	Quantity of dry waste sent for recycling locally		298
3	Quantity of dry waste sent to mainland		5366

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4	Quantity of dry waste landfill		0

(A.1) Details of Segregation centres:				
Sl No	Name /Location	Design/Installed capacity(in Kg per Day)	Facilities/machines (No of shredding, Bailing machines with individual capacity)	Capacity Utilization (in Kg per Day)
1	Radhanagar Cluster	500	(1.5) 01	100
2	Gandhinagar (Radhanagar Cluster)	500	(1.5) 01	0
3	Diglipur (Madhupur Cluster)	0	0	0
4	Madhupur Cluster	500	1	300
5	Ramnagar (Nabagram Cluster)	0	1	0
6	Sitanagar (Madhupur Cluster)	0	0	0
7	Laxmipur	0	0	0
8	Nabagram Cluster	500	1 (2 toncapt.)	0
9	Kalighat (Nabagram Cluster)	500	1 (2 toncapt.)	0
10	R.K. Gram Madhupur Cluster	0	0	0
11	Keralapuram	500	1	400
12	Kishorinagar Cluster	400	1.5 (ton)	0
13	Paschimsagar (Kishorinagar Cluster)	0	0	0
14	Shibpur	0	0	0
15	Subashgram(Madhupur Cluster)	0	(2 t) 1	0

(B) Wet Waste		
1	Out of the total Solid Waste collected, Quantity of Segregated wet waste:(TPD) -[B](**Per month**)	0.24
2	Quantity of wet waste sent for composting etc.	0.965
3	Quantity of wet waste sent for Biomethanation	0

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4	Quantity of wet waste sent to landfill	0
5	No. of Processing Facilities Available with individual Capacity	4 Nos. compost pit with 3cbm capacity per tank
6	No. of Proposed Facilities with individual Capacity (sqm)	100

(B) Detailes of wet waste processing units			
Sl. No.	Name	Design capacity	Capacity utilization
1	Radhanagar Cluster	12 cbm compose pit (3 Cbm per tanks total 4 Nos.	0
2	Gandhinagar (Radhanagar Cluster)	13 cbm compose pit (3 Cbm per tanks total 4 Nos.	0%
3	Diglipur (Madhupur Cluster)	0	0
4	Madhupru Cluster	10 cbm compose pit (3 Cbm per tanks	0
5	Ramnagar (Nabagram Cluster)	2 cbm compose pit (3 Cbm per tanks	0
6	Sitanagar (Madhupur Cluster)	0	0
7	Laxmipur	0	0
8	Nabagram Cluster	2 cbm compose pit (3 Cbm per tanks	0
9	Kalighat (Nabagram Cluster)	2 cbm compose pit (3 Cbm per tanks	0
10	R.K. Gram Madhupur Cluster	0	0
11	Keralapuram	4 Nos. CC compose pit with 02 cbm Capacity	20%
12	Kishorinagar Cluster	0	0
13	Paschimsagar (Kishorinagar Cluster)	0	0
14	Shibpur	0	0
15	Subasheram(Madhupur Cluster)	12 Nos. 2 cbm vermi compose tank	0

(C) Mixed Waste		
1	Out of the total Solid Waste collected, Quantity of Segregated Mixed waste(TPD)-[C] **((Per month in Kg)**	0
2	Quantity of mixed waste sent to landfills	0

- List of proposed land fills with capacity and utilization:
- List of proposed land fills with capacity:

(D) Bulk Waste Generators as defined in SWM Rules,2016 (Average Waste generation rate 100kg/day)

723916/2024/SPMU-RGSA

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(D) Bulk waste generators as defined in SWM Rules-2016 (Average waste generation rate 100kg/day)

(D.1)List of Bulk Waste generators				
Sl.no	Name	Address	Waste generated per day	Composting Units/ Bio-methanation with existing capacity
1	Vegitable Market	Subashgram	1000 KG	0

II. SEWAGE GENERATION :		
(1)Estimated sewage generation (MLD)-[A]+[B]+[C] =1787544		
(A)Sewage flowing through Sewerage System		
1	Out of total sewage generated, Quantity of sewage flowing to sewerage system-[A]	0
2	No. of Proposed STPs with individual capacity in MLD	0
(B)Sewage flowing through Septic tank		
1	Out of total sewage generated, Quantity of sewage treated in Septic Tank(MLD): [B]	334752
2	Quantity of Sludge generated:	0
3	No. of FSTP and Quantity of sludge processed in FSTP:	0
4	No. and Capacity of sludge Tanks:	0
(C)Sewage flowing through Open drains:		
Out of total sewage generated, Quantity of sewage flowing to open drains (MLD): [C]:		
1	Kitchen Garden/Farm	1274251
2	Soak Pit/Magic Pits/Leach Pits	87120.2
3	Drainage Channels with Soak Pits	0
4	Drainage Channels without Soak Pits	68664
III. PLASTIC WASTE:		
1	Quantity of Waste in Tons	During the Month

723916/2024/SPMU-RGSA

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2	Total Dry waste segregated	65.351
3	Total plastic waste segregated	10.4121
4	Total non-plastic waste segregated	85.5948
5	Amount of waste sent to mainland for recycling	0
6	Amount of waste used for road construction	0

(A) Information incorporated in the SWM bye laws:

1	Provisions to collect spot fines from violators in production, distribution, storage sale and use of banned plastic & other items	Yes exist as per SWM Bye laws 2019.
2	Penalty for littering of waste	0
3	Penalty for open burning of plastics	0

(B) Details of Open burning incidents:

	No of team enforcing ban of burning plastic	No of inspections conducted	No of incidents identified	Fine imposed/recovered	Action taken against the violators
During the month	2	1	0	0	0

(C) Creating Awareness among all stakeholders:

	No of awareness programs conducted	Departments/stakeholders participated	No of people participated	Number of Beach
During the Month	3	1	45	No Beach under the

(D) Details of Civil societies or group working with waste pickers:

No of Self Helping Groups(SHGs)	No. of people in SHGs	No. of people engaged in waste
0	0	0

723916/2024/SPMU-RGSA

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(E) Enforcement of SUP ban:					
	No of teams for enforcement of SUP ban	No of field inspections	No of violations observed	No of challans issued	Amount of fine collected (In Rs.)
During the Month	3	2	0	0	0

Note:- **For Gap kindly refer report of concerned Gram Panchayat**

07.10.24

Signature & Seal of the BDO

723916/2024/SPMU-RGSA

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F.No. 2-90/BDO/PP/SBM/GC/2023-24/317
OFFICE OF THE BLOCK DEVELOPMENT OFFICER
CD BLOCK, PROTHRAPUR
****

Dated 5 October, 2024

To,

The Director (RD/PRIs)
Directorate of RD, PRIs & ULBs
Marine Hill, Sri Vijaya Puram

Sub: Submission of NGT Report- reg.

Sir,

I am furnishing herewith the Monthly Progress Report of NGT for the month of September, 2024 in respect of all Gram Panchayats under the jurisdiction of CD Block, Prothrapur for further course of action please.

Encl: A/A

Yours faithfully

5/10/24

Block Development Officer
C.D Block Prothrapur

Format for Submission of MONTHLY PROGRESS REPORT in the NGT Matter		
No. 673 of 2018 (in compliance to NGT order dated 24.09.2020)		
(Report for the month of September 2024)		
Name of the Block	Prothrapur	
District	South Andaman	
I. SOLID WASTE GENERATION		
Total population		26183
No of households		6266
No of commercial establishments/private institutions		766
No. of Government Institutions		95
No of households covered by door to door collection system		4929
No of households covered by door to door collection system practicing segregation at source		3610
No of households covered for collection of User-Fees (certain households have been paying user fees for multiple months instead of a single month, so the figure might vary a little bit)		3760
Total amount collected from HHs as User-Fees (I)		119340
No of commercial establishments/private institution covered by door to door collection system		763
No of commercial establishments/ private institutions covered by door to door collection system practicing segregation at source		763
No of commercial establishments/ private institutions covered for collection of User-Fees		613
Total amount collected from commercial establishment/private institutions as User Fees (II)		389758
No of Government Institutions covered by door to door collection system		89
No of Government Institutions covered by door to door collection system practicing segregation at source		89
No of Government Institutions covered for collection of User-Fees		12
Total amount collected from Government Institutions as User Fees (III)		0
Total Amount of User-Fee collected (I+II+III)		509198
Total quantity of waste collected through door to door collection (A) (in Kg) (Per month)		5950
		0
	Dry	29295
	Wet	10760
No of public garbage sites		215
Total quantity of waste collected from public garbage bins (B) (in Kg) (Per month)		57450
	Dry	97875
	Wet	11417
Total quantity of waste collected from door to door collection and public garbage site (A+B) (Per month)		105303
	Dry	125025
	Wet	22177
Total generation of Solid Waste (Estimation) Both Dry & Waste		6266x0.6=3759.6/3.7 TPD
Total collection of Solid Waste (TPD) – [A]+[B]+[C] DRY-128740KG PER MONTH/128.74 TONNES/4.291 TPD WET-3752KG PER MONTH /3 752 TONNES/0 125 TPD MIXED- 1259 KG PER MONTH/1.259 TONNES/0.04 TPD TOTAL - 4 45 TPD		
Existing Segregation Facilities with capacity		4000 Kg
Proposed Segregation Facilities with capacity		Shed with 2 TPD/Day
(A) Dry Waste:		
Out of the total Solid Waste collected, Quantity of Dry waste (in Kg) (In month)	PET	4458
	All type of Plastics	6828

1683

Multi Layer Plastics(MLP)	9849
Paper/Cardboard)	5606
Tetrapack	3787
Glass	24658
Metals(All type)	3139
E-Waste	260
Cloth	1163
Footwear	576
Total (A)	**60423**

Quantity of dry waste sent for recycling locally	0
Quantity of dry waste sent to mainland	0
Quantity of dry waste landfill	0

(A.1) Details of Segregation centres:

Sl No	Name /Location	Design/Installed capacity (in Kg per Day)	Facilities/machines (No of shredding, Baling machines with individual capacity	Capacity Utilization (in Kg per Day)
1	Sippighat	0	0	0
2	Calicut	0	0	0
3	Nari Kendra(SWM Cluster Ram Nagar)	40	1 nos Baling Machine with 280	80 Kg
4	SWM Cluster Beodnabad	Baling Machine	1 nos Baling Machine	380 Kg
5	Govind Nagar(SWM Cluster Shyam Nagar GP)	0	0	0
6	Shyam Nagar	100	1 Baling Machine	200Kg

(B) Wet Waste

Out of the total Solid Waste collected, Quantity of Segregated wet waste (TPD) –[B] **(Per month)**	3752
Quantity of wet waste sent for composting etc.	3452
Quantity of wet waste sent for Biomethanation	Nil
Quantity of wet waste sent to landfill	Nil
No of Processing Facilities Available with individual Capacity	6 nos vermi compost pit
No of Proposed Facilites with individual Capacity	Nil

(B) Details of wet waste processing units

Sl No	Name /Location/Technology	Design Capacity	Capacity utilization
01	SWM Cluser managed by GP Beodnabad	6 Nos Vermi compost 3 cbm	-

(C) Mixed Waste

Out of the total Solid Waste collected Quantity of Segregated Mixed waste(TPD)–[C] **((Per month in Kg)**	
Quantity of mixed waste sent to landfills	1240
i) List of proposed land fills with capacity and utilization:	
ii) List of proposed land fills with capacity:	

(D) Bulk Waste Generators as defined in SWM Rules-2016 (Average Waste generation rate 100kg/day)

(D.1)List of Bulk Waste generators

Sl no	Name	Address	Waste generated per day	Composting Units/ Bio-methanation with existing capacity
1	Aqua's Beach Resort	Govind Nagar	45 Kg	Compost Pit

2	Lemon Grass Resort	Govind Nagar	38 Kg	Nil
3	Symphony Palm Beach Resort	Govind Nagar	65 Kg	Nil

II. SEWAGE GENERATION :

(1)Estimated sewage generation (MLD)-[A]+[B]+[C] = 6266x55x80%=275.704/MLD

(A)Sewage flowing through Sewerage System

Out of total sewage generated, Quantity of sewage flowing to sewerage system-[A]	Nil
No. of Proposed STPs with individual capacity in MLD	Nil

(B)Sewage flowing through Septic tank-0.28x20%=0.056 MLD

Out of total sewage generated, Quantity of sewage treated in Septic Tank(MLD) [B]	Nil
Quantity of Sludge generated	Nil
No. of FSTP and Quantity of sludge processed in FSTP	Nil
No. and Capacity of sludge Tanks	Nil

(C)Sewage flowing through Open drains:0.28x80%=0.22MLD

Out of total sewage generated, Quantity of sewage flowing to open drains (MLD) [C] 0.76 MLD

Component	Quantity of Sewage flowing (in MLD)	No of HH Covered
Soak Pits/Magic Pits/ Leach Pits	0	Nil
Drainage Channel with Soak Pits	0	Nil
Drainage Channel without Soak Pits	0.05 MLD	Nil
Kitchen Garden/ Farm	0.17 MLD	Nil
Total	(C) = 0.22 MLD	Nil

III. PLASTIC WASTE:

Quantity of Waste in Tons	During the Month
Total Dry waste segregated	62.047
Total plastic waste segregated	10.484
Total non-plastic waste segregated	52.29
Amount of waste sent to mainland for recycling 0	12.948 0
Amount of waste used for road construction	208.463

(A) Information incorporated in the SWM bye laws:

Provisions to collect spot fines from violators in production, distribution, storage sale and use of banned plastic & other items	Yes
Penalty for littering of waste	Rs. 500 Fine
Penalty for open burning of plastics	Rs. 500 Fine

(B) Details of Open burning incidents:

	No of team enforcing ban of burning plastic	No of inspections conducted	No of incidents identified	Fine imposed/recovered	No of complaints received	Action taken against the violators
During the month	04	06	Nil	Nil	Nil	Nil

(C) Creating Awareness among all stakeholders:

1685

	No of awareness programs conducted	Departments/stakeholders participated	No of people participated	Number of Beach Clean-up drive Conducte
During the Month	16	40	288	13

(D) Details of Civil societies or group working with waste pickers:

No of Self Helping Groups(SHGs)	No. of people in SHGs	No. of people engaged in [illegible]
21	180	17

(E) Enforcement of SUP ban:

	No of teams for enforcement of SUP ban	No of field inspections	No of violations observed	No of challans issued	Quantity of plastic seized (in Kg.)	Amount of fine collected
During the Month	5	4	Nil	Nil	Nil	Nil

खण्ड विकास अधिकारी
Block Development Officer
[illegible]

Format for Submission of MONTHLY PROGRESS REPORT in the NGT (O.A.
No. 673 of 2018 (in compliance to NGT order dated 24.09.2020)
(Report for the month of **September 2024**)

Name of the Block : BDO, CD Block, Mayabunder
District : N&M Andaman District

1.	Total population	26327
2.	No. of households	6500
3.	No. of commercial establishments/private institutions	527
4.	No. of Government Institutions	122
5.	No. of households covered by door to door collection system	2483
6.	No. of households covered by door to door collection system practicing segregation at source	1783
7.	No. of households covered for collection of User-Fees	1657
8.	Total amount collected from HHs as User-Fees(I)	99600
9.	No. of commercial establishments/private institution covered by door to door collection system	473
10.	No. of commercial establishments/ private institutions covered by door to door collection system practicing segregation at source	249
11.	No. of commercial establishments/ private institutions covered for collection of User-Fees	359
12.	Total amount collected from commercial establishment/private institutions as User Fees(II)	62100
13.	No. of Government Institutions covered by door to door collection system	58
14.	No. of Government Institutions covered by door to door collection system practicing segregation at source	55
15.	No.of Government Institutions covered for collection of User-Fees	30
16.	Total amount collected from Government Institutions as User Fees(III)	3600
17	Total Amount of User-Fee collected (I+II+III)	165300
18.	Total quantity of solid waste collected through door to door collection(A) (in Kg) (Per month)	28390
19.	Dry	28222
20.	Wet	170

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21.	No of public garbage sites	196
22.	Total quantity of solid waste collected from public garbage bins (B) (in Kg) (Per month)	27297
23.		
24.	Dry	27197
	Wet	100
25.	Total quantity of solid waste collected from door to door collection and public garbage site(A+B) (Per month)	55689
26.		
27.	Dry	55419
	Wet	270

I. SOLID WASTE GENERATION

Total generation of Solid Waste (Estimation) Both Dry & Wet (TPD)	3.90
Total collection of Solid Waste (TPD) – [A]+[B]+[C]	1.86
Existing Segregation Facilities with capacity	1. SLWM Karmatang 2. SLWM Pahalgaon 3. SLWM Basantipur
Proposed Segregation Facilities with capacity (Describe any additional work planned for improving the facilities.)	1. Proposed in MNREGA to develop the site for segregation under GP Rampur 2. 200 sq.m land area proposed for segregation purpose under GP Basantipur 3. Site for segregation shed is proposed and the land allotment is under process under GP Hannagar

(A) Dry Waste:

Out of the total Solid Waste collected, Quantity of Dry waste (in Kg)(In month)	PET	1306
	All type of Plastics	12453
	Multi Layer Plastics(MLP)	10636
	Paper/Cardboard)	17467
	Tetrapack	693
	Glass	8027
	Metals(All type)	1256
	E-Waste	798
	Cloth	1466
	Footwear	1317
	Total (A)	55419
Quantity of dry waste sent for recycling locally (Get the information from Cluster GPs)		-
Quantity of dry waste sent to mainland		-

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(Get the information from Cluster GPs)	
Quantity of dry waste landfill (Get the information from all GPs)	-

(A.1) Details of Segregation centres:

Sl No	Name /Location	Design/Installed capacity(in Kg per Day)	Facilities/machines (No of shredding, Bailing machines with individual capacity)	Capacity Utilization (in Kg per Day)
1.	SLWM cluster, Rampur at Karmatang	500 kg	1 No. Bailing Machine	200 kg
2.	SLWM cluster, Pahalgaon at Tugapur- 7	500 kg	-	140 kg
3.	SLWM cluster, Basantipur at Govindapur	500kg	1 No. Bailing Machine(0.5 TPD)	300 kg
4.	SLWM cluster, Shivapuram	500 kg	1 No. Bailing Machine (0.5 TPD)	60 kg

(B) Wet Waste

Out of the total Solid Waste collected, Quantity of Segregated wet waste:(TPD) –[B](Per month)	0.010
Quantity of wet waste sent for composting etc.	0.027
Quantity of wet waste sent for Biomethanation	-
Quantity of wet waste sent to landfill	-
No. of Processing Facilities Available with individual Capacity (Describe the facility, attach separate sheet if required)	-
No. of Proposed Facilities with individual Capacity	-

(B) Details of wet waste processing units

S. No	Name /Location/Technology	Design Capacity	Capacity utilization
-	-	-	-

(C) Mixed Waste

Out of the total Solid Waste collected, Quantity of Segregated Mixed waste(TPD)–[C] ((Per month in Kg)	-
Quantity of mixed waste sent to landfills	-

- List of proposed land fills with capacity and utilization:
- List of proposed land fills with capacity:

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(D) Bulk Waste Generators as defined in SWM Rules-2016 (Average Waste generation rate 100kg/day)

(D.1)List of Bulk Waste generators

Sl.no	Name	Address	Waste generated per day	Composting Units/ Bio-methanation with existing capacity
-	-	-	-	-

II. SEWAGE GENERATION :

(1)Estimated sewage generation (MLD)-[A]+[B]+[C] = 0.16

(A)Sewage flowing through Sewerage System

Out of total sewage generated, Quantity of sewage flowing to sewerage system-[A]	Nil
No. of Proposed STPs with individual capacity in MLD	-

(B)Sewage flowing through Septic tank

Out of total sewage generated, Quantity of sewage treated in Septic Tank(MLD): [B]	0.032
Quantity of Sludge generated:	-
No. of FSTP and Quantity of sludge processed in FSTP:	-
No. and Capacity of sludge Tanks:	-

(C)Sewage flowing through Open:

Out of total sewage generated, Quantity of sewage flowing through open (MLD): [C]:

Component	Quantity of Sewage flowing (in MLD)	No. of HHs covered
Soak Pits/Magic Pits/Leach Pits	0.005	11
Drainage Channels with Soak Pits	0.006	0
Drainage Channels without Soak Pits	0.007	325
Kitchen Garden/Farm	0.11	1700
Total	**[C] = 0.128**	2036

(Any additional planned works i.e. Drainage channels, Soak Pits constructions under MGNREGA or GIA for Grey Water Management may be elaborated here)

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III. PLASTIC WASTE:	During the Month
Quantity of Waste in Tons	28.86
Total Dry waste segregated	7.165
Total plastic waste segregated	21.775
Total non-plastic waste segregated	-
Amount of waste sent to mainland for recycling	-
Amount of waste used for road construction	

(A) Information incorporated in the SWM bye laws:

Provisions to collect spot fines from violators in production, distribution, storage sale and use of banned plastic & other items	Yes, exist as per SWM Bye Laws, 2019
Penalty for littering of waste (as per SWM Bye Laws) - Actual Fine imposed during the month (in Rs.)	-
Penalty for open burning of plastics (actual fine imposed per month)	-

(B) Details of Open burning incidents:

	No of team enforcing ban of burning plastic	No of inspections conducted	No of incidents identified	Fine imposed/recovered	No of complaints received	Action taken against the violators
During the month	01	02	-	-	-	-

(C) Creating Awareness among all stakeholders:

	No of awareness programs conducted	Departments/stakeholders participated	No of people participated	Number of Beach Clean-up drive Conducted
During the Month	01	02	15	-

(D) Details of Civil societies or group working with waste pickers:

No of Self Helping Groups(SHGs)	No. of people in SHGs	No. of people engaged in waste
-	-	-

(E) Enforcement of SUP ban:

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	No of teams for enforcement of SUP ban	No of field inspections	No of violations observed	No of challans issued	Quantity of plastic seized (in Kg.)	Amount of fine collected (In Rs.)
During the Month	4	06	-	-	-	-

(F) Elaborate on the gaps, if any, with reasons and justification.

Less households are covered under door to door collection system due to inadequate road connectivity, dispersed settlement of households, insufficient number of sanitation staff. Further, many villagers are unwilling to pay the user fee. Also, many commercial establishments are either closed most of the time or their owners are out of station. So, the GPs are unable to collect user fee from these establishments. Government institutions are also refusing to pay user fee stating that they have not received any direction from their respective department for paying user fee to the GP.

21/10/24

Name and Signature of the Block Development Officer with Seal

Block Development Officer
खण्ड विकास अधिकारी
CD Block, Meyabunder

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No.6-75/[illegible]AB/DP/2024-25/ 463

खण्ड विकास अधिकारी का कार्यालय

OFFICE OF THE BLOCK DEVELOPMENT OFFICER

सामुदायिक विकासखण्ड, डिगलीपुर, उत्तरी अण्डमान

C.D. BLOCK, DIGLIPUR, NORTH ANDAMAN

****

Diglipur dated the 05th Sept, 2024

To

The Director
Directorate of RD, PRIs &ULBs
A&N Administration, Marine Hill

Sub: - Submission of Monthly Progress Report on Solid waste Management under NGT Matter No .673 of 2018 for the Month of August 2024 reg.

Sir,

Please find enclosed herewith the Monthly Progress Report on Solid waste Management under NGT Matter No. 673 of 2018 (in compliance to NGT Order dated 24.09.2020) for the Month of August, 2024 in respect of C.D. Block Diglipur along with the copy of Monthly report received from following Gram Panchayat for further necessary action at your end please.

Sl No.	Name of Gram Panchayat	Remarks
1.	Diglipur	Received
2.	Subashgram	Received
3.	R.K. Gram	Received
4.	Shibpur	Received
5.	Gandhinagar	Received
6.	Keralapuram	Received
7.	Laxmipur	Received
8.	Madhupur	Received
9.	Radhanagar	Received
10.	Sitanagar	Received
11.	Nabagram	Received
12.	Ramnagar	Received
13.	Kalighat	Received
14.	Paschimsagar	Received
15.	Kishorinagar	Received

Yours faithfully

5.9.24

खण्ड विकास अधिकारी
Block Development Officer
सामुदायिक विकासखण्ड, डिगलीपुर
C.D. Block, Diglipur

Copy to:-

1. PA to DC, N&MA, for information of the Deputy Commissioner Mayabunder please.
2. The Assistant Commissioner, Diglipur for kind information please.

खण्ड विकास अधिकारी
Block Development Officer
सामुदायिक विकासखण्ड, डिगलीपुर
C.D. Block, Diglipur

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Format for Submission of MONTHLY PROGRESS REPORT in the NGT Matter No. 673 of 2018 (in compliance to NGT order dated 24.09.2020)		
(Report for the Month of August 2024)		
Name of the Block:**Diglipur**		
District: **North & Middle Andaman**		
1.	Total population	40626
2.	No. of households	10658
3.	No. of commercial establishments/private institutions	913
4.	No. of Government Institutions	285
5.	No. of households covered by door to door collection system	9068
6.	No.of households covered by door to door collection system practicing segregation at source	8358
7.	No .of households covered for collection of User-Fees	5677
8.	Total amount collected from HHs as User-Fees**(I)**	384420
9.	No. of commercial establishments/private institution covered by door to door collection system	879
10.	No. of commercial establishments/ private institutions covered by door to door collection system practicing segregation at source	774
11.	No.of commercial establishments/ private institutions covered for collection of User-Fees	760
12.	Total amount collected from commercial establishment/private institutions as User Fees**(II)**	120840
13.	No. of Government Institutions covered by door to door collection system	254
14.	No. of Government Institutions covered by door to door collection system practicing segregation at source	208
15.	No.of Government Institutions covered for collection of User-Fees	54
16.	Total amount collected from Government Institutions as User Fees**(III)**	37100
17.	Total Amount of User-Fee collected **(I+II+III)**	**542360**
18.	Total quantity of waste collected through door to door collection**(A) (in Kg) (Per month)**	**25451**
19.	Dry	25451
20.	Wet	0
21.	No of public garbage sites	841
22.	Total quantity of waste collected from public garbage bins **(B) (in Kg) (Per month)**	108179
23.	Dry	98758
24.	Wet	9421
25.	Total quantity of waste collected from door to door collection and public garbage site**(A+B) (Per month)**	**133630**

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26.	Dry	124209
27.	Wet	9421

I. SOLID WASTE GENERATION		
1	Total generation of Solid Waste (Estimation) Both Dry & Waste	63948
2	Total collection of Solid Waste (TPD) -[A]+[B]+[C]	124489
3	Existing Segregation Facilities with capacity	2000
4	Proposed Segregation Facilities with capacity	3

(A) Dry Waste:			
1	Out of the total Solid Waste collected, Quantity of Dry waste (in Kg)(In month)	PET	3121
		All type of Plastics	8386
		Multi Layer Plastics(MLP)	6354
		Paper/Cardboard)	35121
		Tetrapack	12593
		Glass	47279
		Metals(All type)	2282
		E-Waste	4687
		Cloth	3100
		Footwear	1286
		Total (A)	**124209**
2	Quantity of dry waste sent for recycling locally		298
3	Quantity of dry waste sent to mainland		5366
4	Quantity of dry waste landfill		0

(A.1) Details of Segregation centres:				
Sl No	Name /Location	Design/Installed capacity(in Kg per Day)	Facilities/machines (No of shredding, Bailing machines with individual capacity)	Capacity Utilization (in Kg per Day)
1	Radhanagar Cluster	500	(1.5) 01	100
2	Gandhinagar (Radhanagar Cluster)	500	(1.5) 01	0
3	Diglipur (Madhupur Cluster)	0	0	0

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4	Madhupur Cluster	500	1	300
5	Ramnagar (Nabagram Cluster)	0	1	0
6	Sitanagar (Madhupur Cluster)	0	0	0
7	Laxmipur	0	0	0
8	Nabagram Cluster	500	1 (2 toncapt)	0
9	Kalighat (Nabagram Cluster)	500	1 (2 toncapt)	0
10	R.K. Gram Madhupur Cluster	0	0	0
11	Keralapuram	500	1	400
12	Kishorinagar Cluster	400	1.5 (ton)	0
13	Paschimsagar (Kishorinagar Cluster)	0	0	0
14	Shibpur	0	0	0
15	Subashgram(Madhupur Cluster)	0	(2 t) 1	0

(B) Wet Waste		
1	Out of the total Solid Waste collected, Quantity of Segregated wet waste:(TPD) - [B] **(Per month)**	0.28
2	Quantity of wet waste sent for composting etc.	1.005
3	Quantity of wet waste sent for Biomethanation	0
4	Quantity of wet waste sent to landfill	0
5	No. of Processing Facilities Available with individual Capacity	4 Nos. compost pit with 3cbm capacity per tank
6	No. of Proposed Facilities with individual Capacity (sqm)	100

(B) Detailes of wet waste processing units			
Sl. No.	Name	Design capacity	Capacity utilization
1	Radhanagar Cluster	12 cbm compose pit (3 Cbm per tanks total 4 Nos.	0
2	Gandhinagar (Radhanagar Cluster)	13 cbm compose pit (3 Cbm per tanks total 4 Nos.	0%
3	Diglipur (Madhupur Cluster)	0	0
4	Madhupru Cluster	10 cbm compose pit (3 Cbm per tanks	0
5	Ramnagar (Nabagram Cluster)	2 cbm compose pit (3 Cbm per tanks	0
6	Sitanagar (Madhupur Cluster)	0	0
7	Laxmipur	0	0
8	Nabagram Cluster	2 cbm compose pit (3 Cbm per tanks	0
9	Kalighat (Nabagram Cluster)	2 cbm compose pit (3 Cbm per tanks	0
10	R.K. Gram Madhupur Cluster	0	0
11	Keralapuram	4 Nos. CC compose pit with 02 cbm Capacity	20%
12	Kishorinagar Cluster	0	0
13	Paschimsagar (Kishorinagar Cluster)	0	0
14	Shibpur	0	0
15	Subashgram(Madhupur Cluster)	12 Nos. 2 cbm vermi compose tank	0

(C) Mixed Waste

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	(C) Mixed Waste	
1	Out of the total Solid Waste collected, Quantity of Segregated Mixed waste(TPD)-[C] ((Per month in Kg)	0
2	Quantity of mixed waste sent to landfills	0

- List of proposed land fills with capacity and utilization:
- List of proposed land fills with capacity:

(D) Bulk Waste Generators as defined in SWM Rules-2016 (Average Waste generation rate 100kg/day)				
(D.1)List of Bulk Waste generators				
Sl.no	Name	Address	Waste generated per day	Composting Units/ Bio-methanation with existing capacity
1	Vegitable Market	Subashgram	1000 KG	0

II. SEWAGE GENERATION :		
(1)Estimated sewage generation (MLD)-[A]+[B]+[C] =1787544		
(A)Sewage flowing through Sewerage System		
1	Out of total sewage generated, Quantity of sewage flowing to sewerage system-[A]	0
2	No. of Proposed STPs with individual capacity in MLD	0
(B)Sewage flowing through Septic tank		
1	Out of total sewage generated, Quantity of sewage treated in Septic Tank(MLD): [B]	357508.8
2	Quantity of Sludge generated:	0
3	No. of FSTP and Quantity of sludge processed in FSTP:	0
4	No. and Capacity of sludge Tanks:	0
(C)Sewage flowing through Open drains:		
Out of total sewage generated, Quantity of sewage flowing to open drains (MLD): [C]:		
1	Kitchen Garden/Farm	1269055.148
2	Soak Pit/Magic Pits/Leach Pits	92316.052
3	Drainage Channels with Soak Pits	0
4	Drainage Channels without Soak Pits	68664
III. PLASTIC WASTE:		

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1	Quantity of Waste in Tons	
2	Total Dry waste segregated	During the Month
3	Total plastic waste segregated	96.1778
4	Total non-plastic waste segregated	10.653
5	Amount of waste sent to mainland for recycling	96.704
6	Amount of waste used for road construction	0
		0

(A) Information incorporated in the SWM bye laws:		
1	Provisions to collect spot fines from violators in production, distribution, storage sale and use of banned plastic & other items	Yes exist as per SWM Bye laws 2019.
2	Penalty for littering of waste	0
3	Penalty for open burning of plastics	0

(B) Details of Open burning incidents:					
	No of team enforcing ban of burning plastic	No of inspections conducted	No of incidents identified	Fine imposed/recovered	Action taken against the violators
During the month	2	1	0	0	0

(C) Creating Awareness among all stakeholders:				
	No of awareness programs conducted	Departments/stakeholders participated	No of people participated	Number of Beach
During the Month	4	1	54	No Beach under the

(D) Details of Civil societies or group working with waste pickers:		
No of Self Helping Groups(SHGs)	No. of people in SHGs	No. of people engaged in waste
0	0	0

(E) Enforcement of SUP ban:					
	No of teams for enforcement of SUP ban	No of field inspections	No of violations observed	No of challans issued	Amount of fine collected (In Rs.)

1698

During the Month	3	3	0	0	0

Note:- For Gap kindly refer report of concerned Gram Panchayat

5.9.24

खण्ड विकास अधिकारी
Blo - Development Officer
सामुदायिक विकास खण्ड, डिगलीपुर
C. D. Block, Diglipur

Format for Submission of MONTHLY PROGRESS REPORT in the NGT Matter No. 673 of 2018 (in compliance to NGT order dated 24.09.2020)

(Report for the month of **August 2024**)

Name of the Block : Campbell Bay

District : Nicobar

1.	Total population	8624
2.	No. of households	1765
3.	No. of commercial establishments/private institutions	146
4.	No. of Government Institutions	53
5.	No. of households covered by door to door collection system	1567
6.	No. of households covered by door to door collection system practicing segregation at source	1567
7.	No .of households covered for collection of User-Fees	541*
8.	Total amount collected from HHs as User-Fees(I)	Rs.25250.00
9.	No. of commercial establishments/private institution covered by door to door collection system	126
10.	No. of commercial establishments/ private institutions covered by door to door collection system practicing segregation at source	126
11.	No. of commercial establishments/ private institutions covered for collection of User-Fees	83
12.	Total amount collected from commercial establishment/private institutions as User Fees(II)	Rs.16300.00
13.	No. of Government Institutions covered by door to door collection system	48
14.	No. of Government Institutions covered by door to door collection system practicing segregation at source	36
15.	No. of Government Institutions covered for collection of User-Fees	13*
16.	Total amount collected from Government Institutions as User Fees(III)	0*
17.	Total Amount of User-Fee collected (I+II+III)	Rs.41700.00
18.	Total quantity of solid waste collected through door to door collection(A) (in Kg) (Per month)	
	Dry	2066 Kg
	Wet	65
19.	No of public garbage sites	25
20.	Total quantity of solid waste collected from public garbage bins (B) (in Kg) (Per month)	
	Dry	142
	Wet	0
21.	Total quantity of solid waste collected from door to door collection and public garbage site(A+B) (Per month)	
	Dry	2208 Kg
	Wet	65

I. SOLID WASTE GENERATION1700

Total generation of Solid Waste (Estimation) Both Dry & Wet (TPD)	1.0590 TPD
Total collection of Solid Waste (TPD) – **[A]+[B]+[C]**	0.0736 TPD
Existing Segregation Facilities with capacity	SWM Cluster at Vijay Nagar under Laxmi Nagar GP
Proposed Segregation Facilities with capacity (Describe any additional work planned for improving the facilities.)	Proposal for set-apart of land has been sent to the DC Nicobar, for segregation facility under Govind Nagar GP and Campbell Bay GP

(A) Dry Waste:

Out of the total Solid Waste collected, Quantity of Dry waste **(in Kg)(In month)**	PET	0
	All type of Plastics	416
	Multi-Layer Plastics (MLP)	467
	Paper/Cardboard)	107
	Tetra pack	52
	Glass	652
	Metals(All type)	166
	E-Waste	-
	Cloth	221
	Footwear	127
	Total (A)	**2208**
Quantity of dry waste sent for recycling locally		NIL
Quantity of dry waste sent to mainland		NIL
Quantity of dry waste landfill		NIL

(A.1) Details of Segregation centers:

Sl. No	Name /Location	Design/Installed capacity (in Kg per Day)	Facilities/machines (No of shredding, Bailing machines with individual capacity)	Capacity Utilization (in Kg per Day)
1	SWM Cluster at Vijay Nagar under Laxmi Nagar GP(Segregation is done at Vijay Nagar SWM Cluster)	50Kg/Day	1No. Bailing Machine	50 Kg/Day
2.	Primary Segregation center at Ward no. 4 under Campbell bay GP, then after sent to SWM Cluster at Vijay Nagar			

1701

3.	Temporary segregation station under Govind Nagar GP, then after sent to SWM Cluster at Vijay Nagar.			

(B) Wet Waste

Out of the total Solid Waste collected, Quantity of Segregated wet waste:(TPD) –[B](**Per month**)	65
Quantity of wet waste sent for composting etc.	NIL
Quantity of wet waste sent for Biomethanation	NIL
Quantity of wet waste sent to landfill	65
No. of Processing Facilities Available with individual Capacity (Describe the facility, attach separate sheet if required)	NIL
No. of Proposed Facilities with individual Capacity	NIL

(B) Details of wet waste processing units

Sl. No	Name /Location/Technology	Design Capacity	Capacityutilization
	NIL	NIL	NIL

(C) Mixed Waste

Out of the total Solid Waste collected, Quantity of Segregated Mixed waste(TPD)–[C] ((**Per month in Kg**)	NIL
Quantity of mixed waste sent to landfills	NIL

- List of proposed land fills with capacity and utilization:
- List of proposed land fills with capacity:

(D) Bulk Waste Generators as defined in SWM Rules-2016 (Average Waste generation rate 100kg/day)

(D.1)List of Bulk Waste generators

Sl.no	Name	Address	Waste generated per day	Composting Units/ Bio-methanation with existing capacity
-	-	-	-	-

I. SEWAGE GENERATION :

(1)Estimated sewage generation (MLD)-[A] + [B] +[C] = 37.581 MLD

(A)Sewage flowing through Sewerage System

Out of total sewage generated, Quantity of sewage flowing to sewerage system-[A]	NIL
No. of Proposed STPs with individual capacity in MLD	NIL

1702

(B)Sewage flowing through Septic tank

Out of total sewage generated, Quantity of sewage treated in Septic Tank(MLD): [B]	7.516 MLD
Quantity of Sludge generated:	NIL
No. of FSTP and Quantity of sludge processed in FSTP:	NIL
No. and Capacity of sludge Tanks:	NIL

(C)Sewage flowing through Open:

Out of total sewage generated, Quantity of sewage flowing through open (MLD): [C]: **30.064 MLD**

Component	Quantity of Sewage flowing (in MLD)	No. of HHs covered
Soak Pits/Magic Pits/Leach Pits	NIL	NIL
Drainage Channels with Soak Pits	NIL	NIL
Drainage Channels without Soak Pits	24.052 MLD	1765
Kitchen Garden/Farm	6.012 MLD	
Total	**30.064 MLD**	**1765**

(Any additional planned works i.e. Drainage channels, Soak Pits constructions under MGNREGA or GIA for Grey Water Management may be elaborated here)

II. PLASTIC WASTE:

Quantity of Waste in Tons	During the Month
Total Dry waste segregated	2.208 Tons
Total plastic waste segregated	0.883 Tons
Total non-plastic waste segregated	1.325 Tons
Amount of waste sent to mainland for recycling	NIL
Amount of waste used for road construction	NIL

(A) Information incorporated in the SWM bye laws:

Provisions to collect spot fines from violators in production, distribution, storage sale and use of banned plastic & other items	Yes, exist as per SWM Bye Laws, 2019
Penalty for littering of waste (as per SWM Bye Laws) - Actual Fine imposed during the month (in Rs.)	0
Penalty for open burning of plastics (actual fine imposed per month)	0

(B) Details of Open burning incidents:

	No of team enforcing ban of burning plastic	No of inspections conducted	No of incidents identified	Fine imposed/ recovered	No of complaints received	Action taken against the violators

1703

During the month	NIL	NIL	NIL	NIL	NIL	NIL

(C) Creating Awareness among all stakeholders:

	No of awareness programs conducted	Departments / stakeholders participated	No of people participated	Number of Beach Clean-up drive Conducted
During the Month	4	6	110	3

(D) Details of Civil societies or group working with waste pickers:

No of Self Helping Groups(SHGs)	No. of people in SHGs	No. of people engaged in waste
49	480	18

(E) Enforcement of SUP ban:

	No of teams for enforcement of SUP ban	No of field inspections	No of violations observed	No of challans issued	Quantity of plastic seized (in Kg.)	Amount of fine collected (In Rs.)
During the Month	1	1	0	0	0	0

(F) Elaborate on the gaps, if any, with reasons and justification.

1*. User fee for every HH couldn't collect as many HH are out of station and due to other reason.

2*. User fee could not collect as the shop owners are out of station and due to other reason.

3*. Government institutions are paying the user fee on a quarterly basis.

06/9/24

Block Development Officer
CD Block, Campbell Bay

Format for Submission of MONTHLY PROGRESS REPORT in the NGT Matter No. 673 of 2018 (in compliance to NGT order dated 24.09.2020)

(Report for the month of **August 2024**)

Name of the Block : Rangat

District : N & M Andaman

	Total population	35610
	No. of households	9140
	No. of commercial establishments/private institutions	843
	No. of Government Institutions	236
	No. of households covered by door to door collection system	8064
	No.of households covered by door to door collection system practicing segregation at source	6897
	No .of households covered for collection of User-Fees	5236
	Total amount collected from HHs as User-Fees(I)	229120
	No. of commercial establishments/private institution covered by door to door collection system	842
	No. of commercial establishments/ private institutions covered by door to door collection system practicing segregation at source	771
	No.of commercial establishments/ private institutions covered for collection of User-Fees	584
	Total amount collected from commercial establishment/private institutions as User Fees(II)	92652
	No. of Government Institutions covered by door to door collection system	193
	No. of Government Institutions covered by door to door collection system practicing segregation at source	181
	No.of Government Institutions covered for collection of User-Fees	121

1705

	Total amount collected from Government Institutions as User Fees(III)	42453
	Total Amount of User-Fee collected (I+II+III)	332572
	Total quantity of solid waste collected through door to door collection(A) (in Kg) (Per month)	10160.706
	Dry	10629.006
	Wet	897.25
	No of public garbage sites	414
	Total quantity of solid waste collected from public garbage bins (B) (in Kg) (Per month)	8371.484
	Dry	8073.984
	Wet	740
	Total quantity of solid waste collected from door to door collection and public garbage site(A+B) (Per month)	19239.44
	Dry	18702.99
	Wet	1637.25

- SOLID WASTE GENERATION

Total generation of Solid Waste (Estimation) Both Dry & Wet (TPD)	5.6166
Total collection of Solid Waste (TPD) – [A]+[B]+[C]	1.4186
Existing Segregation Facilities with capacity	0
Proposed Segregation Facilities with capacity (Describe any additional work planned for improving the facilities.)	0

- (A) Dry Waste:

Out of the total Solid Waste collected, Quantity of Dry waste (in Kg)(In month)	PET	656.4
	All type of Plastics	2319.42

1706

	Multi layer Plastics(MLP)	2363.38
	Plastics(HDPE)	2563.58
	Paper(Cardboard)	2518.43
	Paper(Cardboard)	703.91
	Tetrapack	703.91
	Glass	6015
	Metals(All type)	1469.45
	E-Waste	130
	Cloth	1495.5
	Footwear	841
	Total (A)	18518.99
Quantity of dry waste sent for recycling locally (Get the information from Cluster GPs)		11390
Quantity of dry waste sent to mainland (Get the information from Cluster GPs)		0
Quantity of dry waste landfill (Get the information from all GPs)		184

- (A.1) Details of Segregation centres:

Sl No	Name /Location	Design/Installed capacity(in Kg per Day)	Facilities/machines (No of shredding, Bailing machines with individual capacity)	Capacity Utilization (in Kg per Day)
	NA	NA	NA	NA

- (B) Wet Waste

1707

Out of the total Solid Waste collected, Quantity of Segregated wet waste:(TPD) –[B](**Per month**)	1637.25
Quantity of wet waste sent for composting etc.	1637.25
Quantity of wet waste sent for Biomethanation	0
Quantity of wet waste sent to landfill	0
No. of Processing Facilities Available with individual Capacity (Describe the facility, attach separate sheet if required)	0
No. of Proposed Facilities with individual Capacity	4

- (B) Details of wet waste processing units

S. No	Name /Location/Technology	Design Capacity	Capacity utilization
	NA	NA	NA

- (C) Mixed Waste

Out of the total Solid Waste collected, Quantity of Segregated Mixed waste(TPD)–[C] (**(Per month in Kg)**	184
Quantity of mixed waste sent to landfills	184

- List of proposed land fills with capacity and utilization:
- List of proposed land fills with capacity:

(D) Bulk Waste Generators as defined in SWM Rules-2016 (Average Waste generation rate 100kg/day)

- (D.1)List of Bulk Waste generators

1708

(Any additional planned works i.e. Drainage channels, Soak Pits constructions under MGNREGA or GIA for Grey Water Management may be elaborated here)

- PLASTIC WASTE:

Quantity of Waste in Tons	During the Month
Total Dry waste segregated	18.5
Total plastic waste segregated	5.34
Total non-plastic waste segregated	13.18
Amount of waste sent to mainland for recycling	NA
Amount of waste used for road construction	NA

(A) Information incorporated in the SWM bye laws:

Provisions to collect spot fines from violators in production, distribution, storage sale and use of banned plastic & other items	Yes, exist as per SWM Bye Laws, 2019
Penalty for littering of waste (as per SWM Bye Laws) - Actual Fine imposed during the month (in Rs.)	NA
Penalty for open burning of plastics (actual fine imposed per month)	NA

(B) Details of Open burning incidents:

	No of team enforcing ban of burning plastic	No of inspections conducted	No of incidents identified	Fine imposed/recovered	No of complaints received	Action taken against the violators
During the	7	6	NA	NA	NA	NA

1709

Sl.no	Name	Address	Waste generated per day	Composting Units/ Bio-methanation with existing capacity
	NA	NA	NA	NA

- SEWAGE GENERATION :

(1)Estimated sewage generation (MLD)-[A]+[B]+[C] = 2.28

(A)Sewage flowing through Sewerage System

Out of total sewage generated, Quantity of sewage flowing to sewerage system-[A]	1.8
No. of Proposed STPs with individual capacity in MLD	0

(B)Sewage flowing through Septic tank

Out of total sewage generated, Quantity of sewage treated in Septic Tank(MLD): [B]	0.46
Quantity of Sludge generated:	NA
No. of FSTP and Quantity of sludge processed in FSTP:	NA
No. and Capacity of sludge Tanks:	NA

(C)Sewage flowing through Open:

Out of total sewage generated, Quantity of sewage flowing through open (MLD): [C]:

Component	Quantity of Sewage flowing (in MLD)	No. of HHs covered
Soak Pits/Magic Pits/Leach Pits	NA	NA
Drainage Channels with Soak Pits	NA	NA
Drainage Channels without Soak Pits	NA	NA
Kitchen Garden/Farm	NA	NA
Total	[C] =	NA

1710

month						

(C) Creating Awareness among all stakeholders:

	No of awareness programs conducted	Departments/stakeholders participated	No of people participated	Number of Beach Clean-up drive Conducted
During the Month	10	10	92	7

(D) Details of Civil societies or group working with waste pickers:

No of Self Helping Groups(SHGs)	No. of people in SHGs	No. of people engaged in waste
NA	NA	NA
NA	NA	NA

(E) Enforcement of SUP ban:

	No of teams for enforcement of SUP ban	No of field inspections	No of violations observed	No of challans issued	Quantity of plastic seized (in Kg.)	Amount of fine collected (In Rs.)
During the Month	10	4	NA	NA	NA	NA

(F) Elaborate on the gaps, if any, with reasons and justification.

1. Insufficient manpower and non-availability of vehicle restricts coverage of households.

2. Very few households practice segregation while others demand separate dustbins following a previous government initiative of distributing colour-coded bins for dry and wet waste segregation highlighting a significant challenge of leading a mindset shift.

1711

3. Low user fee collection as many residents cite financial constraints while others condition payment on the receipt of collection services.

4. Government institutions notified about the timely monthly user fee payment and outstanding dues.

5. Low capacity utilisation of bailing machine constrained by insufficient manpower for daily collection and intermittent segregation.

6. Underutilization of compost pits as households manage their wet waste internally, resulting in no collection of wet waste

7. Glass vendors have visited the site. Next shipment to be done soon.



Name and Signature of the Block Development Officer with Seal

1712

F.No. 2-90/BDO/PP/SBM/GC/2023-24/257
OFFICE OF THE BLOCK DEVELOPMENT OFFICER
CD BLOCK, PROTHRAPUR
****

Port Blair, dated 04 September, 2024

To,

The Director (RD/PRIs)
Directorate of RD, PRIs & ULBs
Marine Hill, Port Blair

Sub. Submission of NGT Report- regd.

Sir,

I am furnishing herewith the Monthly Progress Report of NGT for the month of August 2024 in respect of all Gram Panchayats under the jurisdiction of CD Block, Prothrapur for further course of action please.

Encl: A/A

Yours faithfully

04/09/2024

Block Development Officer
C.D Block Prothrapur

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Format for Submission of MONTHLY PROGRESS REPORT in the NGT Matter

No. 673 of 2018 (in compliance to NGT order dated 24.09.2020)

(Report for the month of August 2024)

Name of the Block: Prothrapur

District: South Andaman

I SOLID WASTE GENERATION

Total population		26163
No. of households		6266
No. of commercial establishments/private institutions		765
No. of Government Institutions		95
No. of households covered by door to door collection system		4700
No. of households covered by door to door collection system practicing segregation at source		3381
No. of households covered for collection of User Fees (certain households have been paying user fees for multiple months instead of a single month ,so the figure might vary, a little bit)		3515
Total amount collected from HHs as User Fees (I)		242300
No. of commercial establishments/private institution covered by door to door collection system		758
No. of commercial establishments/ private institutions covered by door to door collection system practicing segregation at source		758
No. of commercial establishments/ private institutions covered for collection of User-Fees		652
Total amount collected from commercial establishment/private institutions as User Fees (II)		477187
No. of Government Institutions covered by door to door collection system		89
No. of Government Institutions covered by door to door collection system practicing segregation at source		89
No. of Government Institutions covered for collection of User-Fees		12
Total amount collected from Government institutions as User Fees (III)		0
Total Amount of User-Fee collected (I+II+III)		575487
Total quantity of waste collected through door to door collection (A) (in Kg) (Per month)		16220
		0
	Dry	32890
	Wet	15714
No of public garbage sites		214
Total quantity of waste collected from public garbage bins (B) (in Kg) (Per month)		57425
	Dry	100720
	Wet	13204
Total quantity of waste collected from door to door collection and public garbage site (A+B) (Per month)		106730
	Dry	131410
	Wet	28918
Total generation of Solid Waste (Estimation) Both Dry & Waste		5266x0.6=3759.6/3.7 TPD
Total collection of Solid Waste (TPD) – [A]+[B]+[C] DRY-128740KG PER MONTH/128.74 TONNES/4.291 TPD WET-3752KG PER MONTH /3.752 TONNES/0.125 TPD MIXED- 1259 KG PER MONTH/1.259 TONNES/0.04 TPD TOTAL – 4.45 TPD		
Existing Segregation Facilities with capacity		4000 Kg
Proposed Segregation Facilities with capacity		Shed with 2 TPD/Day
(A) Dry Waste:		
Out of the total Solid Waste collected, Quantity of Dry waste (in Kg) (In month)	PET	5170
	All type of Plastics	7601

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Multi Layer Plastics(MLP)	1077
Paper/Cardboard)	7923
Tetrapack	4109
Glass	7767
Metals(All type)	4256
E-Waste	436
Cloth	1186
Footwear	622
Total (A)	**57622**

Quantity of dry waste sent for recycling locally	0
Quantity of dry waste sent to mainland	0
Quantity of dry waste landfill	0

(A.1) Details of Segregation centres:

Sl No	Name/ Location	Design/Installed capacity (in Kg per Day)	Facilities/machines (No of shredding, Baling machines with individual capacity)	Capacity Utilization (in Kg per Day)
1	Sitapighat	0	0	0
2	Calicut	0	0	0
3	Nari Kendra SWM Cluster Ram Nagar)	40	1 nos Baling Machine wih 280	80 Kg
4	SWM Cluster Beodnabad	Baling Machine	1 nos Baling Machine	380 Kg
5	Govind Nagar/SWM Cluster Shyam Nagar GP)	0	0	0
6	Shyam Nagar	100	1 Baling Machine	200Kg

(B) Wet Waste

Out of the total Solid Waste collected, Quantity of Segregated wet waste (TPD) –[B] **(Per month)**	3752
Quantity of wet waste sent for composting etc	3452
Quantity of wet waste sent for Biomethanation	Nil
Quantity of wet waste sent to landfill	Nil
No. of Processing Facilities Available with individual Capacity	6 nos vermi compost pit
No. of Proposed Facilities with individual Capacity	Nil

(B) Details of wet waste processing units

Sl No	Name /Location/Technology	Design Capacity	Capacity utilization
01	SWM Cluser managed by GP Beodnabad	6 Nos Vermi compost 3 cbm	-

(C) Mixed Waste

Out of the total Solid Waste collected, Quantity of Segregated Mixed waste(TPD)–[C] **(Per month in Kg)**	
Quantity of mixed waste sent to landfills	1259
List of proposed land fills with capacity and ubilization	
List of proposed land fills with capacity	

(D) Bulk Waste Generators as defined in SWM Rules-2016 (Average Waste generation rate 100kg/day)

(D.1)List of Bulk Waste generators

Sl no	Name	Address	Waste generated per day	Composting Units/ Bio-methanation with existing capacity
1	Aqua's Beach Resort	Govind Nagar	62 Kg	Nil

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2	Lemon Grass Resort	Govind Nagar	48 Kg	Compost Pit
3	Symphony Palm Beach Resort	Govind Nagar	44 Kg	Nil

II. SEWAGE GENERATION :

(1)Estimated sewage generation (MLD)-[A]+[B]+[C] = 6266x55x80%=275,704/MLD

(A)Sewage flowing through Sewerage System

Out of total sewage generated, Quantity of sewage flowing to sewerage system-[A]	Nil
No of Proposed STPs with individual capacity in MLD	Nil

(B)Sewage flowing through Septic tank-0.28x20%=0.056 MLD

Out of total sewage generated, Quantity of sewage treated in Septic Tank(MLD): [B]	Nil
Quantity of Sludge generated	Nil
No of FSTP and Quantity of sludge processed in FSTP	Nil
No and Capacity of sludge Tanks	Nil

(C)Sewage flowing through Open drains:0.28x80%=0.22MLD

Out of total sewage generated, Quantity of sewage flowing to open drains (MLD) [C] 0.76 MLD

Component	Quantity of Sewage flowing (in MLD)	No of HH Covered
Soak Pits/Magic Pits/ Leach Pits	0	Nil
Drainage Channel with Soak Pits	0	Nil
Drainage Channel without Soak Pits	0.05 MLD	Nil
Kitchen Garden/ Farm	0.17 MLD	Nil
Total	(C) = 0.22 MLD	Nil

III. PLASTIC WASTE:

Quantity of Waste in Tons	**During the Month**
Total Dry waste segregated	54.659
Total plastic waste segregated	9.657
Total non-plastic waste segregated	42.307
Amount of waste sent to mainland for recycling	12.943
Amount of waste used for road construction	0.000

(A) Information incorporated in the SWM bye laws:

Provisions to collect spot fines from violators in production, distribution, storage sale and use of banned plastic & other items	Yes
Penalty for littering of waste	Rs. 500 Fine
Penalty for open burning of plastics	Rs. 500 Fine

(B) Details of Open burning incidents:

	No of team enforcin g ban of burning plastic	No of inspection s conducted	No of incident s identifie d	Fine imposed/recovere d	No of complaint s received	Action taken against the violator s
During the month	04	06	Nil	Nil	Nil	Nil

(C) Creating Awareness among all stakeholders:

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	No of awareness programs conducted	Departments/stakeholders participated	No of people participated	Number of Beach Clean-up drive Conducte
During the Month	12	44	174	9

(D) Details of Civil societies or group working with waste pickers:

No of Self Helping Groups(SHGs)	No of people in SHGs	No of people engaged in
21	180	16

(E) Enforcement of SUP ban:

	No of teams for enforcement of SUP ban	No of field inspections	No of violations observed	No of challans issued	Quantity of plastic seized (in Kg)	Amount of fine collected
During the Month	5	10	Nil	Nil	Nil	Nil

Block Development Officer
C D Block Prothapur

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F.No. 2-3(90)/CDBFG/SBM PHASE-II/2023-24/348
OFFICE OF THE BLOCK DVELOPMENT OFFICER
C.D.BLOCK, FERRARGUNJ

Ferrargunj, 04th September, 2024

To

The Director (RD/P)
Directorate of RD, PRIs & ULBs
Port Blair.

Sub: Submission of NGT Report- reg

Sir,

I am furnishing herewith the monthly progress report of NGT for the month of August, 2024 in various Gram Panchayats under the jurisdiction of CD, Block Ferrargunj for further course of action at your end please.

Necessary copies of the monthly progress report of NGT received from the 19 Gram Panchayats under the jurisdiction of CD, Block, Ferrargunj are enclosed herewith for your reference.

Yours faithfully

Encl:A/A

Block Development Officer
C.D.Block, Ferrargunj

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Format for Submission of MONTHLY PROGRESS REPORT in the NGT Matter
No. 673 of 2018 (in compliance to NGT order dated 24.09.2020)
(Report for the month of August 2024)

Block : FERRARGUNJ
District : SOUTH ANDAMAN

1.	Total population	59340
2.	No. of households	13937
3.	No. of commercial establishments/private institutions	1006
4.	No. of Government Institutions	187
5.	No. of households covered by door to door collection system	11978
6.	No of households covered by door to door collection system practicing segregation at source	10600
7.	No .of households covered for collection of User-Fees	8599
8.	Total amount collected from HHs as User-Fees(I)	309650
9.	No. of commercial establishments/private institution covered by door to door collection system	1001
10.	No. of commercial establishments/ private institutions covered by door to door collection system practicing segregation at source	906
11.	No.of commercial establishments/ private institutions covered for collection of User-Fees	704
12.	Total amount collected from commercial establishment/private institutions as User Fees(II)	128890
13.	No. of Government Institutions covered by door to door collection system	345
14.	No. of Government Institutions covered by door to door collection system practicing segregation at source	125
15.	No.of Government Institutions covered for collection of User-Fees	12
16.	Total amount collected from Government Institutions as User Fees(III)	1500
17.	Total Amount of User-Fee collected (I+II+III)	440040
18.	Total quantity of **solid waste** collected through door to door collection(A) (in Kg) (Per month)	49733
19.	Dry	47693
20.	Wet	2040
21.	No of public garbage sites	168
22.	Total quantity of **solid waste** collected from public garbage bins (B)	44414
23.	Dry	35412
24.	Wet	9002
25.	Total quantity of **solid waste** collected from door to door collection and public garbage site(A+B) (Per	94147
26.	Dry	83105
27.	Wet	11042

I. SOLID WASTE GENERATION

Total generation of Solid Waste (Estimation) Both Dry & Wet (TPD)	9.32 TPD
Total collection of Solid Waste (TPD) – [A]+[B]+[C]	3.89 TPD
Existing Segregation Facilities with capacity	0

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Proposed Segregation Facilities with capacity	0

(A) Dry Waste:

Out of the total Solid Waste collected, Quantity of Dry waste (in Kg)(**In month**)	PET	5647
	All type of Plastics	14404
	Multi Layer Plastics(MLP)	8587
	Paper/Cardboard)	11363
	Tetrapack	6080
	Glass	15960
	Metals(All type)	5246
	E-Waste	944
	Cloth	3560
	Footwear	3253
	Total (A)	75044
Quantity of dry waste sent for recycling locally		37782
Quantity of dry waste sent to mainland		909
Quantity of dry waste landfill		0

(A.1) Details of Segregation centres:

Sl No	Name /Location	Design/Installed capacity(in Kg per	Facilities/machines (No of shredding, Bailing	Capacity Utilization (in Kg per Day)
1	SLWM Cluster	400	1	220
2	SLWM Mannarghat	500	1	Machine under repair
3	SLWM Cluster	15	1	15
4	SLWM Cluster	400	Bailing Machine	400
5	Chouldari SWM	400	01 Shredding	Data not available

(B) Wet Waste

Out of the total Solid Waste collected, Quantity of Segregated wet waste:(TPD) –[B](**Per month**)	10525
Quantity of wet waste sent for composting etc.	1130
Quantity of wet waste sent for Biomethanation	0
Quantity of wet waste sent to landfill	50
No. of Processing Facilities Available with individual Capacity (Describe the facility, attach separate sheet if required)	SLWM Chouldari
No. of Proposed Facilities with individual Capacity	02 Nos pits

(B) Details of wet waste processing units

S.	Name	Design Capacity	Capacity utilization
1	Shorepoint	(5*5*2) cubic metre	(5*5*2) cubic metre

(C) Mixed Waste

Out of the total Solid Waste collected, Quantity of Segregated Mixed waste(TPD)–[C] ((**Per month in Kg**)	0
Quantity of mixed waste sent to landfills	0

- List of proposed land fills with capacity and utilization:
- List of proposed land fills with capacity:

(D) Bulk Waste Generators as defined in SWM Rules-2016 (Average Waste generation rate 100kg/day)

(D.1)List of Bulk Waste generators

Sl no	Name	Address	Waste	Composting Units/ Bio- methanation with
Nil	Nil	Nil	Nil	Nil

II. SEWAGE GENERATION :

(1)Estimated sewage generation (MLD)-[A]+[B]+[C 73684.037

(A)Sewage flowing through Sewerage System

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Out of total sewage generated, Quantity of sewage flowing to sewerage system-[A]	29113.29
No. of Proposed STPs with individual capacity in MLD	

(B)Sewage flowing through Septic tank

Out of total sewage generated, Quantity of sewage treated in Septic Tank(MLD). [B]	44570.35
Quantity of Sludge generated:	
No. of FSTP and Quantity of sludge processed in FSTP:	
No. and Capacity of sludge Tanks:	

(C)Sewage flowing through Open:

Out of total sewage generated, Quantity of sewage flowing through open (MLD): [C]:

Kitchen Garden/Farm – 0.66 MLD
Soak Pits/Magic Pits/Leach Pits –
Drainage Channels with Soak Pits –
III. Drainage Channels without Soak Pits – 0.022 MLD

Quantity of Waste in Tons	During the Month
Total Dry waste segregated	54.89
Total plastic waste segregated	21.44
Total non-plastic waste segregated	60.19
Amount of waste sent to mainland for recycling	0
Amount of waste used for road construction	0

(A) Information incorporated in the SWM bye laws:

Provisions to collect spot fines from violators in production.	Yes, exist as per SWM Bye Laws.
Penalty for littering of waste (as per SWM Bye Laws) - Actual	500
Penalty for open burning of plastics (actual fine imposed per	500

(B) Details of Open burning incidents:

	No of team enforcing ban of burning plastic	No of inspections conducted	No of incidents identified	Fine imposed/recovered	No of complaints received	Action taken against the violators
During	4	5	0	0	0	0

(C) Creating Awareness among all stakeholders:

	No of	Departments/stakeholders	No of people participated	Number of
During	11	48	435	3

(D) Details of Civil societies or group working with waste pickers:

No of Self Helping	No. of people in SHGs	No. of people engaged in waste
95	615	0

(E) Enforcement of SUP ban:

	No of teams	No of field	No of	No of	Quantity of plastic seized (in	Amount of
During	5	7	Nil	nil	Nil	Nil

(F) Elaborate on the gaps, if any, with reasons and justification.

खण्ड विकास अधिकारी
Block Development Officer
सामुदायिक विकास खण्ड, फरारगंज
C D Block, Ferargunj

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Format for Submission of MONTHLY PROGRESS REPORT in the NGT Matter No. 673 of 2018 (in compliance to NGT order dated 24.09.2020)

(Report for the month of **August 2024**)

Name of the Block : BDO, CD Block, Mayabunder
District : N&M Andaman District

1.	Total population	26327
2.	No. of households	6500
3.	No. of commercial establishments/private institutions	527
4.	No. of Government Institutions	122
5.	No. of households covered by door to door collection system	2483
6.	No. of households covered by door to door collection system practicing segregation at source	1663
7.	No .of households covered for collection of User-Fees	1329
8.	Total amount collected from HHs as User-Fees(I)	78700
9.	No. of commercial establishments/private institution covered by door to door collection system	473
10.	No. of commercial establishments/ private institutions covered by door to door collection system practicing segregation at source	249
11.	No. of commercial establishments/ private institutions covered for collection of User-Fees	240
12.	Total amount collected from commercial establishment/private institutions as User Fees(II)	64410
13.	No. of Government Institutions covered by door to door collection system	58
14.	No. of Government Institutions covered by door to door collection system practicing segregation at source	55
15.	No.of Government Institutions covered for collection of User-Fees	30
16.	Total amount collected from Government Institutions as User Fees(III)	3550
17.	Total Amount of User-Fee collected (I+II+III)	146660
18.	Total quantity of solid waste collected through door to door collection(A) (in Kg) (Per month)	23903
19.	Dry	23783
20.	Wet	120

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21.	No of public garbage sites	196
22.	Total quantity of **solid waste** collected from public garbage bins **(B)** **(in Kg) (Per month)**	29684
23.	Dry	29574
24.	Wet	110
25.	Total quantity of **solid waste** collected from door to door collection and public garbage site**(A+B) (Per month)**	53587
26.	Dry	53357
27.	Wet	230

I. SOLID WASTE GENERATION

Total generation of Solid Waste (Estimation) Both Dry & Wet (TPD)	3.90
Total collection of Solid Waste (TPD) – **[A]+[B]+[C]**	1.82
Existing Segregation Facilities with capacity	1. SLWM Karmatang 2. SLWM Pahalgaon 3. SLWM Basantipur
Proposed Segregation Facilities with capacity (Describe any additional work planned for improving the facilities.)	1. Proposed in MNREGA to develop the site for segregation under GP Rampur 2. 200 sq.m land area proposed for segregation purpose under GP Basantipur 3. Site for segregation shed is proposed and the land allotment is under process under GP Harinagar

(A) Dry Waste:

Out of the total Solid Waste collected, Quantity of Dry waste (in Kg)**(In month)**	PET	1100
	All type of Plastics	12245
	Multi Layer Plastics(MLP)	10430
	Paper/Cardboard)	17261
	Tetrapack	487
	Glass	7821
	Metals(All type)	1050
	E-Waste	592
	Cloth	1260
	Footwear	1111
	Total (A)	53357
Quantity of dry waste sent for recycling locally (Get the information from Cluster GPs)		-
Quantity of dry waste sent to mainland		-

(Get the information from Cluster GPs)	
Quantity of dry waste landfill (Get the information from all GPs)	-

(A.1) Details of Segregation centres:

Sl No	Name /Location	Design/Installed capacity(in Kg per Day)	Facilities/machines (No of shredding, Bailing machines with individual capacity)	Capacity Utilization (in Kg per Day)
1.	SLWM cluster, Rampur at Karmatang	500 kg	1 No. Bailing Machine	200 kg
2.	SLWM cluster, Pahalgaon at Tugapur- 7	500 kg	-	140 kg
3.	SLWM cluster, Basantipur at Govindapur		1 No. Bailing Machine (Under repair)	
4.	SLWM cluster, Shivapuram	500 kg	1 No. Bailing Machine (0.5 TPD)	60 kg

(B) Wet Waste

Out of the total Solid Waste collected, Quantity of Segregated wet waste:(TPD) –[B]**(Per month)**	0.011
Quantity of wet waste sent for composting etc.	**0.023**
Quantity of wet waste sent for Biomethanation	-
Quantity of wet waste sent to landfill	-
No. of Processing Facilities Available with individual Capacity (Describe the facility, attach separate sheet if required)	-
No. of Proposed Facilities with individual Capacity	-

(B) Details of wet waste processing units

S. No	Name /Location/Technology	Design Capacity	Capacity utilization
-	-	-	-

(C) Mixed Waste

Out of the total Solid Waste collected, Quantity of Segregated Mixed waste(TPD)–[C] ((**Per month in Kg)**	-
Quantity of mixed waste sent to landfills	-

- List of proposed land fills with capacity and utilization:
- List of proposed land fills with capacity:

(D) Bulk Waste Generators as defined in SWM Rules-2016 (Average Waste generation rate 100kg/day)

(D.1)List of Bulk Waste generators

Sl.no	Name	Address	Waste generated per day	Composting Units/ Bio-methanation with existing capacity
-	-	-	-	-

II. SEWAGE GENERATION :

(1)Estimated sewage generation (MLD)-[A]+[B]+[C] = 0.16

(A)Sewage flowing through Sewerage System

Out of total sewage generated, Quantity of sewage flowing to sewerage system-[A]	Nil
No. of Proposed STPs with individual capacity in MLD	-

(B)Sewage flowing through Septic tank

Out of total sewage generated, Quantity of sewage treated in Septic Tank(MLD): [B]	0.032
Quantity of Sludge generated:	-
No. of FSTP and Quantity of sludge processed in FSTP:	-
No. and Capacity of sludge Tanks:	-

(C)Sewage flowing through Open:

Out of total sewage generated, Quantity of sewage flowing through open (MLD): [C]:

Component	Quantity of Sewage flowing (in MLD)	No. of HHs covered
Soak Pits/Magic Pits/Leach Pits	0.005	11
Drainage Channels with Soak Pits	0.006	0
Drainage Channels without Soak Pits	0.007	325
Kitchen Garden/Farm	0.11	1700
Total	**[C] = 0.128**	2036

(Any additional planned works i.e. Drainage channels, Soak Pits constructions under MGNREGA or GIA for Grey Water Management may be elaborated here)

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III. PLASTIC WASTE:

Quantity of Waste in Tons	During the Month
Total Dry waste segregated	28.86
Total plastic waste segregated	7.165
Total non-plastic waste segregated	21.775
Amount of waste sent to mainland for recycling	-
Amount of waste used for road construction	-

(A) Information incorporated in the SWM bye laws:

Provisions to collect spot fines from violators in production, distribution, storage sale and use of banned plastic & other items	Yes, exist as per SWM Bye Laws, 2019
Penalty for littering of waste (as per SWM Bye Laws) - Actual Fine imposed during the month (in Rs.)	-
Penalty for open burning of plastics (actual fine imposed per month)	-

(B) Details of Open burning incidents:

	No of team enforcing ban of burning plastic	No of inspections conducted	No of incidents identified	Fine imposed/recovered	No of complaints received	Action taken against the violators
During the month	-	3	-	-	-	-

(C) Creating Awareness among all stakeholders:

	No of awareness programs conducted	Departments/stakeholders participated	No of people participated	Number of Beach Clean-up drive Conducted
During the Month	-	-	-	-

(D) Details of Civil societies or group working with waste pickers:

No of Self Helping Groups(SHGs)	No. of people in SHGs	No. of people engaged in waste
-	-	-

(E) Enforcement of SUP ban:

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	No of teams for enforcement of SUP ban	No of field inspections	No of violations observed	No of challans issued	Quantity of plastic seized (in Kg.)	Amount of fine collected (In Rs.)
During the Month	4	11	-	-	-	-

(F) Elaborate on the gaps, if any, with reasons and justification.

Less households are covered under door to door collection system due to inadequate road connectivity, dispersed settlement of households, insufficient number of sanitation staff. Further, many villagers are unwilling to pay the user fee. Also, many commercial establishments are either closed most of the time or their owners are out of station. So, the GPs are unable to collect user fee from these establishments. Government institutions are also refusing to pay user fee stating that they have not received any direction from their respective department for paying user fee to the GP.

5/9/24

Name and Signature of the Block Development Officer with Seal

Block Development Officer
CD Block, Mavelikara

:Format for Submission of MONTHLY PROGRESS REPORT in the NGT Matter No. 673 of 2018 (in compliance of NGT order dated 24.09.2020)

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(Report for the month of **August 2024**)

Name of the Block :CD Block little Andaman

District : South Andaman

1.	Total population	25101
2.	No. of households	4964
3.	No. of commercial establishments/private institutions	296
4.	No. of Government Institutions	48
5.	No. of households covered by door to door collection system	2250
6.	No.of households covered by door to door collection system practicing segregation at source	1514
7.	No .of households covered for collection of User-Fees	1103
8.	Total amount collected from HHs as User-Fees(I)	60550.00
9.	No. of commercial establishments/private institution covered by door to door collection system	289
10.	No. of commercial establishments/ private institutions covered by door to door collection system practicing segregation at source	246
11.	No.of commercial establishments/ private institutions covered for collection of User-Fees	265
12.	Total amount collected from commercial establishment/private institutions as User Fees(II)	42450.00
13.	No. of Government Institutions covered by door to door collection system	48
14.	No. of Government Institutions covered by door to door collection system practicing segregation at source	40
15.	No of Government Institutions covered for collection of User-Fees	2
16.	Total amount collected from Government Institutions as User Fees(III)	0
17.	Total Amount of User-Fee collected (I+II+III)	85000
18.	Total quantity of**solid waste** collected through door to door collection(A) (in Kg) (Per month)	4000
19.	Dry	11203
20.	Wet	950
21.	No of public garbage sites	55
22.	Total quantity of **solid waste** collected from public garbage bins (B) (in Kg) (Per month)	1050
23.	Dry	3270
24.	Wet	1190
25.	Total quantity of **solid waste** collected from door to door collection and public garbage site(A+B) (Per month)	5050
26.	Dry	14623
27.	Wet	6990

I. SOLID WASTE GENERATION

Total generation of Solid Waste (Estimation) Both Dry &Wet	18063

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(TPD)	
Total collection of Solid Waste (TPD) –[A]+[B]+[C]	18413
Existing Segregation Facilities with capacity	1350Kg per Day
Proposed Segregation Facilities with capacity (Describe any additional work planned for improving the facilities.)	1600Kg

(A) Dry Waste:

Out of the total Solid Waste collected, Quantity of Dry waste (in Kg)**(In month)**	PET	333
	All type of Plastics	2742
	Multi Layer Plastics(MLP)	128 Kg
	Paper/Cardboard)	1955Kg
	Tetrapack	345 Kg
	Glass	2655 Kg
	Metals(All type)	445Kg
	E-Waste	17
	Cloth	105
	Footwear	9 Kg
	Others (Bushes,etc)	2505
	Total (A)	11285
Quantity of dry waste sent for recycling locally (Get the information from Cluster GPs)		No
Quantity of dry waste sent to mainland (Get the information from Cluster GPs)		No
Quantity of dry waste landfill (Get the information from all GPs)		2505

(A.1) Details of Segregation centres:

Sl No	Name /Location	Design/Installed capacity(in Kg per Day)	Facilities/machines (No of shredding, Bailing machines with individual capacity)	Capacity Utilization (in Kg per Day)
1.	Netaji Nagar Cluster	20 Kg	Shedding Machine – 01	20 Kg
2.	SWM Cluster Rabindra Nagar	350 Kg	Baling machine -01 Weighing Machine-01	350 Kg
3.	SLWM Cluster Rabindra Nagar		Baling Machine-01	
4.	SLWM Cluster Netaji Nagar	200 Kg	Shredding machine-01	100 Kg
5.	Rabindra Nagar	150-200 Kg	Baling Machine-01	250-300 Kg

(B) Wet Waste

Out of the total Solid Waste collected, Quantity of Segregated wet waste:(TPD) –[B]**(Per month)**	2050
Quantity of wet waste sent for composting etc.	

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Quantity of wet waste sent for Biomethanation	
Quantity of wet waste sent to landfill	700
No. of Processing Facilities Available with individual Capacity (Describe the facility, attach separate sheet if required)	Required 02 Nos shed for composting of wet waste.
No. of Proposed Facilities with individual Capacity	02 Nos ,Vermi compost pit may be constructed at SWM

(B) Details of wet waste processing units

S. No	Name /Location/Technology	Design Capacity	Capacity utilization
1.	N/A	N/A	N/A

(C) Mixed Waste

Out of the total Solid Waste collected, Quantity of Segregated Mixed waste(TPD)–[C] **((Per month in Kg)**	4300Kg
Quantity of mixed waste sent to landfills	2800Kg

- List of proposed land fills with capacity and utilization:
- List of proposed land fills with capacity:

(D) Bulk Waste Generators as defined in SWM Rules-2016 (Average Waste generation rate 100kg/day)

(D.1)List of Bulk Waste generators

Sl.no	Name	Address	Waste generated per day	Composting Units/ Bio-methanation with existing capacity
1.	ANIIDCO, Hut Bay	Hathi Dera, Hut Bay	80 Kg	
2.	Lovely Bar, Hut Bay	Hathi Dera, Hut Bay	150 Kg	
3.	Nandini Bar, Hut Bay	Indra Bazar, Hut Bay	120 Kg	

II. SEWAGE GENERATION :

(1)Estimated sewage generation (MLD)-[A]+[B]+[C] = 688104

(A)Sewage flowing through Sewerage System
(1)Estimated sewage generation (MLD)-[A]+[B]+[C] =

(A)Sewage flowing through Sewerage System

Out of total sewage generated, Quantity of sewage flowing to sewerage system-[A]	473282-473332

No. of Proposed STPs with individual capacity in MLD	

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(B)Sewage flowing through Septic tank

Out of total sewage generated, Quantity of sewage treated in Septic Tank(MLD): [B]	41987
Quantity of Sludge generated:	
No. of FSTP and Quantity of sludge processed in FSTP:	
No. and Capacity of sludge Tanks:	

(C)Sewage flowing through Open:

Out of total sewage generated, Quantity of sewage flowing through open (MLD): [C]:

Component	Quantity of Sewage flowing (in MLD)	No. of HHs covered
Soak Pits/Magic Pits/Leach Pits		
Drainage Channels with Soak Pits	948	948
Drainage Channels without Soak Pits	50	50
Kitchen Garden/Farm	100	100
Total	**[C] = 1098**	1098

(Any additional planned works i.e. Drainage channels, Soak Pits constructions under MGNREGA or GIA for Grey Water Management may be elaborated here)

III. PLASTIC WASTE:

Quantity of Waste in Tons	During the Month
Total Dry waste segregated	5000.345
Total plastic waste segregated	2570.105
Total non-plastic waste segregated	3820.24
Amount of waste sent to mainland for recycling	-
Amount of waste used for road construction	-

(A) Information incorporated in the SWM bye laws:

Provisions to collect spot fines from violators in production, distribution, storage sale and use of banned plastic & other items	Yes, exist as per SWM Bye Laws, 2019
Penalty for littering of waste (as per SWM Bye Laws) - Actual Fine imposed during the month (in Rs.)	Rs.500 Fine
Penalty for open burning of plastics (actual fine imposed per month)	Rs. 500 Fine

(Open burning incidents:

	No of team enforcing ban of burning plastic	No of inspections conducted	No of incidents identified	Fine imposed/recovered	No of complaints received	Action taken against the violators
During the month	5	3	Nil	Nil	Nil	

(C) Creating Awareness among all stakeholders:

	No of awareness programs conducted	Departments/stakeholders participated	No of people participated	Number of Beach Clean-up drive Conducted
During the Month	3	10	100	3

(D) Details of Civil societies or group working with waste pickers:

No of Self Helping Groups(SHGs)	No. of people in SHGs	No. of people engaged in waste
19	190	

(E) Enforcement of SUP ban:

	No of teams for enforcement of SUP ban	No of field inspections	No of violations observed	No of challans issued	Quantity of plastic seized (in Kg.)	Amount of fine collected (in Rs.)
During the Month	3	3				

(F) Elaborate on the gaps, if any, with reasons and justification.

09/09/2024

(Cherian Mathews)

Name and Signature of the Block Development Officer with Seal

ব্লক বিকাশ আধিকারী
Block Development Officer
কাডুরকিল বিকাশ ব্লক, লিটিল আন্দামান
CD Block, Little Andaman

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Points to be considered while filling up of the monthly report:

1. Nos. covered by Door to Door system at S. No. 5, 9, 13 should match with S. No. 2, 3 and 4 respectively i.e. 100% collection is to be ensured or else public garbage bins is to be ensured for HHs not collected through Door to Door system.
2. Data at S. No. 6,10,14 should match with data t S. No. 5,9,13 i.e. 100 percent practicing segregation at source, if gap in data, measures taken by the Panchayat of fine imposed needs to be appropriately mentioned.
3. Per Day Per capita solid waste generation as per National average is estimated to be 0.5 to 1 Kg in rural. In the Islands, the estimation is taken minimum as 600 gm per Household per day (Dry Waste) and 200 gm (Wet Waste).
   Date reported at S. No. 18 should therefore be in conformity to the above assumption considering the number of HHs, commercial establishments and institutions that are covered.
   Short of data in the above column, should be substantiated with remarks of concerned GP.
4. For HHs, commercial establishments and Govt. Institutions not covered through Door to Door system, sufficient number of public garbage sites/bins should be clearly shown in the report.
5. Total generation of Solid Waste (Estimation) Both Dry & Wet should be calculated as follows –
   No. of HHs x 0.600 Kg = X
6. Sewage Generation –
   55 Litre x Population x 80% = Y
   Y = A+B+C
   C – Open Drain – 80% of Y
   B – 20% of Y
   C- Zero as no Sewerage system exist in rural presently
7. Any ongoing projects, proposed projects in pipeline or planning stage to bridge the gaps may also be mentioned in the report.

Format for Submission of MONTHLY PROGRESS REPORT in the NGT Matter No. 673 of 2018 (in compliance to NGT order dated 24.09.2020)

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(Report for the month of **July 2024**)

Name of the Block : Campbell Bay

District : Nicobars

1.	Total population	25624
2.	No. of households	1765
3.	No. of commercial establishments/private institutions	146
4.	No. of Government Institutions	53
5.	No. of households covered by door to door collection system	1765
6.	No.of households covered by door to door collection system practicing segregation at source	1765
7.	No .of households covered for collection of User-Fees	455
8.	Total amount collected from HHs as User-Fees(I)	Rs.26785*
9.	No. of commercial establishments/private institution covered by door to door collection system	72
10.	No. of commercial establishments/ private institutions covered by door to door collection system practicing segregation at source	72
11.	No. of commercial establishments/ private institutions covered for collection of User-Fees	68
12.	Total amount collected from commercial establishment/ private institutions as User Fees(II)	Rs.12510
13.	No. of Government Institutions covered by door to door collection system	22
14.	No. of Government Institutions covered by door to door collection system practicing segregation at source	13
15.	No. of Government Institutions covered for collection of User-Fees	13
16.	Total amount collected from Government Institutions as User Fees(III)	Rs.26600
17.	Total Amount of User-Fee collected (I+II+III)	Rs.65895
18.	Total quantity of solid waste collected through door to door collection(A) (in Kg) (Per month)	
	Dry	1782 Kg
	Wet	0 Kg
19.	No of public garbage sites	25
20.	Total quantity of solid waste collected from public garbage bins (B) (in Kg) (Per month)	
	Dry	481 Kg
	Wet	0Kg
21.	Total quantity of solid waste collected from door to door collection and public garbage site(A+B) (Per month)	
	Dry	2263 Kg
	Wet	0Kg

I. **SOLID WASTE GENERATION**

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Total generation of Solid Waste (Estimation) Both Dry & Wet **(TPD)**	1.0590 TPD
Total collection of Solid Waste **(TPD) – [A]+[B]+[C]**	0.07543 TPD
Existing Segregation Facilities with capacity	SLWM Cluster at Vijay Nagar with 50Kg/Day
Proposed Segregation Facilities with capacity (Describe any additional work planned for improving the facilities.)	Proposal for set-apart of land has been sent to DC Nicobar, for segregation facility under Govind Nagar GP and Campbell bay GP

(A) Dry Waste:

Out of the total Solid Waste collected, Quantity of Dry waste (in Kg)**(In month)**	PET	-
	All type of Plastics	375
	Multi Layer Plastics(MLP)	475
	Paper/Cardboard)	160
	Tetra-pack	56
	Glass	690
	Metals(All type)	157
	E-Waste	-
	Cloth	217
	Footwear	133
	Total (A)	2263
Quantity of dry waste sent for recycling locally		0
Quantity of dry waste sent to mainland		**0**
Quantity of dry waste landfill		0

(A.1) Details of Segregation centres:

Sl No	Name /Location	Design/Installed capacity(in Kg per Day)	Facilities/machines (No of shredding, Balling machines with individual capacity)	Capacity Utilization (in Kg per Day)
1	SLWM Cluster at Vijay Nagar under Laxmi Nagar GP (Segregation is done at Vijay Nagar SWM Custer)	50Kg/Day	1 No. Balling Machine	50kg/Day
2	Primary segregation centre at ward no.4 under Campbell bay then after sent to SWM Cluster at Vijay Nagar			
3	Temporary Segregation centre under Govind Nagar GP, then after sent to SWM cluster at Vijay Nagar			

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(B) Wet Waste

Out of the total Solid Waste collected, Quantity of Segregated wet waste (TPD) –[B](Per month)	NIL
Quantity of wet waste sent for composting etc.	NIL
Quantity of wet waste sent for Biomethanation	NIL
Quantity of wet waste sent to landfill	NIL
No. of Processing Facilities Available with individual Capacity (Describe the facility, attach separate sheet if required)	NIL
No. of Proposed Facilities with individual Capacity	NIL

(B) Details of wet waste processing units

S. No	Name /Location/Technology	Design Capacity	Capacity utilization
	NIL	NIL	NIL

(C) Mixed Waste

Out of the total Solid Waste collected, Quantity of Segregated Mixed waste(TPD)-[C] ((Per month in Kg)	-
Quantity of mixed waste sent to landfills	-

- List of proposed land fills with capacity and utilization:
- List of proposed land fills with capacity:

(D) Bulk Waste Generators as defined in SWM Rules-2016 (Average Waste generation rate 100kg/day)

(D.1)List of Bulk Waste generators

Sl.no	Name	Address	Waste generated per day	Composting Units/ Bio-methanation with existing capacity
-	-	-	-	-

II. SEWAGE GENERATION :

(1)Estimated sewage generation (MLD)-[A]+[B]+[C] = 37.581 MLD

(A)Sewage flowing through Sewerage System

Out of total sewage generated, Quantity of sewage flowing to sewerage system-[A]	NIL
No. of Proposed STPs with individual capacity in MLD	NIL

(B)Sewage flowing through Septic tank

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Out of total sewage generated, Quantity of sewage treated in Septic Tank(MLD): [B]	7.516 MLD
Quantity of Sludge generated:	-
No. of FSTP and Quantity of sludge processed in FSTP:	-
No. and Capacity of sludge Tanks:	-

(C)Sewage flowing through Open:

Out of total sewage generated, Quantity of sewage flowing through open (MLD): [C]: 30.064 (MLD)

Component [E]	Quantity of Sewage flowing (in MLD)	No. of HHs covered
Soak Pits/Magic Pits/Leach Pits	NIL	-
Drainage Channels with Soak Pits	NIL	-
Drainage Channels without Soak Pits	24.052 (MLD)	1765
Kitchen Garden/Farm	6.012 (MLD)	
Total	**30.064 MLD**	1765

(Any additional planned works i.e. Drainage channels, Soak Pits constructions under MGNREGA or GIA for Grey Water Management may be elaborated here)

III. PLASTIC WASTE:

Quantity of Waste in Tons	During the Month
Total Dry waste segregated	2.263 Tons
Total plastic waste segregated	0.85 Tons
Total non-plastic waste segregated	1.413 Tons
Amount of waste sent to mainland for recycling:	NIL
Amount of waste used for road construction	NIL

(A) Information incorporated in the SWM bye laws:

Provisions to collect spot fines from violators in production, distribution, storage sale and use of banned plastic & other items	Yes, exist as per SWM Bye Laws, 2019
Penalty for littering of waste (as per SWM Bye Laws) - Actual Fine imposed during the month (in Rs.)	0
Penalty for open burning of plastics (actual fine imposed per month)	0

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(B) Details of Open burning incidents:

	No of team enforcing ban of burning plastic	No of inspections conducted	No of incidents identified	e imposed/ recovered	No of complaints received	Action taken against the violators
During the month	-	-	-	-	-	-

(C) Creating Awareness among all stakeholders:

	No of awareness programs conducted	Departments/stakeholders participated	No of people participated	Number of Beach Clean-up drive Conducted
During the Month	2	6	69	2

(D) Details of Civil societies or group working with waste pickers:

No of Self Helping Groups(SHGs)	No. of people in SHGs	No. of people engaged in waste
17	170	10

(E) Enforcement of SUP ban:

	No of teams for enforcement of SUP ban	No of field inspections	No of violations observed	No of challans issued	Quantity of plastic seized (in Kg.)	Amount of fine collected (In Rs.)
During the Month	NIL	NIL	NIL	NIL	NIL	NIL

(F) Elaborate on the gaps, if any, with reasons and justification.

1*. User fee for every HH couldn't collected as many HH are out of station and due to other reason.

2*. User fee could not collect as the shop owners are out of station and due to other reason.

3*. Government institutions are paying the user fee on a quarterly basis.

Block Development Officer
CD Block, Campbell Bay

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No.6-75/NGT/NAB/DP/2024-25/411
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खण्ड विकास अधिकारी का कार्यालय
OFFICE OF THE BLOCK DEVELOPMENT OFFICER
सामूदायिक विकासखण्ड, डिगलीपुर, उत्तरी अण्डमान
C.D. BLOCK, DIGLIPUR, NORTH ANDAMAN

Diglipur dated the 06th August, 2024

To

The Director
Directorate of RD, PRIs &ULBs
A&N Administration, Marine Hill

Sub: - Submission of Monthly Progress Report on Solid waste Management under NGT Matter No .673 of 2018 for the Month of July 2024 reg.

Sir,

Please find enclosed herewith the Monthly Progress Report on Solid waste Management under NGT Matter No. 673 of 2018 (in compliance to NGT Order dated 24.09.2020) for the Month of July 2024 in respect of C.D. Block Diglipur along with the copy of Monthly report received from following Gram Panchayat for further necessary action at your end please.

Sl No.	Name of Gram Panchayat	Remarks
1.	Diglipur	Received
2.	Subashgram	Received
3.	R.K. Gram	Received
4.	Shibpur	Received
5.	Gandhinagar	Received
6.	Keralapuram	Received
7.	Laxmipur	Received
8.	Madhupur	Received
9.	Radhanagar	Received
10.	Sitanagar	Received
11.	Nabagram	Received
12.	Ramnagar	Received
13.	Kalighat	Received
14.	Paschimsagar	Received
15.	Kishorinagar	Received

Yours faithfully

06-8-24

खण्ड विकास अधिकारी
Block Development Officer
सामूदायिक विकासखण्ड, डिगलीपुर
C.D. Block, Diglipur

Copy to:-

1. PA to DC, N&MA, for information of the Deputy Commissioner Mayabunder please.
2. The Assistant Commissioner, Diglipur for kind information please.

06-8-24

खण्ड विकास अधिकारी
Block Development Officer
सामूदायिक विकासखण्ड, डिगलीपुर
C.D. Block, Diglipur

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Format for Submission of MONTHLY PROGRESS REPORT in the NGT Matter No. 673 of 2018 (in compliance to NGT order dated 24.09.2020)		
(Report for the Month of July 2024)		
Name of the Block:**Diglipur**		
District: **North & Middle Andaman**		
1.	Total population	40626
2.	No. of households	10658
3.	No. of commercial establishments/private institutions	913
4.	No. of Government Institutions	285
5.	No. of households covered by door to door collection system	9430
6.	No.of households covered by door to door collection system practicing segregation at source	8404
7.	No .of households covered for collection of User-Fees	5642
8.	Total amount collected from HHs as User-Fees**(I)**	376850
9.	No. of commercial establishments/private institution covered by door to door collection system	881
10.	No. of commercial establishments/ private institutions covered by door to door collection system practicing segregation at source	778
11.	No.of commercial establishments/ private institutions covered for collection of User-Fees	764
12.	Total amount collected from commercial establishment/private institutions as User Fees**(II)**	126780
13.	No. of Government Institutions covered by door to door collection system	249
14.	No. of Government Institutions covered by door to door collection system practicing segregation at source	203
15.	No.of Government Institutions covered for collection of User-Fees	42
16.	Total amount collected from Government Institutions as User Fees**(III)**	18050
17.	Total Amount of User-Fee collected **(I+II+III)**	**521680**
18.	Total quantity of waste collected through door to door collection**(A) (in Kg) (Per month)**	**26493**
19.	Dry	26453
20.	Wet	40
21.	No of public garbage sites	857
22.	Total quantity of waste collected from public garbage bins **(B) (in Kg) (Per month)**	119042
23.	Dry	109241

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24.	Wet	9801
25.	Total quantity of waste collected from door to door collection and public garbage site(A+B) (Per month)	**145535**
26.	Dry	135694
27.	Wet	9841

I. SOLID WASTE GENERATION		
1	Total generation of Solid Waste (Estimation) Both Dry & Waste	6394.8
2	Total collection of Solid Waste (TPD) -[A]+[B]+[C]	135.9815
3	Existing Segregation Facilities with capacity	2000
4	Proposed Segregation Facilities with capacity	3

(A) Dry Waste:			
1	Out of the total Solid Waste collected, Quantity of Dry waste (in Kg)(In month)	PET	2879
		All type of Plastics	8940
		Multi Layer Plastics(MLP)	7113
		Paper/Cardboard)	43218
		Tetrapack	12280
		Glass	49414
		Metals(All type)	2442
		E-Waste	4685
		Cloth	3424
		Footwear	1300
		Total (A)	**135694**
2	Quantity of dry waste sent for recycling locally		298
3	Quantity of dry waste sent to mainland		6110
4	Quantity of dry waste landfill		0

(A.1) Details of Segregation centres:

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Sl No	Name /Location	Design/Installed capacity(in Kg per Day)	Facilities/machines (No of shredding, Bailing machines with individual capacity)	Capacity Utilization (in Kg per Day)
1	Radhanagar Cluster	500	(1.5) 01	100
2	Gandhinagar (Radhanagar Cluster)	500	(1.5) 01	0
3	Diglipur (Madhupur Cluster)	0	0	0
4	Madhupur Cluster	500	1	300
5	Ramnagar (Nabagram Cluster)	0	1	0
6	Sitanagar (Madhupur Cluster)	0	0	0
7	Laxmipur	0	0	0
8	Nabagram Cluster	500	1 (2 toncapt.)	0
9	Kalighat (Nabagram Cluster)	500	1 (2 toncapt.)	0
10	R.K Gram Madhupur Cluster	0	0	0
11	Keralapuram	500	1	400
12	Kishorinagar Cluster	400	1.5 (ton)	0
13	Paschimsagar (Kishorinagar Cluster)	0	0	0
14	Shibpur	0	0	0
15	Subashgram(Madhupur Cluster)	0	(2 t) 1	0

(B) Wet Waste		
1	Out of the total Solid Waste collected, Quantity of Segregated wet waste:(TPD) -[B](**Per month**)	0.2875
2	Quantity of wet waste sent for composting etc.	0.415
3	Quantity of wet waste sent for Biomethanation	0
4	Quantity of wet waste sent to landfill	0
5	No. of Processing Facilities Available with Individual Capacity	4 Nos. compost pit with 3cbm capacity per tank
6	No. of Proposed Facilities with Individual Capacity (sqm)	100

(B) Detailes of wet waste processing units			
Sl. No.	**Name**	**Design capacity**	**Capacity utilization**
1	Radhanagar Cluster.	12 cbm compose pit (3 Cbm per tanks total 4 Nos.	0
2	Gandhinagar (Radhanagar Cluster)	13 cbm compose pit (3 Cbm per tanks total 4 Nos.	0%
3	Diglipur (Madhupur Cluster)	0	0

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4	Madhupru Cluster	10 cbm compose pit (3 Cbm per tanks	0
5	Ramnagar (Nabagram Cluster)	2 cbm compose pit (3 Cbm per tanks	0
6	Sitanagar (Madhupur Cluster)	0	0
7	Laxmipur	0	0
8	Nabagram Cluster	2 cbm compose pit (3 Cbm per tanks	0
9	Kalighat (Nabagram Cluster)	2 cbm compose pit (3 Cbm per tanks	0
10	R.K. Gram Madhupur Cluster	0	0
11	Keralapuram	4 Nos. CC compose pit with 02 cbm Capacity	20%
12	Kishorinagar Cluster	0	0
13	Paschimsagar (Kishorinagar Cluster)	0	0
14	Shibpur	0	0
15	Subashgram(Madhupur Cluster)	12 Nos. 2 cbm vermi compose tank	0

(C) Mixed Waste		
1	Out of the total Solid Waste collected, Quantity of Segregated Mixed waste(TPD)-[C] **((Per month in Kg)**	0
2	Quantity of mixed waste sent to landfills	0

- List of proposed land fills with capacity and utilization:
- List of proposed land fills with capacity:

(D) Bulk Waste Generators as defined in SWM Rules-2016 (Average Waste generation rate 100kg/day)				
(D.1)List of Bulk Waste generators				
Sl.no	Name	Address	Waste generated per day	Composting Units/ Bio-methanation with existing capacity
1	Vegitable Market	Subashgram	1000 KG	0

II. SEWAGE GENERATION :		
(1)Estimated sewage generation (MLD)-[A]+[B]+[C] =1787544		
(A)Sewage flowing through Sewerage System		
1	Out of total sewage generated, Quantity of sewage flowing to sewerage system-[A]	0
2	No. of Proposed STPs with individual capacity in MLD	0

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	(B)Sewage flowing through Septic tank	
1	Out of total sewage generated, Quantity of sewage treated in Septic Tank(MLD): [B]	357508.8
2	Quantity of Sludge generated:	0
3	No. of FSTP and Quantity of sludge processed in FSTP:	0
4	No. and Capacity of sludge Tanks:	0
	(C)Sewage flowing through Open drains:	
	Out of total sewage generated, Quantity of sewage flowing to open drains (MLD): [C]:	
1	Kitchen Garden/Farm	1269055.148
2	Soak Pit/Magic Pits/Leach Pits	92316.052
3	Drainage Channels with Soak Pits	0
4	Drainage Channels without Soak Pits	68664

	III. PLASTIC WASTE:	
1	Quantity of Waste **in Tons**	During the Month
2	Total Dry waste segregated	105.158
3	Total plastic waste segregated	12.902
4	Total non-plastic waste segregated	106.163
5	Amount of waste sent to mainland for recycling	5.861
6	Amount of waste used for road construction	0

	(A) Information incorporated in the SWM bye laws:	
1	Provisions to collect spot fines from violators in production, distribution, storage sale and use of banned plastic & other items	Yes exist as per SWM Bye laws 2019.
2	Penalty for littering of waste	0
3	Penalty for open burning of plastics	0

	(B) Details of Open burning incidents:				
	No of team enforcing ban of burning plastic	No of inspections conducted	No of incidents identified	Fine imposed/recovered	Action taken against the violators
During the month	3	1	0	0	0

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(C) Creating Awareness among all stakeholders:				
	No of awareness programs conducted	Departments/stakeholders participated	No of people participated	Number of Beach
During the Month	7	1	61	No Beach under the

(D) Details of Civil societies or group working with waste pickers:		
No of Self Helping Groups(SHGs)	No. of people in SHGs	No. of people engaged in waste
0	0	0

(E) Enforcement of SUP ban:					
	No of teams for enforcement of SUP ban	No of field inspections	No of violations observed	No of challans issued	Amount of fine collected (In Rs.)
During the Month	7	7	0	0	0

Note:- **For Gap kindly refer report of concerned Gram Panchayat**

06.8.24

Signature & Seal of the BDO

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F.No. 2-3(90)/CDBFG/SBM PHASE-II/2023-24/361
OFFICE OF THE BLOCK DVELOPMENT OFFICER
C.D.BLOCK, FERRARGUNJ

Ferrargunj, 06th August' 2024

To

The Director (RD/P)
Directorate of RD, PRIs & ULBs
Port Blair.

Sub: Submission of NGT Report- reg

Sir,

I am furnishing herewith the monthly progress report of NGT for the month of July'2024 in various Gram Panchayats under the jurisdiction of CD, Block Ferrargunj for further course of action at your end please.

Necessary copies of the monthly progress report of NGT received from the 19 Gram Panchayats under the jurisdiction of CD, Block, Ferrargunj are enclosed herewith for your reference.

Yours faithfully

Encl:A/A

06/08/2024

Block Development Officer
C.D.Block, Ferrargunj

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Format for Submission of MONTHLY PROGRESS REPORT in the NGT Matter No. 673 of 2018 (in compliance to NGT order dated 24.09.2020)

(Report for the month of July 2024)

Block : FERRARGUNJ

District : SOUTH ANDAMAN

1.	Total population	59348
2.	No. of households	13937
3.	No. of commercial establishments/private institutions	1006
4.	No. of Government institutions	198
5.	No. of households covered by door to door collection system	12020
6.	No of households covered by door to door collection system practicing segregation at source	12020
7.	No. of households covered for collection of User-Fees	5082
8.	Total amount collected from HHs as User-Fees(I)	347770
9.	No. of commercial establishments/private institution covered by door to door collection system	1001
10.	No. of commercial establishments/ private institutions covered by door to door collection system practicing segregation at source	1001
11.	No of commercial establishments/ private institutions	816
12.	Total amount collected from commercial	156150
13.	No. of Government institutions covered by door to door	183
14.	No. of Government institutions covered by door to door	183
15.	No of Government institutions covered for collection of User-	7
16.	Total amount collected from Government Institutions as User	600
17.	Total Amount of User Fee collected (I+II+III)	504520
18.	Total quantity of solid waste collected through door to door	39667
19	Dry	41603
20	Wet	1425
21.	No of public garbage sites	180
22	Total quantity of solid waste collected from public garbage bins	49823
23	Dry	39624
24	Wet	9095
25	Total quantity of solid waste collected from door to door	83032
26	Dry	81227
27	Wet	10520

1. SOLID WASTE GENERATION

Total generation of Solid Waste (Estimation) Both Dry & Wet (TPD)	9.32 TPD
Total collection of Solid Waste (TPD) – [A]+[B]+[C]	3.89 TPD
Existing Segregation Facilities with capacity	0
Proposed Segregation Facilities with capacity	0

(A) Dry Waste:

Out of the total Solid Waste collected, Quantity of Dry waste (in Kg)(In month)	PET	3762
	All type of Plastics	13221
	Multi Layer Plastics(MLP)	9115
	Paper/Cardboard)	11395
	Tetrapack	6572
	Glass	13279
	Metals(All type)	4665
	E-Waste	476
	Cloth	3271
	Footwear	2286
	Total (A)	68022
Quantity of dry waste sent for recycling locally		7135
Quantity of dry waste sent to mainland		0
Quantity of dry waste landfill		0

(A.1) Details of Segregation (continued)

Sl.	Name /Location	Type of Installation	Facilities/machines (No of	Capacity Utilization (in Kg per Day)
1	SLWM Cluster	400	1	220
2	SLWM Mannarghat	500	1	Machine under repair
3	SLWM Cluster Collegiate	15	1	15
4	SLWM Cluster Wandoor	400	Baling Machine	400
5	Chokkad NWM Cluster	500	01 Shredding Machine(pur	Data not available

(B) Wet Waste

Out of the total Solid Waste collected, Quantity of Segregated wet	9931
Quantity of wet waste sent for land filling etc.	0
Quantity of wet waste sent for bio-methanation	0
Quantity of wet waste sent to others	
No. of Processing Facilities Available with individual Capacity (Describe	SLWM Chavkad
No. of Proposed Facilities with individual Capacity	0

(B) Details of wet waste processing units

S.	Name	Design Capacity	Capacity utilization
1	Sheepoint	(5*5*2)3 cubic metre	(5*5*2)1 cubic metre

(C) Mixed Waste

Out of the total Solid Waste collected, Quantity of Segregated Mixed waste(TPD)-[C] ((Per month in	0
Quantity of mixed waste sent to landfills	0

- List of proposed land fills with capacity and utilization
- List of proposed land fills with capacity

(D) Bulk Waste Generators as defined in SWM Rules-2016 (Average Waste generation rate 100kg/day)

(D.1)List of Bulk Waste generators

Sl.no	Name	Address	Waste generated	Composting Units/ Bio- methanation with existing
Nil	Nil	Nil	Nil	Nil

II. SEWAGE GENERATION :

(1)Estimated sewage generation (MLD)-[A]+[B]+[C] = 73684.037

(A)Sewage flowing through Sewerage System

Out of total sewage generated, Quantity of sewage flowing to sewerage system-	29113.29
No. of Proposed STPs with individual capacity in MLD	

(B)Sewage flowing through Septic tank

Out of total sewage generated, Quantity of sewage treated in Septic Tank(MLD)	44570.35
Quantity of Sludge generated	
No. of FSTP and Quantity of sludge processed in FSTP:	
No. and Capacity of sludge Tanks	

(C)Sewage flowing through Open:

Out of total sewage generated, Quantity of sewage flowing through open (MLD) :[C]:

- Kitchen Garden/Farm - 0.66 MLD
- Soak Pits/Magic Pits/Leach Pits -
- Drainage Channels with Soak Pits -

III. Drainage Channels without Soak Pits - 0.022 MLD

Quantity of Waste in Tons	During the Month
Total Dry waste segregated	54.89
Total plastic waste segregated	21.44
Total non-plastic waste segregated	60.10
Amount of waste sent to dumpland for recycling	0
Amount of waste used for road construction	0

(A) Information Incorporated in the SWM bye laws:

Provisions to collect spot fines from violators in production, distribution,	Yes, exist as per SWM Bye Laws, 2019
Penalty for littering of waste (as per SWM Bye Laws) - Actual Fine	500
Penalty for open burning of plastics (actual fine imposed per month)	500

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(B) Details of Open ... ting incidents:

	No of lea...	of	No of	Fine	No of complaint s received	Action
During	4		0	0	0	0

(C) Creating Aware... among all ...takeholders:

	No of awa...	s	Depart ments/stakeholders	No of people participated	Number of
During	11		4	431	3

(D) Details of Civil ... ties or group working with waste pickers:

No of Self Helping	No. of people in SHGs	No. of people engaged in waste
05	015	9

(E) Enforcement of ... ban:

	No of te...	of	No of he...	No of	No of	Quantity of plastic seized (in Kg.)	Amount of
During the	5		1	Nil	nil	Nil	Nil

(F) Elaborate on th... ...s, if any, with reasons and justification.

Assistant Officer
Block Development Officer
Co Block, Nabagram

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Format for Submission of MONTHLY PROGRESS REPORT in the NGT Matter No. 673 of 2018 (in compliance to NGT order dated 24.09.2020)

(Report for the month of **July 2024**)

Name of the Block — CD Block little Andaman

District — South Andaman

1.	Total population	25101
2.	No. of households	4964
3.	No. of commercial establishments/private institutions	296
4.	No. of Government Institutions	48
5.	No. of households covered by door to door collection system	1941
6.	No.of households covered by door to door collection system practicing segregation at source	1562
7.	No .of households covered for collection of User-Fees	1116
8.	Total amount collected from HHs as User-Fees(I)	54900.00
9.	No. of commercial establishments/private institution covered by door to door collection system	257
10.	No. of commercial establishments/ private institutions covered by door to door collection system practicing segregation at source	224
11.	No.of commercial establishments/ private institutions covered for collection of User-Fees	248
12.	Total amount collected from commercial establishment/private institutions as User Fees(II)	37400
13.	No. of Government Institutions covered by door to door collection system	48
14.	No. of Government Institutions covered by door to door collection system practicing segregation at source	40
15.	No.of Government Institutions covered for collection of User-Fees	3
16.	Total amount collected from Government Institutions as User Fees(III)	300
17.	Total Amount of User-Fee collected (I+II+III)	97100
18.	Total quantity ofsolid waste collected through door to door collection(A) (in Kg) (Per month)	3800
19.	Dry	10130
20.	Wet	790
21.	No of public garbage sites	45
22.	Total quantity of solid waste collected from public garbage bins (B) (in Kg) (Per month)	1050
23.	Dry	4374

24.	Wet	620
25.	Total quantity of solid waste collected from door to door collection and public garbage site**(A+B) (Per month)**	4850
26.	Dry	14455
27.	Wet	1459

I. SOLID WASTE GENERATION

Total generation of Solid Waste (Estimation) Both Dry &Wet (TPD)	15490
Total collection of Solid Waste (TPD) –**[A]+[B]+[C]**	15840
Existing Segregation Facilities with capacity	1350Kg per Day
Proposed Segregation Facilities with capacity (Describe any additional work planned for improving the facilities.)	1600Kg

(A) Dry Waste:

Out of the total Solid Waste collected, Quantity of Dry waste (in Kg)**(In month)**	PET	310
	All type of Plastics	2742
	Multi Layer Plastics(MLP)	125 Kg
	Paper/Cardboard)	2192 Kg
	Tetrapack	357 Kg
	Glass	2090 Kg
	Metals(All type)	972Kg
	E-Waste	21
	Cloth	80
	Footwear	19 Kg
	Others (Bushes,etc)	2505
	Total (A)	11158
Quantity of dry waste sent for recycling locally (Get the information from Cluster GPs)		No
Quantity of dry waste sent to mainland (Get the information from Cluster GPs)		No
Quantity of dry waste landfill (Get the information from all GPs)		2505

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(A.1) Details of Segregation centres:

Sl No	Name /Location	Design/Installed capacity(in Kg per Day)	Facilities/machines (No of shredding, Baling machines with individual capacity)	Capacity Utilization (in Kg per Day)
1.	Netaji Nagar Cluster	20 Kg	Shedding Machine – 01	20 Kg
2.	SWM Cluster Rabindra Nagar	350 Kg	Baling machine -01 Weighing Machine-01	350 Kg
3.	SLWM Cluster Rabindra Nagar		Baling Machine-01	
4.	SLWM Cluster Netaji Nagar	200 Kg	Shredding machine-01	100 Kg
5.	Rabindra Nagar	150-200 Kg	Baling Machine-01	250-300 Kg

(B) Wet Waste

Out of the total Solid Waste collected, Quantity of Segregated wet waste (TPD) –[B]**(Per month)**	3700
Quantity of wet waste sent for composting etc.	
Quantity of wet waste sent for Biomethanation	
Quantity of wet waste sent to landfill	600
No. of Processing Facilities Available with individual Capacity (Describe the facility, attach separate sheet if required)	Required 02 Nos. shed for composting of wet waste.
No. of Proposed Facilities with individual Capacity	02 Nos ,Vermi compost pit may be constructed at SWM.

(B) Details of wet waste processing units

S. No	Name /Location/Technology	Design Capacity	Capacity utilization
1.	N/A	N/A	N/A

(C) Mixed Waste

Out of the total Solid Waste collected, Quantity of Segregated Mixed waste(TPD)–[C] **((Per month in Kg)**	40000Kg

Quantity of mixed waste sent to landfills	2705Kg

- List of proposed land fills with capacity and utilization:
- List of proposed land fills with capacity:

(D) Bulk Waste Generators as defined in SWM Rules-2016 (Average Waste generation rate 100kg/day)

(D.1)List of Bulk Waste generators

Sl.no	Name	Address	Waste generated per day	Composting Units/ Bio-methanation with existing capacity
1.	ANIIDCO, Hut Bay	Hathi Dera, Hut Bay	100 Kg	
2.	Lovely Bar, Hut Bay	Hathi Dera, Hut Bay	120 Kg	
3.	Nandini Bar, Hut Bay	Indra Bazar, Hut Bay	125 Kg	

II. SEWAGE GENERATION :

(1)Estimated sewage generation (MLD)-[A]+[B]+[C] =

(A)Sewage flowing through Sewerage System
(1)Estimated sewage generation (MLD)-[A]+[B]+[C] =

(A)Sewage flowing through Sewerage System

Out of total sewage generated, Quantity of sewage flowing to sewerage system-[A]	462982
No. of Proposed STPs with individual capacity in MLD	

(B)Sewage flowing through Septic tank

Out of total sewage generated, Quantity of sewage treated in Septic Tank(MLD): [B]	48482
Quantity of Sludge generated:	
No. of FSTP and Quantity of sludge processed in FSTP:	
No. and Capacity of sludge Tanks:	

(C)Sewage flowing through Open:

Out of total sewage generated, Quantity of sewage flowing through open (MLD): [C]:

Component	Quantity of Sewage flowing (in MLD)	No. of HHs covered
Soak Pits/Magic Pits/Leach Pits		
Drainage Channels with Soak Pits	948	948
Drainage Channels without Soak Pits	50	50
Kitchen Garden/Farm	100	100
Total	**[C] = 1098**	1098

(Any additional planned works i.e. Drainage channels, Soak Pits constructions under MGNREGA or GIA for Grey Water Management may be elaborated here)

III. PLASTIC WASTE:

Quantity of Waste **in Tons**	During the Month
Total Dry waste segregated	4350.35
Total plastic waste segregated	2565.2
Total non-plastic waste segregated	3120.33
Amount of waste sent to mainland for recycling	-
Amount of waste used for road construction	-

(A) Information incorporated in the SWM bye laws:

Provisions to collect spot fines from violators in production, distribution, storage sale and use of banned plastic & other items	Yes, exist as per SWM Bye Laws, 2019
Penalty for littering of waste (as per SWM Bye Laws) - Actual Fine imposed during the month (in Rs.)	Rs.500 Fine
Penalty for open burning of plastics (actual fine imposed per month)	Rs. 500 Fine

(B) Details of Open burning incidents:

	No of team enforcing ban of burning plastic	No of inspections conducted	No of incidents identified	Fine imposed/recovered	No of complaints received	Action taken against the violators

month						

(C) Creating Awareness among all stakeholders:

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	No of awareness programs conducted	Departments/stakeholders participated	No of people participated	Number of Beach Clean-up drive Conducted
During the Month	3	14	105	3

(D) Details of Civil societies or group working with waste pickers:

No of Self Helping Groups(SHGs)	No. of people in SHGs	No. of people engaged in waste
19	190	

(E) Enforcement of SUP ban:

	No of teams for enforcement of SUP ban	No of field inspections	No of violations observed	No of challans issued	Quantity of plastic seized (in Kg.)	Amount of fine collected (In Rs.)
During the Month	3	5				

(F) Elaborate on the gaps, if any, with reasons and justification.

Name and Signature of the Block Development Officer with Seal

खण्ड विकास अधिकारी
Block Development Officer
सामुदायिक विकास खण्ड, लिटिल अंडमान
CD Block, Little Andaman

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Points to be considered while filling up of the monthly report:

1. Nos. covered by Door to Door system at S. No. 5, 9, 13 should match with S. No. 2, 3 and 4 respectively i.e. 100% collection is to be ensured or else public garbage bins is to be ensured for HHs not collected through Door to Door system.
2. Data at S. No. 6,10,14 should match with data t S. No. 5,9,13 i.e. 100 percent practicing segregation at source, if gap in data, measures taken by the Panchayat of fine imposed needs to be appropriately mentioned.
3. Per Day Per capita solid waste generation as per National average is estimated to be 0.5 to 1 Kg in rural. In the Islands, the estimation is taken minimum as 600 gm per Household per day (Dry Waste) and 200 gm (Wet Waste).
   Date reported at S. No. 18 should therefore be in conformity to the above assumption considering the number of HHs, commercial establishments and institutions that are covered.
   Short of data in the above column, should be substantiated with remarks of concerned GP.
4. For HHs, commercial establishments and Govt. Institutions not covered through Door to Door system, sufficient number of public garbage sites/bins should be clearly shown in the report.
5. Total generation of Solid Waste (Estimation) Both Dry & Wet should be calculated as follows –
   No. of HHs x 0.600 Kg = X
6. Sewage Generation –
   55 Litre x Population x 80% = Y
   Y = A+B+C
   C – Open Drain – 80% of Y
   B – 20% of Y
   C- Zero as no Sewerage system exist in rural presently

7. Any ongoing projects, proposed projects in pipeline or planning stage to bridge the gaps may also be mentioned in the report.

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Format for Submission of MONTHLY PROGRESS REPORT in the NGT Matter No. 673 of 2018 (in compliance to NGT order dated 24.09.2020)

(Report for the month of **July 2024**)

Name of the Block : BDO, CD Block, Mayabunder
District : N&M Andaman District

1.	Total population	26327
2.	No. of households	6520
3.	No. of commercial establishments/private institutions	527
4.	No. of Government Institutions	122
5.	No. of households covered by door to door collection system	2483
6.	No.of households covered by door to door collection system practicing segregation at source	1663
7.	No .of households covered for collection of User-Fees	1329
8.	Total amount collected from HHs as User-Fees**(I)**	66450
9.	No. of commercial establishments/private institution covered by door to door collection system	473
10.	No. of commercial establishments/ private institutions covered by door to door collection system practicing segregation at source	249
11.	No of commercial establishments/ private institutions covered for collection of User-Fees	240
12.	Total amount collected from commercial establishment/private institutions as User Fees**(II)**	64410
13.	No. of Government Institutions covered by door to door collection system	58
14.	No. of Government Institutions covered by door to door collection system practicing segregation at source	55
15.	No.of Government Institutions covered for collection of User-Fees	30
16.	Total amount collected from Government Institutions as User Fees**(III)**	3600
17.	Total Amount of User-Fee collected **(I+II+III)**	134460
18.	Total quantity of solid waste collected through door to door collection**(A) (in Kg) (Per month)**	24117
19.	Dry	23997
20	Wet	120
21.	No of public garbage sites	196
22.	Total quantity of solid waste collected from public garbage bins **(B) (in Kg) (Per month)**	30515
23.	Dry	30305

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24.		Wet	210
25.	Total quantity of solid waste collected from door to door collection and public garbage site(A+B) (Per month)		54632
26.		Dry	54302
27.		Wet	330

I. SOLID WASTE GENERATION

Total generation of Solid Waste (Estimation) Both Dry & Wet (TPD)	3.91
Total collection of Solid Waste (TPD) – [A]+[B]+[C]	1.82
Existing Segregation Facilities with capacity	1. SLWM Karmatang 2. SLWM Pahalgaon 3. SLWM Basantipur
Proposed Segregation Facilities with capacity (Describe any additional work planned for improving the facilities.)	1. Proposed in MNREGA to develop the site for segregation under GP Rampur 2. 200 sq.m land area proposed for segregation purpose under GP Basantipur 3. Site for segregation shed is proposed and the land allotment is under process under GP Harinagar

(A) Dry Waste:

Out of the total Solid Waste collected, Quantity of Dry waste (in Kg)(**In month**)	PET	1100
	All type of Plastics	12500
	Multi Layer Plastics(MLP)	10550
	Paper/Cardboard)	17527
	Tetrapack	487
	Glass	8022
	Metals(All type)	1050
	E-Waste	592
	Cloth	1363
	Footwear	1111
	Total (A)	54302
Quantity of dry waste sent for recycling locally (Get the information from Cluster GPs)		-
Quantity of dry waste sent to mainland (Get the information from Cluster GPs)		-
Quantity of dry waste landfill (Get the information from all GPs)		-

(A.1) Details of Segregation centres:

Sl No	Name /Location	Design/Installed	Facilities/machines (No of shredding,	Capacity Utilization

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		capacity(in Kg per Day)	Bailing machines with individual capacity)	(in Kg per Day)
1.	SLWM cluster, Rampur at Kamatang	500 kg	1 No. Bailing Machine	200 kg
2.	SLWM cluster, Pahalgaon at Tugapur- 7	500 kg	-	140 kg
3.	SLWM cluster, Basantipur at Govindapur		1 No. Bailing Machine (Under repair)	
4.	SLWM cluster, Shivapuram	500 kg	1 No. Bailing Machine (0.5 TPD)	60 kg

(B) Wet Waste

Out of the total Solid Waste collected, Quantity of Segregated wet waste:(TPD) –[B]**(Per month)**	0.011
Quantity of wet waste sent for composting etc.	**0.011**
Quantity of wet waste sent for Biomethanation	-
Quantity of wet waste sent to landfill	-
No. of Processing Facilities Available with individual Capacity (Describe the facility, attach separate sheet if required)	-
No. of Proposed Facilities with individual Capacity	-

(B) Details of wet waste processing units

S. No	Name /Location/Technology	Design Capacity	Capacity utilization
-	-	-	-

(C) Mixed Waste

Out of the total Solid Waste collected, Quantity of Segregated Mixed waste(TPD)–[C] **((Per month in Kg)**	-
Quantity of mixed waste sent to landfills	-

- List of proposed land fills with capacity and utilization:
- List of proposed land fills with capacity:

(D) Bulk Waste Generators as defined in SWM Rules-2016 (Average Waste generation rate 100kg/day)

(D.1)List of Bulk Waste generators

Sl.no	Name	Address	Waste generated per day	Composting Units/ Bio-methanation with existing capacity
-	-	-	-	-

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II. SEWAGE GENERATION :

(1)Estimated sewage generation (MLD)-[A]+[B]+[C] = 0.16
(A)Sewage flowing through Sewerage System

Out of total sewage generated, Quantity of sewage flowing to sewerage system-[A]	Nil
No. of Proposed STPs with individual capacity in MLD	-

(B)Sewage flowing through Septic tank

Out of total sewage generated, Quantity of sewage treated in Septic Tank(MLD): [B]	0.032
Quantity of Sludge generated:	-
No. of FSTP and Quantity of sludge processed in FSTP:	-
No. and Capacity of sludge Tanks:	-

(C)Sewage flowing through Open:

Out of total sewage generated, Quantity of sewage flowing through open (MLD): [C]:

Component	Quantity of Sewage flowing (in MLD)	No. of HHs covered
Soak Pits/Magic Pits/Leach Pits	0.005	11
Drainage Channels with Soak Pits	0.006	0
Drainage Channels without Soak Pits	0.007	325
Kitchen Garden/Farm	0.11	1700
Total	**[C] = 0.128**	2036

(Any additional planned works i.e. Drainage channels, Soak Pits constructions under MGNREGA or GIA for Grey Water Management may be elaborated here)

III. PLASTIC WASTE:

Quantity of Waste in Tons	During the Month
Total Dry waste segregated	28.86
Total plastic waste segregated	7.165
Total non-plastic waste segregated	21.775
Amount of waste sent to mainland for recycling	-
Amount of waste used for road construction	-

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(A) Information incorporated in the SWM bye laws:

Provisions to collect spot fines from violators in production, distribution, storage sale and use of banned plastic & other items	Yes, exist as per SWM Bye Laws, 2019
Penalty for littering of waste (as per SWM Bye Laws) : Actual Fine imposed during the month (in Rs.)	-
Penalty for open burning of plastics (actual fine imposed per month)	-

(B) Details of Open burning incidents:

	No of team enforcing ban of burning plastic	No of inspections conducted	No of incidents identified	Fine imposed/recovered	No of complaints received	Action taken against the violators
During the month	-	3	-	-	-	-

(C) Creating Awareness among all stakeholders:

	No of awareness programs conducted	Departments/stakeholders participated	No of people participated	Number of Beach Clean-up drive Conducted
During the Month	-	-	-	-

(D) Details of Civil societies or group working with waste pickers:

No of Self Helping Groups(SHGs)	No. of people in SHGs	No. of people engaged in waste
-	-	-

(E) Enforcement of SUP ban:

	No of teams for enforcement of SUP ban	No of field inspections	No of violations observed	No of challans issued	Quantity of plastic seized (in Kg.)	Amount of fine collected (In Rs.)
During the Month	4	11	-	-	-	-

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(F) Elaborate on the gaps, if any, with reasons and justification.

Less households are covered under door to door collection system due to inadequate road connectivity, dispersed settlement of households, insufficient number of sanitation staff. Further, many villagers are unwilling to pay the user fee. Also, many commercial establishments are either closed most of the time or their owners are out of station. So, the GPs are unable to collect user fee from these establishments. Government institutions are also refusing to pay user fee stating that they have not received any direction from their respective department for paying user fee to the GP.

6/8/24

Name and Signature of the Block Development Officer with Seal

खण्ड विकास अधिकारी
Block Development Officer
समुदायिक विकास खण्ड, मायाबंदर
CD Block, Mayabunder

Points to be considered while filling up of the monthly report:

1. Nos. covered by Door to Door system at S. No. 5, 9, 13 should match with S. No. 2, 3 and 4 respectively i.e. 100% collection is to be ensured or else public garbage bins is to be ensured for HHs not collected through Door to Door system.
2. Data at S. No. 6,10 14 should match with data f S. No. 5,9,13 i.e. 100 percent practicing segregation at source, if gap in data, measures taken by the Panchayat of fine imposed needs to be appropriately mentioned.
3. Per Day Per capita solid waste generation as per National average is estimated to be 0.5 to 1 Kg in rural. In the Islands, the estimation is taken minimum as 500 gm per Household per day (Dry Waste) and 200 gm (Wet Waste).
   Date reported at S. No. 18 should therefore be in conformity to the above assumption considering the number of HHs, commercial establishments and institutions that are covered.

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Format for Submission of MONTHLY PROGRESS REPORT in the NGT Matter No. 673 of 2018 (in compliance to NGT order dated 24.09.2020)

(Report for the month of **July 2024**)

Name of the Block : Rangat

District : N & M Andaman

1.	Total population	35550
2.	No. of households	9130
3.	No. of commercial establishments/private institutions	843
4.	No. of Government Institutions	240
5.	No. of households covered by door to door collection system	8064
6.	No.of households covered by door to door collection system practicing segregation at source	6897
7.	No .of households covered for collection of User-Fees	5365
8.	Total amount collected from HHs as User-Fees**(I)**	234550
9.	No. of commercial establishments/private institution covered by door to door collection system	823
10.	No. of commercial establishments/ private institutions covered by door to door collection system practicing segregation at source	769
11.	No.of commercial establishments/ private institutions covered for collection of User-Fees	503
12.	Total amount collected from commercial establishment/private institutions as User Fees**(II)**	75140
13.	No. of Government Institutions covered by door to door collection system	198
14.	No. of Government Institutions covered by door to door collection system practicing segregation at source	173
15.	No.of Government Institutions covered for collection of User-Fees	120
16.	Total amount collected from Government Institutions as User Fees**(III)**	2700
17.	Total Amount of User-Fee collected **(I+II+III)**	312390
18.	Total quantity of **solid waste** collected through door to door collection**(A) (in Kg) (Per month)**	11758.555
19.	Dry	11758.555
20.	Wet	908
21.	No of public garbage sites	414
22.	Total quantity of **solid waste** collected from public	7141.295

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	garbage bins **(B)** **(in Kg) (Per month)**	
23.	Dry	6421.795
24.	Wet	735
25.	Total quantity of **solid waste** collected from door to door collection and public garbage site**(A+B) (Per month)**	18899.85
26.	Dry	18180.35
27.	Wet	1643

I. SOLID WASTE GENERATION

Total generation of Solid Waste (Estimation) Both Dry & Wet (TPD)	6.223
Total collection of Solid Waste (TPD) – **[A]+[B]+[C]**	1615.17177
Existing Segregation Facilities with capacity	0
Proposed Segregation Facilities with capacity (Describe any additional work planned for improving the facilities.)	NA

(A) Dry Waste:

Out of the total Solid Waste collected, Quantity of Dry waste (in Kg)**(In month)**	PET	783.4
	All type of Plastics	2283.6
	Multi Layer Plastics(MLP)	1860.6
	Paper/Cardboard)	3039.2
	Tetrapack	606.4
	Glass	6437.6
	Metals(All type)	1126.85
	E-Waste	100
	Cloth	1204.5
	Footwear	653.8
	Total (A)	**17942.35**
Quantity of dry waste sent for recycling locally (Get the information from Cluster GPs)		13653.5
Quantity of dry waste sent to mainland (Get the information from Cluster GPs)		3636.3
Quantity of dry waste landfill (Get the information from all GPs)		238

(A.1) Details of Segregation centres:

Sl No	Name /Location	Design/Installed capacity(in Kg per Day)	Facilities/machines (No of shredding, Bailing machines with individual capacity)	Capacity Utilization (in Kg per Day)
	NA	NA	NA	NA

(B) Wet Waste

Out of the total Solid Waste collected, Quantity of Segregated wet waste:(TPD) –[B]**(Per month)**	NA
Quantity of wet waste sent for composting etc.	NA
Quantity of wet waste sent for Biomethanation	NA
Quantity of wet waste sent to landfill	NA
No. of Processing Facilities Available with individual Capacity (Describe the facility, attach separate sheet if required)	NA
No. of Proposed Facilities with individual Capacity	NA

(B) Details of wet waste processing units

S. No	Name /Location/Technology	Design Capacity	Capacity utilization
	NA	NA	NA

(C) Mixed Waste

Out of the total Solid Waste collected, Quantity of Segregated Mixed waste(TPD)–[C] (**(Per month in Kg)**	238
Quantity of mixed waste sent to landfills	NA

- List of proposed land fills with capacity and utilization:
- List of proposed land fills with capacity:

(D) Bulk Waste Generators as defined in SWM Rules-2016 (Average Waste generation rate 100kg/day)

(D.1)List of Bulk Waste generators

Sl.no	Name	Address	Waste generated per day	Composting Units/ Bio-methanation with existing capacity
	NA	NA	NA	NA

II. <u>SEWAGE GENERATION :</u>

(1)Estimated sewage generation (MLD)-[A]+[B]+[C] = 3.044488 MLD

(A)Sewage flowing through Sewerage System

Out of total sewage generated, Quantity of sewage flowing to sewerage system-[A]	1.584744
No. of Proposed STPs with individual capacity in MLD	NA

(B)Sewage flowing through Septic tank

Out of total sewage generated, Quantity of sewage treated in Septic Tank(MLD): [B]	0.509628
Quantity of Sludge generated:	NA
No. of FSTP and Quantity of sludge processed in FSTP:	NA
No. and Capacity of sludge Tanks:	NA

(C)Sewage flowing through Open:

Out of total sewage generated, Quantity of sewage flowing through open (MLD): [C]:

Component	Quantity of Sewage flowing (in MLD)	No. of HHs covered
Soak Pits/Magic Pits/Leach Pits	NA	NA
Drainage Channels with Soak Pits	NA	NA
Drainage Channels without Soak Pits	NA	NA
Kitchen Garden/Farm	NA	NA
Total	**[C] =**	NA

(Any additional planned works i.e. Drainage channels, Soak Pits constructions under MGNREGA or GIA for Grey Water Management may be elaborated here)

III. PLASTIC WASTE:

Quantity of Waste **in Tons**	During the Month
Total Dry waste segregated	17.94235
Total plastic waste segregated	0
Total non-plastic waste segregated	0
Amount of waste sent to mainland for recycling	3636.3
Amount of waste used for road construction	0

(A) Information incorporated in the SWM bye laws:

Provisions to collect spot fines from violators in production, distribution, storage sale and use of banned plastic & other items	Yes, exist as per SWM Bye Laws, 2019
Penalty for littering of waste (as per SWM Bye Laws) - Actual Fine imposed during the month (in Rs.)	500
Penalty for open burning of plastics (actual fine imposed per month)	500

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(B) Details of Open burning incidents:

	No of team enforcing ban of burning plastic	No of inspections conducted	No of incidents identified	Fine imposed/recovered	No of complaints received	Action taken against the violators
During the month	8	3	0	0	0	0

(C) Creating Awareness among all stakeholders:

	No of awareness programs conducted	Departments/stakeholders participated	No of people participated	Number of Beach Clean-up drive Conducted
During the Month	10	14	290	2

(D) Details of Civil societies or group working with waste pickers:

No of Self Helping Groups(SHGs)	No. of people in SHGs	No. of people engaged in waste
11	127	130
NA	NA	NA

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(E) Enforcement of SUP ban:

	No of teams for enforcement of SUP ban	No of field inspections	No of violations observed	No of challans issued	Quantity of plastic seized (in Kg.)	Amount of fine collected (In Rs.)
During the Month	9	5	0	0	0	0

(F) Elaborate on the gaps, if any, with reasons and justification.

- Need more sanitation workers for effective implementation. Insufficient manpower and use of a power tiller restricts coverage to only 210 out of 733 households. Around 50 households practice segregation while others demand separate dustbins following a previous government initiative of distributing colour-coded bins for dry and wet waste segregation highlighting a significant challenge of leading a mindset shift.
- Most of Government departments are not paying user fee. Government institutions notified about the timely monthly user fee payment and outstanding dues.
- Low user fee collection as many residents cite financial constraints while others condition payment on the receipt of collection services.
- Low capacity utilization of bailing machine constrained by insufficient manpower for daily collection and intermittent segregation.
- Underutilization of compost pits as households manage their wet waste internally, resulting in no collection of wet waste.
- Dry waste shipment informed to vendor. Waiting for the feasible appointment of date from vendor.

Name and Signature of the Block Development Officer with Seal

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No.6-75/NGT/BDO/DP/2024-25/ 349

खण्ड विकास अधिकारी का कार्यालय

OFFICE OF THE BLOCK DEVELOPMENT OFFICER

खण्डात्मक विकासखण्ड, डिगलीपुर, उत्तरी अण्डमान

C.D. BLOCK, DIGLIPUR, NORTH ANDAMAN

Diglipur dated the 05th July, 2024

To

The Director
Directorate of RD, PRIs &ULBs
A&N Administration, Marine Hill
Port Blair

Sub:- Submission of Monthly Progress Report on Solid waste Management under *NGT Matter No.673 of 2018 for the Month of June 2024 reg.*

Sir,

Please find enclosed herewith the Monthly Progress Report on Solid waste Management under NGT Matter No. 673 of 2018 (in compliance to NGT Order dated 24.09.2020) for the Month of June, 2024 in respect of C.D. Block Diglipur along with the copy of Monthly report received from following Gram Panchayat for further necessary action at your end please.

Sl No.	Name of Gram Panchayat	Remarks
1.	Diglipur	Received
2.	Subashgram	Received
3.	R.K. Gram	Received
4.	Shibpur	Received
5.	Gandhinagar	Received
6.	Keralapuram	Received
7.	Laxmipur	Received
8.	Madhupur	Received
9.	Radhanagar	Received
10.	Sitanagar	Received
11.	Nabagram	Received
12.	Ramnagar	Received
13.	Kalighat	Received
14.	Paschimsagar	Received
15.	Kishorinagar	Received

Yours faithfully

05.7.24

खण्ड विकास अधिकारी
Block Development Officer
खण्डात्मक विकासखण्ड, डिगलीपुर
C.D. Block, Diglipur

Copy to:-

1. PA to DC, N&MA, for information of the Deputy Commissioner Mayabunder please.
2. The Assistant Commissioner, Diglipur for kind information please.

05.7.24

खण्ड विकास अधिकारी
Block Development Officer
खण्डात्मक विकासखण्ड, डिगलीपुर
C.D. Block, Diglipur

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Format for Submission of MONTHLY PROGRESS REPORT in the NGT Matter No. 673 of 2018 (in compliance to NGT order dated 24.09.2020)		
(Report for the Month of June 2024)		
Name of the Block:**Diglipur**		
District: **North & Middle Andaman**		
1.	Total population	40626
2.	No. of households	10658
3.	No. of commercial establishments/private institutions	913
4.	No. of Government Institutions	285
5.	No. of households covered by door to door collection system	9063
6.	No.of households covered by door to door collection system practicing segregation at source	8317
7.	No .of households covered for collection of User-Fees	5404
8.	Total amount collected from HHs as User-Fees(I)	267700
9.	No. of commercial establishments/private institution covered by door to door collection system	879
10.	No. of commercial establishments/ private institutions covered by door to door collection system practicing segregation at source	825
11.	No.of commercial establishments/ private institutions covered for collection of User-Fees	809
12.	Total amount collected from commercial establishment/private institutions as User Fees(II)	115760
13.	No. of Government Institutions covered by door to door collection system	249
14.	No. of Government Institutions covered by door to door collection system practicing segregation at source	203
15.	No.of Government Institutions covered for collection of User-Fees	39
16.	Total amount collected from Government Institutions as User Fees(III)	13100
17.	Total Amount of User-Fee collected **(I+II+III)**	**396560**
18.	Total quantity of waste collected through door to door collection**(A) (in Kg) (Per month)**	**29595**
19.	Dry	29595
20.	Wet	0
21.	No of public garbage sites	834
22.	Total quantity of waste collected from public garbage bins **(B) (in Kg) (Per month)**	103348
23.	Dry	95778

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24.	Wet	7570
25.	Total quantity of waste collected from door to door collection and public garbage site(A+B) (Per month)	132943
26.	Dry	125373
27.	Wet	7570

I. SOLID WASTE GENERATION		
1	Total generation of Solid Waste (Estimation) Both Dry & Waste	6394.8
2	Total collection of Solid Waste (TPD) -[A]+[B]+[C]	125.6605
3	Existing Segregation Facilities with capacity	2000
4	Proposed Segregation Facilities with capacity	3

(A) Dry Waste:			
1	Out of the total Solid Waste collected, Quantity of Dry waste (in Kg)(In month)	PET	2354
		All type of Plastics	9135
		Multi Layer Plastics(MLP)	7273
		Paper/Cardboard)	37398
		Tetrapack	12457
		Glass	44572
		Metals(All type)	1701
		E-Waste	4622
		Cloth	4132
		Footwear	1729
		Total (A)	**125373**
2	Quantity of dry waste sent for recycling locally		298
3	Quantity of dry waste sent to mainland		6110
4	Quantity of dry waste landfill		0

(A.1) Details of Segregation centres:

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Sl No	Name /Location	Design/Installed capacity(in Kg per Day)	Facilities/machines (No of shredding, Bailing machines with individual capacity)	Capacity Utilization (in Kg per Day)
1	Radhanagar Cluster	500	(1.5) 01	100
2	Gandhinagar (Radhanagar Cluster)	500	(1.5) 01	0
3	Diglipur (Madhupur Cluster)	0	0	0
4	Madhupur Cluster	500	1	300
5	Ramnagar (Nabagram Cluster)	0	1	0
6	Sitanagar (Madhupur Cluster)	0	0	0
7	Laxmipur	0	0	0
8	Nabagram Cluster	500	1 (2 toncapt.)	0
9	Kalighat (Nabagram Cluster)	500	1 (2 toncapt.)	0
10	R.K. Gram Madhupur Cluster	0	0	0
11	Keralapuram	500	1	400
12	Kishorinagar Cluster	400	1.5 (ton)	0
13	Paschimsagar (Kishorinagar Cluster)	0	0	0
14	Shibpur	0	0	0
15	Subashgram(Madhupur Cluster)	0	(2 t) 1	0

(B) Wet Waste		
1	Out of the total Solid Waste collected, Quantity of Segregated wet waste:(TPD) –[B](**Per month**)	0.2875
2	Quantity of wet waste sent for composting etc.	0.415
3	Quantity of wet waste sent for Biomethanation	0
4	Quantity of wet waste sent to landfill	0
5	No. of Processing Facilities Available with individual Capacity	4 Nos. compost pit with 3cbm capacity per tank
6	No. of Proposed Facilities with individual Capacity (sqm)	100

(B) Detailes of wet waste processing units			
Sl. No.	**Name**	**Design capacity**	**Capacity utilization**
1	Radhanagar Cluster	12 cbm compose pit (3 Cbm per tanks total 4 Nos.	0
2	Gandhinagar (Radhanagar Cluster)	13 cbm compose pit (3 Cbm per tanks total 4 Nos.	0%
3	Diglipur (Madhupur Cluster)	0	0

4	Madhupru Cluster	10 cbm compose pit (3 Cbm per tanks	0
5	Ramnagar (Nabagram Cluster)	2 cbm compose pit (3 Cbm per tanks	0
6	Sitanagar (Madhupur Cluster)	0	0
7	Laxmipur	0	0
8	Nabagram Cluster	2 cbm compose pit (3 Cbm per tanks	0
9	Kalighat (Nabagram Cluster)	2 cbm compose pit (3 Cbm per tanks	0
10	R.K. Gram Madhupur Cluster	0	0
11	Keralapuram	4 Nos. CC compose pit with 02 cbm Capacity	20%
12	Kishornagar Cluster	0	0
13	Paschimsagar (Kishornagar Cluster)	0	0
14	Shibpur	0	0
15	Subashgram(Madhupur Cluster)	12 Nos. 2 cbm vermi compose tank	0

(C) Mixed Waste		
1	Out of the total Solid Waste collected, Quantity of Segregated Mixed waste(TPD)-[C] **(Per month in Kg)**	0
2	Quantity of mixed waste sent to landfills	0

- List of proposed land fills with capacity and utilization:
- List of proposed land fills with capacity:

(D) Bulk Waste Generators as defined in SWM Rules-2016 (Average Waste generation rate 100kg/day)

(D.1)List of Bulk Waste generators

Sl.no	Name	Address	Waste generated per day	Composting Units/ Bio-methanation with existing capacity
1	Vegitable Market	Subashgram	1000 KG	0

II. SEWAGE GENERATION :

(1)Estimated sewage generation (MLD)-[A]+[B]+[C] =1787544

(A)Sewage flowing through Sewerage System

1	Out of total sewage generated, Quantity of sewage flowing to sewerage system-[A]	0
2	No. of Proposed STPs with individual capacity in MLD	0

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	(B)Sewage flowing through Septic tank	
1	Out of total sewage generated, Quantity of sewage treated in Septic Tank(MLD): [B]	357508.8
2	Quantity of Sludge generated:	0
3	No. of FSTP and Quantity of sludge processed in FSTP:	0
4	No. and Capacity of sludge Tanks:	0
	(C)Sewage flowing through Open drains:	
	Out of total sewage generated, Quantity of sewage flowing to open drains (MLD): [C]:	
1	Kitchen Garden/Farm	1269055.148
2	Soak Pit/Magic Pits/Leach Pits	92316.052
3	Drainage Channels with Soak Pits	0
4	Drainage Channels without Soak Pits	68664
	III. PLASTIC WASTE:	
1	Quantity of Waste in Tons	During the Month
2	Total Dry waste segregated	101.5409
3	Total plastic waste segregated	12.6081
4	Total non-plastic waste segregated	89.087
5	Amount of waste sent to mainland for recycling	9.464
6	Amount of waste used for road construction	0

	(A) Information incorporated in the SWM bye laws:	
1	Provisions to collect spot fines from violators in production, distribution, storage sale and use of banned plastic & other items	Yes exist as per SWM Bye laws 2019.
2	Penalty for littering of waste	0
3	Penalty for open burning of plastics	0

	(B) Details of Open burning incidents:				
	No of team enforcing ban of burning plastic	No of inspections conducted	No of incidents identified	Fine imposed/recovered	Action taken against the violators
During the month	8	2	0	0	0

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(C) Creating Awareness among all stakeholders:				
	No of awareness programs conducted	Departments/stakeholders participated	No of people participated	Number of Beach
During the Month	6	0	124	No Beach under the

(D) Details of Civil societies or group working with waste pickers:		
No of Self Helping Groups(SHGs)	No. of people in SHGs	No. of people engaged in waste
0	0	0

(E) Enforcement of SUP ban:					
	No of teams for enforcement of SUP ban	No of field inspections	No of violations observed	No of challans issued	Amount of fine collected (In Rs.)
During the Month	10	11	0	0	0

Note:- **For Gap kindly refer report of concerned Gram Panchayat**

05-7-24

Signature & Seal of the BDO
खण्ड विकास अधिकारी
Block Development Officer
समुदायिक विकास खण्ड, डिगलीपुर
C.D. Block, Diglipur

F.No. 2-3(90)/CDBFC-FFM PHASE-II/2023-24/1776
OFFICE OF THE BLOCK DVELOPMENT OFFICER
C.D.BLOCK, FERRARGUNJ

Ferrargunj, Dated 2nd July 2024

To

The Assistant Director (RD/P)
Directorate of RD, PRIs & ULBs
Port Blair.

Sub: Block level NGT report in R/o C.D.Block, Ferrargunj- reg

Sir,

As directed by the Director in the VC held on 29.04.2024, the compiled NGT report for the month of June 2024 of C.D.Block, Ferrargunj as received from the 19 Gram Panchayats is hereby enclosed for your kind information and further necessary action please.

Thanking you

Yours faithfully

Encl:A/A

Block Development Officer
C.D.Block, Ferrargunj

Format for Submission of MONTHLY PROGRESS REPORT in the NGT Matter No. 673 of 2018 (in compliance of NGT order dated 24.09.2020)

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(Report for the month of June 2024)

Block FERRARGUNJ

District SOUTH ANDAMAN

1	Total population	59340
2	No. of households	14000
3	No. of commercial establishments/private institutions	1002
4	No. of Government Institutions	191
5	No. of households covered by door to door collection system	14000
6	No of households covered by door to door collection system practicing segregation at source	14000
7	No. of households covered for collection of User- Fees	6297
8	Total amount collected from HHs as User-Fees(I)	314859
9	No. of commercial establishments/private institution covered by door to door collection system	1002
10.	No. of commercial establishments/ private institutions covered by door to door collection system practicing segregation at source	1002
11.	No.of commercial establishments/ private institutions covered for collection of User-Fees	721
12.	Total amount collected from commercial establishment/private institutions as User Fees(II)	113360
13.	No. of Government Institutions covered by door to door collection system	191
14.	No. of Government Institutions covered by door to door collection system practicing segregation at source	191
15.	No.of Government Institutions covered for collection of User-Fees	6
16.	Total amount collected from Government Institutions as User Fees(III)	900
17.	Total Amount of User-Fee collected (I+II+III)	429110
18.	Total quantity of solid waste collected through door to door collection(A) (in Kg) (Per month)	39758
19.	Dry	39758
20.	Wet	0
21.	No of public garbage sites	171
22.	Total quantity of solid waste collected from public garbage bins (B) (in Kg) (Per month)	18810
23.	Dry	18810
24.	Wet	0

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25.	Total quantity of [illegible] from door to door collection and public garbage site(A+B) (Per month)	58568
26.	Dry	58568
27.	Wet	0

I. SOLID WASTE GENERATION

Total generation of Solid Waste (Estimation) Both Dry & Wet (TPD)	9.32 TPD
Total collection of Solid Waste (TPD) – [A]+[B]+[C]	5.86 TPD
Existing Segregation Facilities with capacity	0
Proposed Segregation Facilities with capacity (Describe any additional work planned for improving the facilities.)	2

(A) Dry Waste:

Out of the total Solid Waste collected, Quantity of Dry waste (in Kg)(**In month**)	PET	4233
	All type of Plastics	7698
	Multi Layer Plastics(MLP)	5641
	Paper/Cardboard)	13625
	Tetrapack	5925
	Glass	12560
	Metals(All type)	5231
	E-Waste	388
	Cloth	2615
	Footwear	652
	Total (A)	**58568**
Quantity of dry waste sent for recycling locally		0
Quantity of dry waste sent to mainland		0
Quantity of dry waste landfill		0

(A.1) Details of Segregation centres:

Sl No	Name /Location	Design/Installed capacity(in Kg per Day)	Facilities/machines (No of shredding, Bailing machines with individual	Capacity Utilization (in Kg per Day)
1	SWM Cluster Shorepoint	400	1	220
2	SWM Mannarghat	500	1	210
3	SWM Cluster Collinpur	15	1	15
4	SWM Cluster Wandoor	400	Bailing Machine	400

5	SWM Cluster Chouldhari	1779 400	01 Shredding Machine(not functioning), 01 Bailing machine	400

(B) Wet Waste

Out of the total Solid Waste collected, Quantity of Segregated wet waste (TPD) –[B]**(Per month)**	0
Quantity of wet waste sent for composting etc.	0
Quantity of wet waste sent for Biomethanation	0
Quantity of wet waste sent to landfill	0
No. of Processing Facilities Available with individual Capacity (Describe the facility, attach separate sheet if required)	SLWM Chouldari, Shore Point
No. of Proposed Facilities with individual Capacity	0

(B) Details of wet waste processing units

S. No	Name /Location/Technology	Design Capacity	Capacity utilization
1	Shorepoint	(5*5*2) cubic metre	(5*5*2) cubic metre
2	Chouldhari	(5*5*2) cubic metre	(5*5*2) cubic metre

(C) Mixed Waste

Out of the total Solid Waste collected, Quantity of Segregated Mixed waste(TPD)–[C] (**(Per month in Kg)**	0
Quantity of mixed waste sent to landfills	0

- List of proposed land fills with capacity and utilization:
- List of proposed land fills with capacity:

(D) Bulk Waste Generators as defined in SWM Rules-2016

(Average Wastegeneration rate 100kg/day)

(D.1)List of Bulk Waste generators

Sl.no	Name	Address	Waste generated per day	Composting Units/ Bio- methanation with existing capacity
Nil	Nil	Nil	Nil	Nil

II. SEWAGE GENERATION :

(1)Estimated sewage generation (MLD)-[A]+[B]+[C] = 0.08703 MLD

(A)Sewage flowing through Sewerage System

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Out of total sewage generated, Quantity of sewage flowing to sewerage system-[A]	0
No. of Proposed STPs with individual capacity in MLD	

(B)Sewage flowing through Septic tank

Out of total sewage generated, Quantity of sewage treated in Septic Tank(MLD): [B]	0.0174 MLD
Quantity of Sludge generated:	
No. of FSTP and Quantity of sludge processed in FSTP:	
No. and Capacity of sludge Tanks:	

(C)Sewage flowing through Open:

Out of total sewage generated, Quantity of sewage flowing through open (MLD): [C]:

Kitchen Garden/Farm - 0.0557 MLD
Soak Pits/Magic Pits/Leach Pits -
Drainage Channels with Soak Pits -
Drainage Channels without Soak Pits - 0.01393 MLD

III. PLASTIC WASTE:

Quantity of Waste **in Tons**	During the Month
Total Dry waste segregated	58.568
Total plastic waste segregated	23.497
Total non-plastic waste segregated	35.071
Amount of waste sent to mainland for recycling	0
Amount of waste used for road construction	0

(A) Information incorporated in the SWM bye laws:

Provisions to collect spot fines from violators in production, distribution, storage sale and use of banned plastic & other items	Yes, exist as per SWM Bye Laws,
Penalty for littering of waste (as per SWM Bye Laws) - Actual Fine imposed during the month (in Rs.)	2500
Penalty for open burning of plastics (actual fine imposed per month)	2500

(B) Details of Open burning incidents:

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	No of team enforcing ban of burning plastic	No of inspections conducted	No of incidents identified	Fine imposed/recovered	No of complaints received	Action taken against the violators
During the month	3	4	0	0	0	0

(C) Creating Awareness among all stakeholders:

	No of awareness programs conducted	Departments/stakeholders participated	No of people participated	Number of Beach Clean-up drive Conducted
During the Month	5	30	203	2

(D) Details of Civil societies or group working with waste pickers:

No of Self Helping Groups(SHGs)	No. of people in SHGs	No. of people engaged in waste
60	310	0

(E) Enforcement of SUP ban:

	No of teams for enforcement of SUP ban	No of field inspections	No of violations observed	No of challans issued	Quantity of plastic seized (in Kg.)	Amount of fine collected (In Rs.)
During the Month	4	13	Nil	nil	Nil	Nil

(F) Elaborate on the gaps, if any, with reasons and justification.

खण्ड विकास अधिकारी
Block Development Officer
सामुदायिक विकास खण्ड, फरारगंज
C D Block, Farrarganj

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Format for Submission of MONTHLY PROGRESS REPORT in the NGT Matter No. 673 of 2018 (in compliance to NGT order dated 24.09.2020)

(Report for the month of **June 2024**)

Name of the Block :CD Block little Andaman

District : South Andaman

1.	Total population	25101
2.	No. of households	4964
3.	No. of commercial establishments/private institutions	296
4.	No. of Government Institutions	48
5.	No. of households covered by door to door collection system	1962
6.	No.of households covered by door to door collection system practicing segregation at source	1692
7.	No .of households covered for collection of User-Fees	1068
8.	Total amount collected from HHs as User-Fees(I)	54900.00
9.	No. of commercial establishments/private institution covered by door to door collection system	273
10.	No. of commercial establishments/ private institutions covered by door to door collection system practicing segregation at source	236
11.	No.of commercial establishments/ private institutions covered for collection of User-Fees	255
12.	Total amount collected from commercial establishment/private institutions as User Fees(II)	39700
13.	No. of Government Institutions covered by door to door collection system	48
14.	No. of Government Institutions covered by door to door collection system practicing segregation at source	40
15.	No.of Government Institutions covered for collection of User-Fees	3
16.	Total amount collected from Government Institutions as User Fees(III)	300
17.	Total Amount of User-Fee collected (I+II+III)	93500
18.	Total quantity ofsolid waste collected through door to door collection(A) (in Kg) (Per month)	3740
19.	Dry	4752.2
20.	Wet	725
21.	No of public garbage sites	49
22.	Total quantity of solid waste collected from public garbage bins (B) (in Kg) (Per month)	950
23.	Dry	2675
24.	Wet	550
25.	Total quantity of solid waste collected from door to door collection and public garbage site(A+B) (Per month)	4690
26.	Dry	6427.2
27.	Wet	1275

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I. SOLID WASTE GENERATION

Total generation of Solid Waste (Estimation) Dry &Wet (TPD)	12152.2
Total collection of Solid Waste (TPD) –[A]+[B]+[C]	12502.2
Existing Segregation Facilities with capacity	1350Kg per Day
Proposed Segregation Facilities with capacity	1600Kg
(Describe any additional work planned for improving the facilities.)	

(A) Dry Waste:

Out of the total Solid Waste collected, Quantity of Dry waste (in Kg)**(In month)**	PET	250
	All type of Plastics	1148
	Multi Layer Plastics(MLP)	185 Kg
	Paper/Cardboard)	373 Kg
	Tetrapack	286 Kg
	Glass	698 Kg
	Metals(All type)	76.2 Kg
	E-Waste	21
	Cloth	15
	Footwear	9 Kg
	Others (Bushes,etc)	2525
	Total (A)	5451.2
Quantity of dry waste sent for recycling locally (Get the information from Cluster GPs)		No
Quantity of dry waste sent to mainland (Get the information from Cluster GPs)		No
Quantity of dry waste landfill (Get the information from all GPs)		2525

(A.1) Details of Segregation centres:

Sl No	Name /Location	Design/Installed capacity(in Kg per Day)	Facilities/machines (No of shredding, Baling machines with individual capacity)	Capacity Utilization (in Kg per Day)
1.	Netaji Nagar Cluster	20 Kg	Shedding Machine – 01	20 Kg
2.	SWM Cluster Rabindra Nagar	350 Kg	Baling machine -01 Weighing Machine-01	350 Kg
3.	SLWM Cluster Rabindra Nagar		Baling Machine-01	
4.	SLWM Cluster Netaji Nagar	200 Kg	Shredding machine-01	100 Kg
5.	Rabindra Nagar	150-200 Kg	Baling Machine-01	250-300 Kg

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(B) Wet Waste

Out of the total Solid Waste collected, Quantity of Segregated wet waste:(TPD) –[B](Per month)	3230
Quantity of wet waste sent for composting etc.	
Quantity of wet waste sent for Biomethanation	
Quantity of wet waste sent to landfill	550
No. of Processing Facilities Available with individual Capacity (Describe the facility, attach separate sheet if required)	Required 02 Nos. shed for composting of wet waste.
No. of Proposed Facilities with individual Capacity	02 Nos .Vermi compost pit may be constructed at SWM.

(B) Details of wet waste processing units

S. No	Name /Location/Technology	Design Capacity	Capacity utilization
1.	N/A	N/A	N/A

(C) Mixed Waste

Out of the total Solid Waste collected, Quantity of Segregated Mixed waste(TPD)–[C] ((Per month in Kg)	5100Kg
Quantity of mixed waste sent to landfills	2725Kg

- List of proposed land fills with capacity and utilization:
- List of proposed land fills with capacity:

(D) Bulk Waste Generators as defined in SWM Rules-2016 (Average Waste generation rate 100kg/day)

(D.1)List of Bulk Waste generators

Sl.no	Name	Address	Waste generated per day	Composting Units/ Bio-methanation with existing capacity
1.	ANIIDCO, Hut Bay	Hathi Dera, Hut Bay	80 Kg	
2.	Lovely Bar, Hut Bay	Hathi Dera, Hut Bay	150 Kg	
3.	Nandini Bar, Hut Bay	Indra Bazar, Hut Bay	135 Kg	

II. **SEWAGE GENERATION :**

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(1)Estimated sewage generation (MLD)-[A]+[B]+[C] = 1785

(A)Sewage flowing through Sewerage System

Out of total sewage generated, Quantity of sewage flowing to sewerage system-[A]	473332
No. of Proposed STPs with individual capacity in MLD	

(B)Sewage flowing through Septic tank

Out of total sewage generated, Quantity of sewage treated in Septic Tank(MLD): [B]	49412
Quantity of Sludge generated:	
No. of FSTP and Quantity of sludge processed in FSTP:	
No. and Capacity of sludge Tanks:	

(C)Sewage flowing through Open:

Out of total sewage generated, Quantity of sewage flowing through open (MLD): [C]:

Component	Quantity of Sewage flowing (in MLD)	No. of HHs covered
Soak Pits/Magic Pits/Leach Pits		
Drainage Channels with Soak Pits	948	948
Drainage Channels without Soak Pits	50	50
Kitchen Garden/Farm		35179
Total	**[C] =**	36177

(Any additional planned works i.e. Drainage channels, Soak Pits constructions under MGNREGA or GIA for Grey Water Management may be elaborated here)

III. PLASTIC WASTE:

Quantity of Waste **in Tons**	During the Month
Total Dry waste segregated	2733.07
Total plastic waste segregated	1650.2
Total non-plastic waste segregated	3082.53
Amount of waste sent to mainland for recycling	-
Amount of waste used for road construction	-

(A) Information incorporated in the SWM bye laws:

Provisions to collect spot fines from violators in production, distribution, storage sale and use of banned plastic & other items	Yes, exist as per SWM Bye Laws,

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	2019
Penalty for littering of waste (as per SWM Bye Laws) - Actual Fine imposed during the month (in Rs.)	Rs.500 Fine
Penalty for open burning of plastics (actual fine imposed per month)	Rs. 500 Fine

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(B) Details of Open burning incidents: 1787

	No of team enforcing ban of burning plastic	No of inspections conducted	No of incidents identified	Fine imposed/recovered	No of complaints received	Action taken against the violators
During the month	5	2	Nil	Nil	Nil	

(C) Creating Awareness among all stakeholders:

	No of awareness programs conducted	Departments/stakeholders participated	No of people participated	Number of Beach Clean-up drive Conducted
During the Month	3	19	190	3

(D) Details of Civil societies or group working with waste pickers:

No of Self Helping Groups(SHGs)	No. of people in SHGs	No. of people engaged in waste
19	190	

(E) Enforcement of SUP ban:

	No of teams for enforcement of SUP ban	No of field inspections	No of violations observed	No of challans issued	Quantity of plastic seized (in Kg.)	Amount of fine collected (In Rs.)
During the Month	3	6				

(F) Elaborate on the gaps, if any, with reasons and justification.

09/07/2024

Name and Signature of the Block Development Officer with Seal

Block Development Officer
खण्डविकास विकास खण्ड, लिटिल अण्डमान
CD Block, Little Andaman

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Format for Submission of MONTHLY PROGRESS REPORT in the NGT Matter No. 673 of 2018 (in compliance to NGT order dated 24.09.2020)
(Report for the month of **June 2024**)

Name of the Block : BDO, CD Block, Mayabunder
District : N&M Andaman District

1.	Total population	26327
2.	No. of households	6520
3.	No. of commercial establishments/private institutions	527
4.	No. of Government Institutions	122
5.	No. of households covered by door to door collection system	2483
6.	No.of households covered by door to door collection system practicing segregation at source	1663
7.	No .of households covered for collection of User-Fees	1329
8.	Total amount collected from HHs as User-Fees(I)	59750
9.	No. of commercial establishments/private institution covered by door to door collection system	473
10.	No. of commercial establishments/ private institutions covered by door to door collection system practicing segregation at source	249
11.	No.of commercial establishments/ private institutions covered for collection of User-Fees	338
12.	Total amount collected from commercial establishment/private institutions as User Fees(II)	55340
13.	No. of Government Institutions covered by door to door collection system	58
14.	No. of Government Institutions covered by door to door collection system practicing segregation at source	55
15.	No.of Government Institutions covered for collection of User-Fees	30
16.	Total amount collected from Government Institutions as User Fees(III)	600
17.	Total Amount of User-Fee collected (I+II+III)	115690
18.	Total quantity of **solid waste** collected through door to door collection(A) **(in Kg) (Per month)**	24510
19.	Dry	23700
20.	Wet	810
21.	No of public garbage sites	196
22.	Total quantity of **solid waste** collected from public garbage bins (B) **(in Kg) (Per month)**	30515
23.	Dry	30305

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24			
25	Total quantity of solid waste collected from door to door collection and public garbage site(A+B) (Per month)	Wet	210
26			55025
27		Dry	54005
		Wet	1020

I. SOLID WASTE GENERATION

Total generation of Solid Waste (Estimation) Both Dry & Wet (TPD)	3.91
Total collection of Solid Waste (TPD) – [A]+[B]+[C]	1.83
Existing Segregation Facilities with capacity	1. SLWM Karmatang 2. SLWM Pahalgaon 3. SLWM Basantipur
Proposed Segregation Facilities with capacity (Describe any additional work planned for improving the facilities.)	1. Proposed in MNREGA to develop the site for segregation under GP Rampur 2. 200 sq.m land area proposed for segregation purpose under GP Basantipur 3. Site for segregation shed is proposed and the land allotment is under process under GP Harinagar

(A) Dry Waste:

Out of the total Solid Waste collected, Quantity of Dry waste (in Kg)(In month)	PET	1100
	All type of Plastics	12500
	Multi Layer Plastics(MLP)	10550
	Paper/Cardboard)	17527
	Tetrapack	487
	Glass	8022
	Metals(All type)	1050
	E-Waste	592
	Cloth	1066
	Footwear	1111
	Total (A)	54005
Quantity of dry waste sent for recycling locally (Get the information from Cluster GPs)		-
Quantity of dry waste sent to mainland (Get the information from Cluster GPs)		-
Quantity of dry waste landfill (Get the information from all GPs)		-

(A.1) Details of Segregation centres:

Sl No	Name /Location	Design/Installed	Facilities/machines (No of shredding,	Capacity Utilization

		capacity(in Kg per Day)	Bailing machines with individual capacity)	(in Kg per Day)
1.	SLWM cluster, Rampur at Karmatang	500 kg	1 No. Bailing Machine	200 kg
2.	SLWM cluster, Pahalgaon at Tugapur- 7	500 kg	-	140 kg
3.	SLWM cluster, Basantipur at Govindapur		1 No. Bailing Machine (Under repair)	
4.	SLWM cluster, Shivapuram	500 kg	1 No. Bailing Machine (0.5 TPD)	60 kg

(B) Wet Waste

Out of the total Solid Waste collected, Quantity of Segregated wet waste:(TPD) –[B]**(Per month)**	0.034
Quantity of wet waste sent for composting etc.	**0.034**
Quantity of wet waste sent for Biomethanation	-
Quantity of wet waste sent to landfill	-
No. of Processing Facilities Available with individual Capacity (Describe the facility, attach separate sheet if required)	-
No. of Proposed Facilities with individual Capacity	-

(B) Details of wet waste processing units

S. No	Name /Location/Technology	Design Capacity	Capacity utilization
-	-	-	-

(C) Mixed Waste

Out of the total Solid Waste collected, Quantity of Segregated Mixed waste(TPD)–[C] **((Per month in Kg)**	-
Quantity of mixed waste sent to landfills	-

- List of proposed land fills with capacity and utilization:
- List of proposed land fills with capacity:

(D) Bulk Waste Generators as defined in SWM Rules-2016 (Average Waste generation rate 100kg/day)

(D.1)List of Bulk Waste generators

Sl.no	Name	Address	Waste generated per day	Composting Units/ Bio-methanation with existing capacity
-	-	-	-	-

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II. SEWAGE GENERATION :

(1)Estimated sewage generation (MLD)-[A]+[B]+[C] = 0.16
(A)Sewage flowing through Sewerage System

Out of total sewage generated, Quantity of sewage flowing to sewerage system-[A]	Nil
No. of Proposed STPs with individual capacity in MLD	-

(B)Sewage flowing through Septic tank

Out of total sewage generated, Quantity of sewage treated in Septic Tank(MLD): [B]	0.032
Quantity of Sludge generated:	-
No. of FSTP and Quantity of sludge processed in FSTP:	-
No. and Capacity of sludge Tanks:	-

(C)Sewage flowing through Open:

Out of total sewage generated, Quantity of sewage flowing through open (MLD): [C]:

Component	Quantity of Sewage flowing (in MLD)	No. of HHs covered
Soak Pits/Magic Pits/Leach Pits	0.005	11
Drainage Channels with Soak Pits	0.006	0
Drainage Channels without Soak Pits	0.007	325
Kitchen Garden/Farm	0.11	1700
Total	**[C] = 0.128**	2036

(Any additional planned works i.e. Drainage channels, Soak Pits constructions under MGNREGA or GIA for Grey Water Management may be elaborated here)

III. PLASTIC WASTE:

Quantity of Waste in Tons	During the Month
Total Dry waste segregated	28.86
Total plastic waste segregated	7.165
Total non-plastic waste segregated	21.775
Amount of waste sent to mainland for recycling	-
Amount of waste used for road construction	-

1792

(A) Information incorporated in the SWM bye laws:

Provisions to collect spot fines from violators in production, distribution, storage sale and use of banned plastic & other items	Yes, exist as per SWM Bye Laws, 2019
Penalty for littering of waste (as per SWM Bye Laws) - Actual Fine imposed during the month (in Rs.)	-
Penalty for open burning of plastics (actual fine imposed per month)	-

(B) Details of Open burning incidents:

	No of team enforcing ban of burning plastic	No of inspections conducted	No of incidents identified	Fine imposed/recovered	No of complaints received	Action taken against the violators
During the month	-	3	-	-	-	-

(C) Creating Awareness among all stakeholders:

	No of awareness programs conducted	Departments/stakeholders participated	No of people participated	Number of Beach Clean-up drive Conducted
During the Month	-	-	-	-

(D) Details of Civil societies or group working with waste pickers:

No of Self Helping Groups(SHGs)	No. of people in SHGs	No. of people engaged in waste
-	-	-

E) Enforcement of SUP ban:

	No of teams for enforcement of SUP ban	No of field inspections	No of violations observed	No of challans issued	Quantity of plastic seized (in Kg.)	Amount of fine collected (In Rs.)
During the Month	4	11	-	-	-	-

1793

(F) Elaborate on the gaps, if any, with reasons and justification.

Less households are covered under door to door collection system due to inadequate road connectivity, dispersed settlement of households, insufficient number of sanitation staff. Further, many villagers are unwilling to pay the user fee. Also, many commercial establishments are either closed most of the time or their owners are out of station. So, the GPs are unable to collect user fee from these establishments. Government Institutions are also refusing to pay user fee stating that they have not received any direction from their respective department for paying user fee to the GP.

Name and Signature of the Block Development Officer with Seal

Block Development Officer
खण्ड विकास अधि., अबरेरा
CD Block Mayabunder

Points to be considered while filling up of the monthly report:

1. Nos. covered by Door to Door system at S. No. 5, 9, 13 should match with S. No. 2, 3 and 4 respectively i.e. 100% collection is to be ensured or else public garbage bins is to be ensured for HHs not collected through Door to Door system.
2. Data at S. No. 6,10,14 should match with data t S. No. 5,9,13 i.e. 100 percent practicing segregation at source, if gap in data, measures taken by the Panchayat of fine imposed needs to be appropriately mentioned.
3. Per Day Per capita solid waste generation as per National average is estimated to be 0.5 to 1 Kg in rural. In the Islands, the estimation is taken minimum as 600 gm per Household per day (Dry Waste) and 200 gm (Wet Waste). Date reported at S. No. 18 should therefore be in conformity to the above assumption considering the number of HHs, commercial establishments and institutions that are covered.

Format for Submission of MONTHLY PROGRESS REPORT in the NGT Matter No. 673 of 2018 (in compliance of NGT order dated 24.09.2020)

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(Report for the month of June 2024)

Name of the Block : CD Block Prothrapur

District : South Andaman

I. SOLID WASTE GENERATION

Block name: CD Block Prothrapur		
1.	Total population	26116
2.	No. of households	6266
3.	No. of commercial establishments/private institutions	766
4.	No. of Government Institutions	95
5.	No. of households covered by door to door collection system	8715
6.	No.of households covered by door to door collection system practicing segregation at source	3025
7.	No. of households covered for collection of User-Fees	3679
8.	Total amount collected from HHs as User-Fees(I)	111350
9.	No. of commercial establishments/private institution covered by door to door collection system	741
10.	No. of commercial establishments/ private institutions covered by door to door collection system practicing segregation at source	743
11.	No.of commercial establishments/ private institutions covered for collection of User-Fees	603
12.	Total amount collected from commercial establishment/private institutions as User Fees(II)	405051
13.	No. of Government Institutions covered by door to door collection system	89
14.	No. of Government Institutions covered by door to door collection system practicing segregation at source	89
15.	No.of Government Institutions covered for collection of User-Fees	14
16.	Total amount collected from Government Institutions as User Fees(III)	300
17.	Total Amount of User-Fee collected (I+II+III)	516701
18.	Total quantity of waste collected through door to door collection(A) (in Kg) (Per month)	31104
19.	Dry	21298
20.	Wet	9806
21.	No of public garbage sites	214
22.	Total quantity of waste collected from public garbage bins (B) (in Kg) (Per month)	55978
23.	Dry	47829
24.	Wet	8149
25.	Total quantity of waste collected from door to door collection and public garbage site(A+B) (Per month)	84971
26.	Dry	69127
27.	Wet	15845

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Total generation of Solid Waste (Estimated) Both Dry & Waste	6260x0.6=3759.6Kg/3.7 TPD
Total collection of Solid Waste (TPD) –[A]+[B]+[C] DRY-69127 KG PER MONTH/69.127 TONNES/2.304TPD WET- 3726 KG PER MONTH/3.726 TONNES/0.1242 TPD MIXED-1240 KG PER MONTH/1.240TONNES/0.041TPD TOTAL -2.4692 TPD	2.4692 TPD
Existing Segregation Facilities with capacity	4000 kg
Proposed Segregation Facilities with capacity	Shed with 2TPD/ day

(A) Dry Waste:

Out of the total Solid Waste collected, Quantity of Dry waste (in Kg)(**In month**)	PET	4810
	All type of Plastics	2529
	Multi Layer Plastics(MLP)	7398
	Paper/Cardboard)	6827
	Tetra pack	3842
	Glass	20063
	Metals(All type)	2504
	E-Waste	195
	Cloth	568
	Footwear	352
	Total (A)	49088
Quantity of dry waste sent for recycling locally		NIL
Quantity of dry waste sent to mainland		10571
Quantity of dry waste landfill		NIL

(A.1) Details of Segregation centres:

Sl No	Name /Location	Design/Installed capacity(in Kg per Day)	Facilities/machines (No of shredding, Bailing machines with individual capacity)	Capacity Utilization (in Kg per Day)
01	SWM Cluster Beodnabad	500Kg	01 No Bailing Machine 2 Ton Capacity	380
02	SWM Ram Nagar, Neil Kendra	40Kg	01(Bailing Machine) with 280	80
03	Sippighat	-	-	-
04	SWM Shyam Nagar, Swaraj Dweep	100	01 Bailing Machine	200
05	Calicut	-	-	-
06	Govind Nagar, Swaraj Dweep	-	-	

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(B) Wet Waste

Out of the total Solid Waste collected, Quantity of Segregated wet waste (TPD) –[B](Per month)	3726
Quantity of wet waste sent for composting etc.	3326
Quantity of wet waste sent for Biomethanation	NIL
Quantity of wet waste sent to landfill	NIL
No. of Processing Facilities Available with individual Capacity	06 No (3 cbm capacity)
No. of Proposed Facilities with individual Capacity	NIL

(B) Details of wet waste processing units

S No	Name /Location/Technology	Design Capacity	Capacity utilization
01	SWM Cluster managed by GP Beodnabad	06 Nos vermi compost 03 cbm	-

(C) Mixed Waste

Out of the total Solid Waste collected, Quantity of Segregated Mixed waste(TPD)–[C] ((Per month in Kg)	1240
Quantity of mixed waste sent to landfills	-

- List of proposed land fills with capacity and utilization
- List of proposed land fills with capacity:

(D) Bulk Waste Generators as defined in SWM Rules-2016 (Average Waste generation rate 100kg/day)

(D.1)List of Bulk Waste generators

Sl.no	Name	Address	Waste generated per day	Composting Units/ Bio-methanation with existing capacity
01	Symphony Palm Beach Resort	Govind Nagar	65Kg	Nil
02	Aqua's Beach Resort	Govind Nagar	45Kg	Compost Pit
03	Lemon Grass Beach Resort	Govind Nagar	38Kg	Nil

II. SEWAGE GENERATION :

(1)Estimated sewage generation (MLD)-[A]+[B]+[C]=6266x55x80%=275,704/MLD

(A)Sewage flowing through Sewerage System

Out of total sewage generated, Quantity of sewage flowing to sewerage	Nil

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system [A]	
No. of Proposed STPs with individual capacity in MLD	-

(B)Sewage flowing through Septic tank-0.28x20%=0.056MLD

Out of total sewage generated, Quantity of sewage treated in Septic Tank(MLD): [B]	-
Quantity of Sludge generated	-
No. of FSTP and Quantity of sludge processed in FSTP:	-
No. and Capacity of sludge Tanks	-

(C)Sewage flowing through Open drains:0.28x80%=0.22MLD

Out of total sewage generated, Quantity of sewage flowing to open drains (MLD): [C] **0.76 MLD**

Component	Quantity of Sewage flowing(in MLD)	No.of HHs Covered
Soak Pits/Magic Pits/Leach Pits		
Drainage channel with Soak pits		
Drainage Channels without Soak Pits	0.05 MLD	
Kitchen Garden/Farm	0.17 MLD	
Total	(C)=0.22 MLD	

III. PLASTIC WASTE:

Quantity of Waste in Tons	During the Month
Total Dry waste segregated	55.242
Total plastic waste segregated	10.413
Total non-plastic waste segregated	41.054
Amount of waste sent to mainland for recycling	24.289
Amount of waste used for road construction	NIL

(A) Information incorporated in the SWM bye laws:

Provisions to collect spot fines from violators in production, distribution, storage sale and use of banned plastic & other items	Yes
Penalty for littering of waste	Rs. 500 Fine
Penalty for open burning of plastics	Rs. 500 Fine

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(B) Details of Open burning incidents:

	No of team enforcing ban of burning plastic	No of inspections conducted	No of incidents identified	Fine imposed/recovered	No of complaints received	Action taken against the violators
During the month	04	5	-	-	-	-

(C) Creating Awareness among all stakeholders:

	No of awareness programs conducted	Departments/stakeholders participated	No of people participated	Number of Beach Clean-up drive Conducted
During the Month	10	62(Panchayat, MGNREGA, Indian Navy and Coast Guard)	445	5

(D) Details of Civil societies or group working with waste pickers:

No of Self Helping Groups(SHGs)	No. of people in SHGs	No. of people engaged in waste
23	241	17

(E) Enforcement of SUP ban:

	No of teams for enforcement of SUP ban	No of field inspections	No of violations observed	No of challans issued	Quantity of plastic seized (in Kg)	Amount of fine collected (in Rs)
During the Month	5	8	-	-	-	-

Signature & Seal of the BDO

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Format for Submission of MONTHLY PROGRESS REPORT in the NGT Matter No. 673 of 2018 (in compliance to NGT order dated 24.09.2020)

(Report for the month of **June 2024**)

Name of the Block : Rangat

District : N & M Andaman

1.	Total population	35245
2.	No. of households	9130
3.	No. of commercial establishments/private institutions	843
4.	No. of Government Institutions	236
5.	No. of households covered by door to door collection system	8064
6.	No.of households covered by door to door collection system practicing segregation at source	6897
7.	No .of households covered for collection of User-Fees	4939
8.	Total amount collected from HHs as User-Fees(I)	246950
9.	No. of commercial establishments/private institution covered by door to door collection system	823
10.	No. of commercial establishments/ private institutions covered by door to door collection system practicing segregation at source	769
11.	No.of commercial establishments/ private institutions covered for collection of User-Fees	529
12.	Total amount collected from commercial establishment/private institutions as User Fees(II)	79350
13.	No. of Government Institutions covered by door to door collection system	194
14.	No. of Government Institutions covered by door to door collection system practicing segregation at source	182
15.	No.of Government Institutions covered for collection of User-Fees	106
16.	Total amount collected from Government Institutions as User Fees(III)	74700
17.	Total Amount of User-Fee collected (I+II+III)	401000
18.	Total quantity of **solid waste** collected through door to door collection(A) (in Kg) (Per month)	11613.155
19.	Dry	10253.105
20.	Wet	1249.05
21.	No of public garbage sites	399

1800

22.	Total quantity of solid waste collected from public garbage bins (B) (in Kg) (Per month)	5852.745
23.	Dry	5125.745
24.	Wet	727
25.	Total quantity of solid waste collected from door to door collection and public garbage site(A+B) (Per month)	17465.9
26.	Dry	14921.75
27.	Wet	1976.5

I. SOLID WASTE GENERATION

Total generation of Solid Waste (Estimation) Both Dry & Wet (TPD)	5.478
Total collection of Solid Waste (TPD) – [A]+[B]+[C]	0.577421667
Existing Segregation Facilities with capacity	0.5
Proposed Segregation Facilities with capacity (Describe any additional work planned for improving the facilities.)	0

(A) Dry Waste:

Out of the total Solid Waste collected, Quantity of Dry waste (in Kg)(In month)	PET	560
	All type of Plastics	1924.3
	Multi Layer Plastics(MLP)	1685.9
	Paper/Cardboard)	2322.8
	Tetrapack	578.6
	Glass	5992.7
	Metals(All type)	939.65
	E-Waste	121
	Cloth	592.6
	Footwear	381.6
	Total (A)	15109.15

1801

Quantity of dry waste sent for recycling locally (Get the information from Cluster GPs)	430
Quantity of dry waste sent to mainland (Get the information from Cluster GPs)	6619.8
Quantity of dry waste landfill (Get the information from all GPs)	237

(A.1) Details of Segregation centres:

Sl No	Name /Location	Design/Installed capacity(in Kg per Day)	Facilities/machines (No of shredding, Bailing machines with individual capacity)	Capacity Utilization (in Kg per Day)
	NA	NA	NA	NA

(B) Wet Waste

Out of the total Solid Waste collected, Quantity of Segregated wet waste:(TPD) –[B]**(Per month)**	1.9265
Quantity of wet waste sent for composting etc.	1.9265
Quantity of wet waste sent for Biomethanation	NA
Quantity of wet waste sent to landfill	NA
No. of Processing Facilities Available with individual Capacity (Describe the facility, attach separate sheet if required)	NA
No. of Proposed Facilities with individual Capacity	NA

(B) Details of wet waste processing units

1802

S. No	Name /Location/Technology	Design Capacity	Capacity utilization
	NA	NA	NA

(C) Mixed Waste

Out of the total Solid Waste collected, Quantity of Segregated Mixed waste(TPD)–[C] **((Per month in Kg)**	237
Quantity of mixed waste sent to landfills	NA

- List of proposed land fills with capacity and utilization:
- List of proposed land fills with capacity:

(D) Bulk Waste Generators as defined in SWM Rules-2016 (Average Waste generation rate 100kg/day)

(D.1)List of Bulk Waste generators

Sl.no	Name	Address	Waste generated per day	Composting Units/ Bio-methanation with existing capacity
	NA	NA	NA	NA

II. SEWAGE GENERATION :

(1)Estimated sewage generation (MLD)-[A]+[B]+[C] = 1.222348

(A)Sewage flowing through Sewerage System

Out of total sewage generated, Quantity of sewage flowing to sewerage system-[A]	1.24
No. of Proposed STPs with individual capacity in MLD	NA

(B)Sewage flowing through Septic tank

Out of total sewage generated, Quantity of sewage treated in Septic Tank(MLD): [B]	0.31
Quantity of Sludge generated:	NA
No. of FSTP and Quantity of sludge processed in FSTP:	NA
No. and Capacity of sludge Tanks:	NA

(C)Sewage flowing through Open:

Out of total sewage generated, Quantity of sewage flowing through open (MLD): [C]:

Component	Quantity of Sewage flowing (in MLD)	No. of HHs covered
Soak Pits/Magic Pits/Leach Pits	NA	NA
Drainage Channels with Soak Pits	NA	NA
Drainage Channels without Soak Pits	NA	NA
Kitchen Garden/Farm	NA	NA
Total	**[C] =**	NA

(Any additional planned works i.e. Drainage channels, Soak Pits constructions under MGNREGA or GIA for Grey Water Management may be elaborated here)

III. PLASTIC WASTE:

Quantity of Waste in Tons	During the Month
Total Dry waste segregated	14.92
Total plastic waste segregated	4.1702
Total non-plastic waste segregated	10.92895
Amount of waste sent to mainland for recycling	6.6198
Amount of waste used for road construction	NA

1804

(A) Information incorporated in the SWM bye laws:

Provisions to collect spot fines from violators in production, distribution, storage sale and use of banned plastic & other items	Yes, exist as per SWM Bye Laws, 2019
Penalty for littering of waste (as per SWM Bye Laws) - Actual Fine imposed during the month (in Rs.)	Rs. 500
Penalty for open burning of plastics (actual fine imposed per month)	Rs. 500

(B) Details of Open burning incidents:

	No of team enforcing ban of burning plastic	No of inspections conducted	No of incidents identified	Fine imposed/recovered	No of complaints received	Action taken against the violators
During the month	06	08	NA	NA	NA	NA

(C) Creating Awareness among all stakeholders:

	No of awareness programs conducted	Departments/stakeholders participated	No of people participated	Number of Beach Clean-up drive Conducted
During the Month	9	16	182	03

(D) Details of Civil societies or group working with waste pickers:

No of Self Helping Groups(SHGs)	No. of people in SHGs	No. of people engaged in waste

12	120	0
NA	NA	NA

(E) Enforcement of SUP ban:

	No of teams for enforcement of SUP ban	No of field inspections	No of violations observed	No of challans issued	Quantity of plastic seized (in Kg.)	Amount of fine collected (In Rs.)
During the Month	8	4	0	NA	NA	NA

(F) Elaborate on the gaps, if any, with reasons and justification.

- The Panchayat is making regular efforts for collection of user fees from all the households, and all the households have been visited regularly for collection of user fees but the people are no co-operating for paying user fees. - *GP Pamashala, GP Bakultala, GP kaushalya Nagar*
- Appropriate mechanism has to be implemented for collection of user fees. - *GP Dasarathpur*
- Insufficient manpower and use of a power tiller restricts coverage to only 210 out of 733 households. Around 50 households practice segregation while others demand separate dustbins following a previous government initiative of distributing colour-coded bins for dry and wet waste segregation highlighting a significant challenge of leading a mindset shift. Low user fee collection as many residents cite financial constraints while others condition payment on the receipt of collection services. Government institutions notified about the timely monthly user fee payment and outstanding dues. Low capacity utilization of bailing machine constrained by insufficient manpower for daily collection and intermittent segregation. Underutilization of compost pits as households manage their wet waste internally, resulting in no collection of wet waste. Dry waste shipment informed to vendor. Waiting for the feasible appointment of date from vendor. - *GP Nilambur*

11/07/2024

Name and Signature of the Block Development Officer with Seal

LALITA TIGGA
Block Development Officer
CD-Block, Rangat
Middle Andaman

Format for Submission of MONTHLY PROGRESS REPORT in the NGT Matter No. 673 of 2018 (in compliance of NGT order dated 24.09.2020)

1806

(Report for the month of **June 2024**)

Name of the Block : Campbell Bay

District : Nicobars

1.	Total population	25624
2.	No. of households	1765
3.	No. of commercial establishments/private institutions	146
4.	No. of Government Institutions	53
5.	No. of households covered by door to door collection system	1765
6.	No.of households covered by door to door collection system practicing segregation at source	1765
7.	No .of households covered for collection of User-Fees	767*
8	Total amount collected from HHs as User-Fees(I)	Rs.42470*
9.	No. of commercial establishments/private institution covered by door to door collection system	72
10.	No. of commercial establishments/ private institutions covered by door to door collection system practicing segregation at source	72
11.	No.of commercial establishments/ private institutions covered for collection of User-Fees	68
12.	Total amount collected from commercial establishment/private institutions as User Fees(II)	Rs.18330
13.	No. of Government Institutions covered by door to door collection system	34
14.	No. of Government Institutions covered by door to door collection system practicing segregation at source	10
15.	No.of Government Institutions covered for collection of User-Fees	1
16.	Total amount collected from Government Institutions as User Fees(III)	Rs.24800
17.	Total Amount of User-Fee collected (I+II+III)	Rs.85600
18.	Total quantity of solid waste collected through door to door collection(A) (in Kg) (Per month)	
	Dry	1824 Kg
	Wet	45 Kg
19.	No of public garbage sites	25
20.	Total quantity of solid waste collected from public garbage bins (B) (In Kg) (Per month)	
	Dry	1056 Kg
	Wet	0Kg
21.	Total quantity of solid waste collected from door to door collection and public garbage site(A+B) (Per month)	
	Dry	2905 Kg
	Wet	45Kg

I. SOLID WASTE GENERATION 1807

Total generation of Solid Waste (Estimation) Both Dry & Wet **(TPD)**	1.0590 TPD
Total collection of Solid Waste **(TPD) – [A]+[B]+[C]**	0.0982 TPD
Existing Segregation Facilities with capacity	SLWM Cluster at Vijay Nagar with 50Kg/Day
Proposed Segregation Facilities with capacity (Describe any additional work planned for improving the facilities.)	Proposal for set-apart of land has been sent to DC Nicobar, for segregation facility under Govind Nagar GP and Campbell bay GP

(A) Dry Waste:

Out of the total Solid Waste collected, Quantity of Dry waste (in Kg)**(In month)**	PET	-
	All type of Plastics	393
	Multi Layer Plastics(MLP)	543
	Paper/Cardboard)	659
	Tetra-pack	87
	Glass	667
	Metals(All type)	171
	E-Waste	-
	Cloth	259
	Footwear	126
	Total (A)	2905
Quantity of dry waste sent for recycling locally		0
Quantity of dry waste sent to mainland		**0**
Quantity of dry waste landfill		0

(A.1) Details of Segregation centres:

Sl No	Name /Location	Design/Installed capacity(in Kg per Day)	Facilities/machines (No of shredding, Bailing machines with individual capacity)	Capacity Utilization (in Kg per Day)
1	SLWM Cluster at Vijay Nagar under Laxmi Nagar GP (Segregation is done at Vijay Nagar SWM Custer)	50Kg/Day	1 No. Bailing Machine	50kg/Day
2	Primary segregation centre at ward no.4 under Campbell bay then after sent to SWM Cluster at Vijay Nagar			
3	Temporary Segregation centre under Govind Nagar			

	GP, then after sent to SWM cluster at Vijay Nagar			

(B) Wet Waste

Out of the total Solid Waste collected, Quantity of Segregated wet waste:(TPD) –[B](**Per month**)	0.0015 TPD
Quantity of wet waste sent for composting etc.	**NIL**
Quantity of wet waste sent for Biomethanation	**NIL**
Quantity of wet waste sent to landfill	**0.0015 TPD**
No. of Processing Facilities Available with individual Capacity (Describe the facility, attach separate sheet if required)	NIL
No. of Proposed Facilities with individual Capacity	NIL

(B) Details of wet waste processing units

S. No	Name /Location/Technology	Design Capacity	Capacity utilization
	NIL	NIL	**NIL**

(C) Mixed Waste

Out of the total Solid Waste collected, Quantity of Segregated Mixed waste(TPD)–[C] ((**Per month in Kg**)	-
Quantity of mixed waste sent to landfills	-

- List of proposed land fills with capacity and utilization:
- List of proposed land fills with capacity:

(D) Bulk Waste Generators as defined in SWM Rules-2016 (Average Waste generation rate 100kg/day)

(D.1)List of Bulk Waste generators

Sl.no	Name	Address	Waste generated per day	Composting Units/ Bio-methanation with existing capacity
-	-	-	-	-

II. SEWAGE GENERATION :

(1)Estimated sewage generation (MLD)-[A]+[B]+[C] = 37.581 MLD

(A)Sewage flowing through Sewerage System

Out of total sewage generated, Quantity of sewage flowing to sewerage system-[A]	NIL
No. of Proposed STPs with individual capacity in MLD	NIL

(B)Sewage flowing through Septic tank

Out of total sewage generated, Quantity of sewage treated in Septic Tank(MLD): [B]	7.516 MLD
Quantity of Sludge generated:	-
No. of FSTP and Quantity of sludge processed in FSTP:	-
No. and Capacity of sludge Tanks:	-

(C)Sewage flowing through Open:

Out of total sewage generated, Quantity of sewage flowing through open (MLD): [C]: 30.064 (MLD)

Component	Quantity of Sewage flowing (in MLD)	No. of HHs covered
Soak Pits/Magic Pits/Leach Pits	NIL	-
Drainage Channels with Soak Pits	NIL	-
Drainage Channels without Soak Pits	24.052 (MLD)	1765
Kitchen Garden/Farm	6.012 (MLD)	
Total	**30.064 MLD**	715

(Any additional planned works i.e. Drainage channels, Soak Pits constructions under MGNREGA or GIA for Grey Water Management may be elaborated here)

III. PLASTIC WASTE:

Quantity of Waste in Tons	During the Month
Total Dry waste segregated	2.726 TPD
Total plastic waste segregated	1.027 Tons
Total non-plastic waste segregated	1.867 Tons
Amount of waste sent to mainland for recycling	NIL
Amount of waste used for road construction	NIL

(A) Information incorporated in the SWM bye laws:

Provisions to collect spot fines from violators in production, distribution, storage sale and use of banned plastic & other items	Yes, exist as per SWM Bye Laws, 2019
Penalty for littering of waste (as per SWM Bye Laws) - Actual Fine imposed during the month (in Rs.)	0
Penalty for open burning of plastics (actual fine imposed per month)	0

(B) Details of Open burning incidents:

	No of team	No of	No of	Fine	No of	Action

	enforcing ban of burning plastic	inspections conducted	incidents identified	imposed/ recovered	complai nts received	taken against the violators
During the month	-	-	-	-	-	-

(C) Creating Awareness among all stakeholders:

	No of awareness programs conducted	Departments/stakeh olders participated	No of people participated	Number of Beach Clean-up drive Conducted
During the Month	3	6	160	3

(D) Details of Civil societies or group working with waste pickers:

No of Self Helping Groups(SHGs)	No. of people in SHGs	No. of people engaged in waste
17	170	10

(E) Enforcement of SUP ban:

	No of teams for enforcement of SUP ban	No of field inspection s	No of violations observed	No of challans issued	Quantity of plastic seized (in Kg.)	Amount of fine collected (In Rs.)
During the Month	1	2	0	0	0	0

(F) Elaborate on the gaps, if any, with reasons and justification.

1*. User fee for every HH couldn't collected as many HH are out of station and due to other reason.

2*. User fee could not collect as the shop owners are out of station and due to other reason.

3*. Government institutions are paying the user fee on a quarterly basis.

Block Development Officer
CD Block, Campbell Bay

BLOCK DEVELOPMENT OFFICER
C.D. BLOCK, CAMPBELL BAY

Format for Submission of MONTHLY PROGRESS REPORT in the NGT Matter No. 673 of 2018 (in compliance of NGT order dated 24.09.2020)

1811

(Report for the month of May 2024)

Name of the Block : CD Block Prothrapur

District : South Andaman

I. SOLID WASTE GENERATION

Block name:		
1.	Total population	26116
2.	No. of households	6266
3.	No. of commercial establishments/private institutions	766
4.	No. of Government Institutions	95
5.	No. of households covered by door to door collection system	4497
6.	No of households covered by door to door collection system practicing segregation at source	2440
7.	No. of households covered for collection of User-Fees	3746
8.	Total amount collected from HHs as User-Fees(I)	116221
9.	No. of commercial establishments/private institution covered by door to door collection system	727
10.	No. of commercial establishments/ private institutions covered by door to door collection system practicing segregation at source	727
11.	No of commercial establishments/ private institutions covered for collection of User-Fees	576
12.	Total amount collected from commercial establishment/private institutions as User Fees(II)	527692
13.	No. of Government Institutions covered by door to door collection system	75
14.	No. of Government Institutions covered by door to door collection system practicing segregation at source	75
15.	No of Government Institutions covered for collection of User-Fees	13
16.	Total amount collected from Government Institutions as User Fees(III)	300
17.	Total Amount of User-Fee collected (I+II+III)	644213
18.	Total quantity of waste collected through door to door collection(A) (in Kg) (Per month)	41731
19.	Dry	30799
20.	Wet	10932
21.	No of public garbage sites	214
22.	Total quantity of waste collected from public garbage bins (B) (in Kg) (Per month)	114845
23.	Dry	106813
24.	Wet	8032
25.	Total quantity of waste collected from door to door collection and public garbage site(A+B) (Per month)	156576
26.	Dry	137612
27.	Wet	18964

Total generation of Solid Waste (Estimated) Dry & Waste	6266x0.6=3759.6Kg/3.7 TPD
Total collection of Solid Waste (TPD) -[A]+[B]+[C] DRY-137612 KG PER MONTH/137.6 TONNES/4.58 TPD WET- 4664 KG PER MONTH/4.7 TONNES/0.156 TPD MIXED-1320 KG PER MONTH/1.3TONNES/0.043TPD TOTAL -4.779 TPD	4.779 TPD
Existing Segregation Facilities with capacity	4000 kg
Proposed Segregation Facilities with capacity	Shed with 2TPD/ day

(A) Dry Waste:

Out of the total Solid Waste collected, Quantity of Dry waste (in Kg)**(In month)**	PET	15649
	All type of Plastics	20286
	Multi Layer Plastics(MLP)	18079
	Paper/Cardboard)	20267
	Tetrapack	15963
	Glass	18002
	Metals(All type)	3853
	E-Waste	492
	Cloth	1500
	Footwear	618
	Total (A)	114708
Quantity of dry waste sent for recycling locally		65120
Quantity of dry waste sent to mainland		Nil
Quantity of dry waste landfill		Nil

(A.1) Details of Segregation centres:

Sl No	Name /Location	Design/Installed capacity(in Kg per Day)	Facilities/machines (No of shredding, Bailing machines with individual capacity)	Capacity Utilization (in Kg per Day)
01	SWM Cluster Beodnabad	-	Bailing Machine	480
02	SWM Ram Nagar, Neel Kendra	40	01(Bailing Machine) with 280	80
03	Sippighat	-	-	-
04	SWM Shyam Nagar, SwarajDweep	100	01 Bailing Machine	200
05	Calicut	-	-	-
06	Govind Nagar, Swaraj Dweep	-	-	-

(B) Wet Waste

Out of the total Solid Waste collected, Quantity of Segregated wet waste:(TPD) –[B](**Per month**)	4664
Quantity of wet waste sent for composting etc	4264
Quantity of wet waste sent for Biomethanation	Nil
Quantity of wet waste sent to landfill	Nil
No. of Processing Facilities Available with individual Capacity	Nil
No. of Proposed Facilities with individual Capacity	Nil

(B) Details of wet waste processing units

S. No	Name /Location/Technology	Design Capacity	Capacity utilization
	-	-	-

(C) Mixed Waste

Out of the total Solid Waste collected, Quantity of Segregated Mixed waste(TPD)–[C] ((**Per month in Kg**)	1320
Quantity of mixed waste sent to landfills	-

- List of proposed land fills with capacity and utilization:
- List of proposed land fills with capacity.

(D) Bulk Waste Generators as defined in SWM Rules-2016 (Average Waste generation rate 100kg/day)

(D.1)List of Bulk Waste generators

Sl.no	Name	Address	Waste generated per day	Composting Units/ Bio-methanation with existing capacity
01	Symphony Palm Beach Resort	Govind Nagar	65 Kg	Nil
02	Aqua's Beach Resort	Govind Nagar	45 Kg	Composit Pit
03	Lemon Grass Beach Resort	Govind Nagar	38 Kg	Nil

II. **SEWAGE GENERATION :**

(1)Estimated sewage generation (MLD)-[A]+[B]+[C] = 6266x55x80%=275,704/MLD

(A)Sewage flowing through Sewerage System

Out of total sewage generated, Quantity of sewage flowing to sewerage system-[A]	Nil
No. of Proposed STPs with individual capacity in MLD	-

1814

(B)Sewage flowing through Septic tank-0.28x20%=0.056MLD

Out of total sewage generated, Quantity of sewage treated in Septic Tank(MLD): [B]	-
Quantity of Sludge generated	-
No. of FSTP and Quantity of sludge processed in FSTP:	-
No. and Capacity of sludge Tanks:	-

(C)Sewage flowing through Open drains:0.28x80%=0.22MLD

Out of total sewage generated, Quantity of sewage flowing to open drains (MLD): [C]:**0.76 MLD**

Component	Quantity of Sewage flowing(in MLD)	No.of HHs Covered
Soak Pits/Magic Pits/Leach Pits		
Drainage channel with Soak pits		
Drainage Channels without Soak Pits	0.05 MLD	
Kitchen Garden/Farm	0.17 MLD	
Total	(C) = 0.22 MLD	

III. **PLASTIC WASTE:**

Quantity of Waste **in Tons**	During the Month
Total Dry waste segregated	114.708
Total plastic waste segregated	49.723
Total non-plastic waste segregated	43.016
Amount of waste sent to mainland for recycling	0
Amount of waste used for road construction	208.463

(A) Information incorporated in the SWM bye laws:

Provisions to collect spot fines from violators in production, distribution, storage sale and use of banned plastic & other items	Yes
Penalty for littering of waste	Rs. 500 Fine
Penalty for open burning of plastics	Rs. 500 Fine

(B) Details of Open burning incidents:

	No of team enforcing ban of burning plastic	No of inspections conducted	No of incidents identified	Fine imposed/recovered	No of complaints received	Action taken against the violators
During the month	3	6	Nil	Nil	Nil	Nil

(C) Creating Awareness among all stakeholders:

	No of awareness programs conducted	Departments/stakeholders participated	No of people participated	Number of Beach Clean-up drive Conducted
During the Month	3	17	57	3

(D) Details of Civil societies or group working with waste pickers:

No of Self Helping Groups(SHGs)	No. of people in SHGs	No. of people engaged in waste
23	241	17

(E) Enforcement of SUP ban:

	No of teams for enforcement of SUP ban	No of field inspections	No of violations observed	No of challans issued	Quantity of plastic seized (in Kg.)	Amount of fine collected (In Rs.)
During the Month	4	11	1	1	500 gm	3000

Signature & Seal of the BDO

1816

Format for Submission of MONTHLY PROGRESS REPORT in the NGT Matter No. 673 of 2018 (in compliance to NGT order dated 24.09.2020)

(Report for the month of **May 2024**)

Block : FERRARGUNJ

District : SOUTH ANDAMAN

1.	Total population	59340
2.	No. of households	14000
3.	No. of commercial establishments/private institutions	987
4.	No. of Government Institutions	181
5.	No. of households covered by door to door collection system	12071
6.	No.of households covered by door to door collection system practicing segregation at source	12071
7.	No .of households covered for collection of User- Fees	7461
8.	Total amount collected from HHs as User-Fees(I)	384820
9.	No. of commercial establishments/private institution covered by door to door collection system	817
10.	No. of commercial establishments/ private institutions covered by door to door collection system practicing segregation at source	817
11.	No.of commercial establishments/ private institutions covered for collection of User-Fees	850
12.	Total amount collected from commercial establishment/private institutions as User Fees(II)	113170
13.	No. of Government Institutions covered by door to door collection system	163
14.	No. of Government Institutions covered by door to door collection system practicing segregation at source	114

15.	No.of Government Institutions covered for collection of User-Fees	19
16.	Total amount collected from Government Institutions as User Fees**(III)**	600
17.	Total Amount of User-Fee collected **(I+II+III)**	498590
18.	Total quantity of solid waste collected through door to door collection**(A) (in Kg) (Per month)**	52741
19.	Dry	51324
20.	Wet	1495
21.	No of public garbage sites	112
22.	Total quantity of solid waste collected from public garbage bins **(B)** **(in Kg) (Per month)**	45027
23.	Dry	42511
24.	Wet	2516
25.	Total quantity of solid waste collected from door to door collection and public garbage site**(A+B) (Per month)**	97768
26.	Dry	93835
27.	Wet	4011

I. SOLID WASTE GENERATION

Total generation of Solid Waste (Estimation) Both Dry & Wet (TPD)	9.32 TPD
Total collection of Solid Waste (TPD) – **[A]+[B]+[C]**	3.89 TPD
Existing Segregation Facilities with capacity	0
Proposed Segregation Facilities with capacity (Describe any additional work planned for improving the facilities.)	0

(A) Dry Waste:

1818

Out of the total Solid Waste collected, Quantity of Dry waste (in Kg)**(In month)**	PET	4491
	All type of Plastics	13325
	Multi Layer Plastics(MLP)	9244
	Paper/Cardboard)	14783
	Tetrapack	9329
	Glass	23574
	Metals(All type)	10776
	E-Waste	689
	Cloth	4281
	Footwear	2409
	Total (A)	93101
Quantity of dry waste sent for recycling locally		42780
Quantity of dry waste sent to mainland		0
Quantity of dry waste landfill		0

(A.1) Details of Segregation centres:

Sl No	Name /Location	Design/Installed capacity(in Kg per Day)	Facilities/machines (No of shredding, Bailing machines with individual capacity)	Capacity Utilization (in Kg per
1	SLWM Cluster Shorepoint	400	1	220
2	SLWM Mannarghat	500	1	Machine under
3	SLWM Cluster Collinpur	15	1	15
4	SLWM Cluster Wandoor	400	Bailing Machine	400
5	Chouldari SWM Cluster	400	01 Shredding Machine(not functioning), 01 Bailing machine	Data not available

(B) Wet Waste

Out of the total Solid Waste collected, Quantity of Segregated wet waste:(TPD) –[B](Per month)	9955
Quantity of wet waste sent for composting etc.	0
Quantity of wet waste sent for Biomethanation	0
Quantity of wet waste sent to landfill	
No. of Processing Facilities Available with individual Capacity (Describe the facility, attach separate sheet if required)	SLWM Cboulder
No. of Proposed Facilities with individual Capacity	0

(B) Details of wet waste processing units

S No	Name /Location/Technology	Design Capacity	Capacity utilization
1	Shorepoint	(5*5*2) cubic metre	(5*5*2) cubic metre

(C) Mixed Waste

Out of the total Solid Waste collected, Quantity of Segregated Mixed waste(TPD)–[C] ((Per month in Kg)	0
Quantity of mixed waste sent to landfills	0

- List of proposed land fills with capacity and utilization
- List of proposed land fills with capacity:

(D) Bulk Waste Generators as defined in SWM Rules-2016 (Average Waste generation rate 100kg/day)

(D.1)List of Bulk Waste generators

Sl.no	Name	Address	Waste generated per day	Composting Units/ Bio- methanation with existing capacity
Nil	Nil	Nil	Nil	Nil

II. SEWAGE GENERATION ;

(1)Estimated sewage generation (MLD)-[A]+[B]+[C] = 75684.037

(A)Sewage flowing through Sewerage System

Out of total sewage generated, Quantity of sewage flowing to sewerage system-[A]	29111.25
No. of Proposed STPs with individual capacity in MLD	

(B)Sewage flowing through Septic tank

Out of total sewage generated, Quantity of sewage treated in Septic Tank(MLD): [B]	14378.03
Quantity of Sludge generated:	
No. of FSTP and Quantity of sludge processed in FSTP:	
No. and Capacity of sludge Tanks:	

(C)Sewage flowing through Open:

Out of total sewage generated, Quantity of sewage flowing through open (MLD): [C]:

- Kitchen Garden/Farm – 0.69 MLD
- Soak Pits/Magic Pits/Leach Pits –
- Drainage Channels with Soak Pits –
- Drainage Channels without Soak Pits – 0.922 MLD

III. PLASTIC WASTE:

Quantity of Waste in Tons	During the Month
Total Dry waste segregated	54.89

1821

Total plastic waste segregated	21.44
Total non-plastic waste segregated	60.19
Amount of waste sent to mainland for recycling	0
Amount of waste used for road construction	0

(A) Information incorporated in the SWM bye laws:

Provisions to collect spot fines from violators in production, distribution, storage sale and use of banned plastic & other items	Yes, exist as per SWM Bye Laws, 2019
Penalty for littering of waste (as per SWM Bye Laws) - Actual Fine imposed during the month (in Rs.)	500
Penalty for open burning of plastics (actual fine imposed per month)	500

(B) Details of Open burning incidents:

	No of team enforcing ban of burning plastic	No of inspections conducted	No of incidents identified	Fine imposed/recovered	No of complaints received	Action taken against the violators
During the month	4	5	0	0	0	0

(C) Creating Awareness among all stakeholders:

1822

	No of awareness programs conducted	Departments/stakeholders participated	No of people participated	Number of Beach Clean-up drive
During the Month	11	48	435	3

(D) Details of Civil societies or group working with waste pickers:

No of Self Helping Groups(SHGs)	No. of people in SHGs	No. of people engaged in waste
95	615	0

(E) Enforcement of SUP ban:

	No of teams for enforcement of SUP ban	No of field inspections	No of violations observed	No of challans issued	Quantity of plastic seized (in Kg.)	Amount of fine collected (In Rs.)
During the Month	5	7	Nil	nil	Nil	Nil

12/6/24
ব্লক বিকাশ আধিকারী
Block Development Officer
জুনিয়া ব্লক, গুৱাহাটী
Junia Block, Guwahati

1823

Format for Submission of MONTHLY PROGRESS REPORT : (as per NGT Matter No. 673 of 2015 (in compliance to NGT order dated 24.09.2020)

(Report for the month of May2024)

Name of the Block :CD Block little Andaman

District : South Andaman

1.	Total population	25101
2.	No. of households	4964
3.	No. of commercial establishments/private institutions	296
4.	No. of Government Institutions	46
5.	No. of households covered by door to door collection system	2162
6.	No.of households covered by door to door collection system practicing segregation at source	1650
7.	No .of households covered for collection of User-Fees	1311
8.	Total amount collected from HHs as User-Fees(I)	70300.00
9.	No. of commercial establishments/private institution covered by door to door collection system	259
10.	No. of commercial establishments/ private institutions covered by door to door collection system practicing segregation at source	223
11.	No.of commercial establishments/ private institutions covered for collection of User-Fees	221
12.	Total amount collected from commercial establishment/private institutions as User Fees(II)	28090
13.	No. of Government Institutions covered by door to door collection system	46
14.	No. of Government Institutions covered by door to door collection system practicing segregation at source	40
15.	No.of Government Institutions covered for collection of User-Fees	2
16.	Total amount collected from Government Institutions as User Fees(III)	3600
17.	Total Amount of User-Fee collected (I+II+III)	101990
18.	Total quantity ofsolid waste collected through door to door collection(A) (in Kg) (Per month)	3740
19.	Dry	11677.8
20.	Wet	845
21.	No of public garbage sites	49
22.	Total quantity of solid waste collected from public garbage bins (B) (in Kg) (Per month)	950
23.	Dry	4850
24.	Wet	600
25.	Total quantity of solid waste collected from door to door collection and public garbage site(A+B) (Per month)	4690
26.	Dry	16027.8
27.	Wet	1445

SOLID WASTE GENERATION 1824

Total generation of Solid Waste (Estimation) Both Dry &Wet (TPD)	18322.8
Total collection of Solid Waste (TPD) -[A]+[B]+[C]	18672.8
Existing Segregation Facilities with capacity	1350Kg per Day
Proposed Segregation Facilities with capacity (Describe any additional work planned for improving the facilities.)	1600Kg

(A) Dry Waste:

Out of the total Solid Waste collected, Quantity of Dry waste (in Kg)**(In month)**	PET	315
	All type of Plastics	3062
	Multi Layer Plastics(MLP)	630 Kg
	Paper/Cardboard)	2843 Kg
	Tetrapack	399 Kg
	Glass	1795 Kg
	Metals(All type)	286 Kg
	E-Waste	12
	Cloth	102
	Footwear	35.8 Kg
	Others (Bushes,etc)	2525
	Total (A)	...12004.8...
Quantity of dry waste sent for recycling locally (Get the information from Cluster GPs)		No
Quantity of dry waste sent to mainland (Get the information from Cluster GPs)		No
Quantity of dry waste landfill (Get the information from all GPs)		2525

(A.1) Details of Segregation centres:

Sl No	Name /Location	Design/Installed capacity(in Kg per Day)	Facilities/machines (No of shredding, Bailing machines with individual capacity)	Capacity Utilization (in Kg per Day)
1.	Netaji Nagar Cluster	20 Kg	Shedding Machine – 01	20 Kg
2.	SWM Cluster Rabindra Nagar	350 Kg	Baling machine -01 Weighing Machine-01	350 Kg
3.	SLWM Cluster Rabindra Nagar		Baling Machine-01	
4.	SLWM Cluster Netaji Nagar	200 Kg	Shredding machine-01	100 Kg
5.	Rabindra Nagar	150-200 Kg	Baling Machine-01	250-300 Kg

1825

(B) Wet Waste

Out of the total Solid Waste collected, Quantity of Segregated wet waste:(TPD) –[B](Per month)	3430
Quantity of wet waste sent for composting etc.	
Quantity of wet waste sent for Biomethanation	
Quantity of wet waste sent to landfill	550
No. of Processing Facilities Available with individual Capacity (Describe the facility, attach separate sheet if required)	
No. of Proposed Facilities with individual Capacity	02 Nos

(B) Details of wet waste processing units

S. No	Name /Location/Technology	Design Capacity	Capacity utilization
1.	N/A	N/A	N/A

(C) Mixed Waste

Out of the total Solid Waste collected, Quantity of Segregated Mixed waste(TPD)–[C] ((Per month in Kg)	5100Kg
Quantity of mixed waste sent to landfills	2725Kg

- List of proposed land fills with capacity and utilization:
- List of proposed land fills with capacity:

(D) Bulk Waste Generators as defined in SWM Rules-2016 (Average Waste generation rate 100kg/day)

(D.1)List of Bulk Waste generators

Sl.no	Name	Address	Waste generated per day	Composting Units/ Bio-metharation with existing capacity
1.	ANIIDCO, Hut Bay	Hathi Dera, Hut Bay	40 Kg	
2.	Lovely Bar, Hut Bay	Hathi Dera, Hut Bay	180 Kg	

II. SEWAGE GENERATION :

(1)Estimated sewage generation (MLD)-[A]+[B]+[C] =

(A)Sewage flowing through Sewerage System

Out of total sewage generated, Quantity of sewage flowing to sewerage	473332

1826

system-[A]	
No. of Proposed STPs with individual capacity in MLD	

(B)Sewage flowing through Septic tank

Out of total sewage generated, Quantity of sewage treated in Septic Tank(MLD): [B]	49412
Quantity of Sludge generated:	
No. of FSTP and Quantity of sludge processed in FSTP:	
No. and Capacity of sludge Tanks:	

(C)Sewage flowing through Open:

Out of total sewage generated, Quantity of sewage flowing through open (MLD): [C]:

Component	Quantity of Sewage flowing (in MLD)	No. of HHs covered
Soak Pits/Magic Pits/Leach Pits		
Drainage Channels with Soak Pits		948
Drainage Channels without Soak Pits		50
Kitchen Garden/Farm		35179
Total	**[C] =**	36177

(Any additional planned works i.e. Drainage channels, Soak Pits constructions under MGNREGA or GIA for Grey Water Management may be elaborated here)

III. PLASTIC WASTE:

Quantity of Waste in Tons	During the Month
Total Dry waste segregated	4500.35
Total plastic waste segregated	2810.2
Total non-plastic waste segregated	4575.33
Amount of waste sent to mainland for recycling	-
Amount of waste used for road construction	-

(A) Information incorporated in the SWM bye laws:

Provisions to collect spot fines from violators in production, distribution, storage sale and use of banned plastic & other items	Yes, exist as per SWM Bye Laws, 2019
Penalty for littering of waste (as per SWM Bye Laws) - Actual Fine imposed during the month (in Rs.)	Rs.500 Fine

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Penalty for open burning of plastics (actual fine imposed per month)	Rs. 500 Fine

(B) Details of Open burning incidents:

	No of team enforcing ban of burning plastic	No of inspections conducted	No of incidents identified	Fine imposed/recovered	No of complaints received	Action taken against the violators
During the month	6	4				

(C) Creating Awareness among all stakeholders:

	No of awareness programs conducted	Departments/stakeholders participated	No of people participated	Number of Beach Clean-up drive Conducted
During the Month	3	15	78	3

(D) Details of Civil societies or group working with waste pickers:

No of Self Helping Groups(SHGs)	No. of people in SHGs	No. of people engaged in waste
19	190	

(E) Enforcement of SUP ban:

	No of teams for enforcement of SUP ban	No of field inspections	No of violations observed	No of challans issued	Quantity of plastic seized (in Kg.)	Amount of fine collected (In Rs.)
During the Month	3	8		3		1500/-

(F) Elaborate on the gaps, if any, with reasons and justification.

05/04/2024

Block Development Officer
CD Block, Little Andaman

Name and Signature of the Block Development Officer with Seal

1828

Points to be considered while filling up of the monthly report:

1. Nos. covered by Door to Door system at S. No. 5, 9, 13 should match with S. No. 2, 3 and 4 respectively i.e. 100% collection is to be ensured or else public garbage bins is to be ensured for HHs not collected through Door to Door system.
2. Data at S. No. 6,10,14 should match with data t S. No. 5,9,13 i.e. 100 percent practicing segregation at source, if gap in data, measures taken by the Panchayat of fine imposed needs to be appropriately mentioned.
3. Per Day Per capita solid waste generation as per National average is estimated to be 0.5 to 1 Kg in rural. In the Islands, the estimation is taken minimum as 600 gm per Household per day (Dry Waste) and 200 gm (Wet Waste).
   Date reported at S. No. 18 should therefore be in conformity to the above assumption considering the number of HHs, commercial establishments and institutions that are covered.
   Short of data in the above column, should be substantiated with remarks of concerned GP.
4. For HHs, commercial establishments and Govt. Institutions not covered through Door to Door system, sufficient number of public garbage sites/bins should be clearly shown in the report.
5. Total generation of Solid Waste (Estimation) Both Dry & Wet should be calculated as follows –
   No. of HHs x 0.600 Kg = X
6. Sewage Generation –
   55 Litre x Population x 80% = Y
   Y = A+B+C
   C – Open Drain – 80% of Y
   B – 20% of Y
   C- Zero as no Sewerage system exist in rural presently

7. Any ongoing projects, proposed projects in pipeline or planning stage to bridge the gaps may also be mentioned in the report.

1829

Submission of MONTHLY PROGRESS REPORT in the NGT Matter No. 673 of 2018 (in compliance to NGT order dated 24.09.2020)

(Report for the month of **May 2024**)

Name of the Block : Rangat

District : N & M Andaman

1.	Total population	35550
2.	No. of households	9130
3.	No. of commercial establishments/private institutions	843
4.	No. of Government Institutions	227
5.	No. of households covered by door-to-door collection system	8064
6.	No. of households covered by door-to-door collection system practicing segregation at source	6897
7.	No. of households covered for collection of User-Fees	4970
8.	Total amount collected from HHs as User-Fees(I)	248500
9.	No. of commercial establishments/private institution covered by door-to-door collection system	840
10.	No. of commercial establishments/ private institutions covered by door-to-door collection system practicing segregation at source	769
11.	No. of commercial establishments/ private institutions covered for collection of User-Fees	572
12.	Total amount collected from commercial establishment/private institutions as User Fees (II)	85800
13.	No. of Government Institutions covered by door-to-door collection system	175
14.	No. of Government Institutions covered by door-to-door collection system practicing segregation at source	163
15.	No. of Government Institutions covered for collection of User-Fees	64
16.	Total amount collected from Government Institutions as User Fees (III)	40200
17.	Total Amount of User-Fee collected (I+II+III)	374500
18.	Total quantity of **solid waste** collected through door-to-door collection(A) (in Kg) (Per month)	13105.91
19.	Dry	12226.48
20.	Wet	879.43

1830

21.	No of public garbage sites	400
22.	Total quantity of solid waste collected from public garbage bins (B) (in Kg) (Per month)	7665.92
23.	Dry	6935.92
24.	Wet	730
25.	Total quantity of solid waste collected from door-to-door collection and public garbage site(A+B) (Per month)	20771.83
26.	Dry	19162.4
27.	Wet	1609.43

(A) Dry Waste:

I. SOLID WASTE GENERATION

Total generation of Solid Waste (Estimation) Both Dry & Wet (TPD)	5.478
Total collection of Solid Waste (TPD) – **[A]+[B]+[C]**	0.71018
Existing Segregation Facilities with capacity	0.5
Proposed Segregation Facilities with capacity (Describe any additional work planned for improving the facilities.)	NA

Out of the total Solid Waste collected, Quantity of Dry waste (in Kg) **(In month)**	PET	587.1
	All type of Plastics	1955.4
	Multi-Layer Plastics (MLP)	2106.8
	Paper/Cardboard)	4436.2
	Tetra-pack	777.7
	Glass	6125.9
	Metals (All type)	1183.4
	E-Waste	57.1
	Cloth	844.3
	Footwear	686.3
	Total (A)	18760.2
Quantity of dry waste sent for recycling locally (Get the information from Cluster GPs)		0
Quantity of dry waste sent to mainland		2504.3

1831

(Get the information from Cluster GPs)	
Quantity of dry waste landfill (Get the information from all GPs)	0

(A.1) Details of Segregation centers:

Sl No	Name /Location	Design/Installed capacity (in Kg per Day)	Facilities/machines (No of shredding, Bailing machines with individual capacity)	Capacity Utilization (in Kg per Day)
	NA	NA	NA	NA

(B) Wet Waste

Out of the total Solid Waste collected, Quantity of Segregated wet waste:(TPD) – [B] **(Per month)**	1609.43
Quantity of wet waste sent for composting etc.	NA
Quantity of wet waste sent for Bio-Methanation	NA
Quantity of wet waste sent to landfill	NA
No. of Processing Facilities Available with individual Capacity (Describe the facility, attach separate sheet if required)	NA
No. of Proposed Facilities with individual Capacity	NA

(B.1) Details of wet waste processing units.

S. No	Name /Location/Technology	Design Capacity	Capacity utilization
	NA	NA	NA

(C) Mixed Waste

Out of the total Solid Waste collected, Quantity of Segregated Mixed waste (TPD)–[C] **((Per month in Kg)**	NA
Quantity of mixed waste sent to landfills	NA

- List of proposed land fills with capacity and utilization:
- List of proposed land fills with capacity:

(D) Bulk Waste Generators as defined in SWM Rules-2016 (Average Waste generation rate 100kg/day)

(D.1) List of Bulk Waste generators

Sl:no	Name	Address	Waste generated per day	Composting Units/ Bio-methanation with existing capacity
	NA	NA	NA	NA

II. SEWAGE GENERATION:

(1) Estimated sewage generation (MLD)-[A]+[B]+[C] = 1.5642 MLD

(A)Sewage flowing through Sewerage System

Out of total sewage generated, Quantity of sewage flowing to sewerage system-[A]	NA
No. of Proposed STPs with individual capacity in MLD	NA

(B)Sewage flowing through Septic tank

Out of total sewage generated, Quantity of sewage treated in Septic Tank (MLD): [B]	0.31284 MLD
Quantity of Sludge generated:	NA
No. of FSTP and Quantity of sludge processed in FSTP:	NA
No. and Capacity of sludge Tanks:	NA

(C)Sewage flowing through Open:

Out of total sewage generated, Quantity of sewage flowing through open (MLD): [C]: **1.25136 MLD**

Component	Quantity of Sewage flowing (in MLD)	No. of HHs covered
Soak Pits/Magic Pits/Leach Pits	NA	NA
Drainage Channels with Soak Pits	NA	NA
Drainage Channels without Soak Pits	NA	NA
Kitchen Garden/Farm	NA	NA
Total	**[C] =**	NA

(Any additional planned works i.e. Drainage channels, Soak Pits constructions under MGNREGA or GIA for Grey Water Management may be elaborated here)

III. PLASTIC WASTE:

Quantity of Waste in Tons	During the Month
Total Dry waste segregated	18.7602
Total plastic waste segregated	4.6493
Total non-plastic waste segregated	14.1109
Amount of waste sent to mainland for recycling	2504.3
Amount of waste used for road construction	NA

(A) Information incorporated in the SWM bye laws:

Provisions to collect spot fines from violators in production, distribution, storage sale and use of banned plastic & other items	Yes, exist as per SWM Bye Laws, 2019
Penalty for littering of waste (as per SWM Bye Laws) - Actual Fine imposed during the month (in Rs.)	NA
Penalty for open burning of plastics (actual fine imposed per month)	NA

1834

(B) Details of Open burning incidents:

	No of team enforcing ban of burning plastic	No of inspections conducted	No of incidents identified	Fine imposed/recovered	No of complaints received	Action taken against the violators
During the month	NA	NA	NA	NA	NA	NA

(C) Creating Awareness among all stakeholders:

	No of awareness programs conducted	Departments/stakeholders participated	No of people participated	Number of Beach Clean-up drive Conducted
During the Month	NA	NA	NA	NA

(D) Details of Civil societies or group working with waste pickers:

No of Self Helping Groups (SHGs)	No. of people in SHGs	No. of people engaged in waste
NA	NA	NA
NA	NA	NA

1835

(E) Enforcement of SUP ban:

	No of teams for enforcement of SUP ban	No of field inspections	No of violations observed	No of challans issued	Quantity of plastic seized (in Kg.)	Amount of fine collected (In Rs.)
During the Month	1	NA	NA	NA	NA	NA

(F) Elaborate on the gaps, if any, with reasons and justification.

The Panchayats are making regular efforts for collection of user fee from all the HH and all the HH have been visited regularly for collection of user fee but the people are not co-operating for paying user fees.

LALITA TIGGA
Block Development Officer
CD-Block, Rangat
Middle Andaman

18/06

Name and Signature of the Block Development Officer with Seal

1836

Format for Submission of MONTHLY PROGRESS REPORT in the NGT Matter No. 673 of 2018 (in compliance to NGT order dated 24.09.2020)

(Report for the month of **May 2024**)

Name of the Block : BDO, CD Block, Mayabunder
District : N&M Andaman District

1.	Total population	26327
2.	No. of households	6520
3.	No. of commercial establishments/private institutions	527
4.	No. of Government Institutions	122
5.	No. of households covered by door to door collection system	2483
6.	No. of households covered by door to door collection system practicing segregation at source	1663
7.	No .of households covered for collection of User-Fees	1329
8.	Total amount collected from HHs as User-Fees**(I)**	57750
9.	No. of commercial establishments/private institution covered by door to door collection system	473
10.	No. of commercial establishments/ private institutions covered by door to door collection system practicing segregation at source	249
11.	No.of commercial establishments/ private institutions covered for collection of User-Fees	338
12.	Total amount collected from commercial establishment/private institutions as User Fees**(II)**	45010
13.	No. of Government Institutions covered by door to door collection system	58
14.	No. of Government Institutions covered by door to door collection system practicing segregation at source	55
15.	No. of Government Institutions covered for collection of User-Fees	30
16.	Total amount collected from Government Institutions as User Fees**(III)**	1565
17.	Total Amount of User-Fee collected **(I+II+III)**	104325
18.	Total quantity of solid waste collected through door to door collection**(A) (in Kg) (Per month)**	24233.5
19.	Dry	23523.5
20.	Wet	710
21.	No of public garbage sites	196
22.	Total quantity of solid waste collected from public garbage bins **(B) (in Kg) (Per month)**	29538.5
23.	Dry	29268.5
24.	Wet	270

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25.	Total quantity of solid waste collected from door to door collection and public garbage site(A+B) (Per month)	53772
26	Dry	52792
27.	Wet	980

I. SOLID WASTE GENERATION

Total generation of Solid Waste (Estimation) Both Dry & Wet (TPD)	1.79
Total collection of Solid Waste (TPD) – [A]+[B]+[C]	1.75
Existing Segregation Facilities with capacity	1. SLWM Karmatang 2. SLWM Pahalgaon 3. SLWM Basantipur
Proposed Segregation Facilities with capacity (Describe any additional work planned for improving the facilities.)	1. Proposed in MNREGA to develop the site for segregation under GP Rampur 2. 200 sq.m land area proposed for segregation purpose under GP Basantipur 3. Site for segregation shed is proposed and the land allotment is under process under GP Harinagar

(A) Dry Waste:

Out of the total Solid Waste collected, Quantity of Dry waste (in Kg)(In month)	PET	1011
	All type of Plastics	12300
	Multi Layer Plastics(MLP)	10240
	Paper/Cardboard)	10968
	Tetrapack	485
	Glass	13987
	Metals(All type)	1041
	E-Waste	692.5
	Cloth	1066.5
	Footwear	1011
	Total (A)	52792
Quantity of dry waste sent for recycling locally (Get the information from Cluster GPs)		-
Quantity of dry waste sent to mainland (Get the information from Cluster GPs)		-
Quantity of dry waste landfill (Get the information from all GPs)		-

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1838

(A.1) Details of Segregation centres:

Sl No	Name /Location	Design/Installed capacity(in Kg per Day)	Facilities/machines (No of shredding, Bailing machines with individual capacity)	Capacity Utilization (in Kg per Day)
1.	SLWM cluster, Rampur at Karmatang	500 kg	1 No. Bailing Machine	200 kg
2.	SLWM cluster, Pahalgaon at Tugapur- 7	500 kg	-	140 kg
3.	SLWM cluster, Basantipur at Govindapur		1 No. Bailing Machine (Under repair)	
4.	SLWM cluster, Shivapuram	500 kg	1 No. Bailing Machine (0.5 TPD)	60 kg

(B) Wet Waste

Out of the total Solid Waste collected, Quantity of Segregated wet waste:(TPD) –[B]**(Per month)**	0.034
Quantity of wet waste sent for composting etc.	**0.034**
Quantity of wet waste sent for Biomethanation	-
Quantity of wet waste sent to landfill	-
No. of Processing Facilities Available with individual Capacity (Describe the facility, attach separate sheet if required)	-
No. of Proposed Facilities with individual Capacity	-

(B) Details of wet waste processing units

S. No	Name /Location/Technology	Design Capacity	Capacity utilization
-	-	-	-

(C) Mixed Waste

Out of the total Solid Waste collected, Quantity of Segregated Mixed waste(TPD)–[C] **((Per month in Kg)**	-
Quantity of mixed waste sent to landfills	-

- List of proposed land fills with capacity and utilization:
- List of proposed land fills with capacity:

(D) Bulk Waste Generators as defined in SWM Rules-2016 (Average Waste generation rate 100kg/day)

(D.1)List of Bulk Waste generators

Sl.no	Name	Address	Waste generated per day	Composting Units/ Bio-methanation with existing capacity
-	-	-	-	-

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II. SEWAGE GENERATION :

(1)Estimated sewage generation (MLD)-[A]+[B]+[C] = 0.16
(A)Sewage flowing through Sewerage System

Out of total sewage generated, Quantity of sewage flowing to sewerage system-[A]	Nil
No. of Proposed STPs with individual capacity in MLD	-

(B)Sewage flowing through Septic tank

Out of total sewage generated, Quantity of sewage treated in Septic Tank(MLD): [B]	0.032
Quantity of Sludge generated:	-
No. of FSTP and Quantity of sludge processed in FSTP:	-
No. and Capacity of sludge Tanks:	-

(C)Sewage flowing through Open:

Out of total sewage generated, Quantity of sewage flowing through open (MLD): [C]:

Component	Quantity of Sewage flowing (in MLD)	No. of HHs covered
Soak Pits/Magic Pits/Leach Pits	0.005	11
Drainage Channels with Soak Pits	0.006	0
Drainage Channels without Soak Pits	0.007	325
Kitchen Garden/Farm	0.11	1700
Total	**[C] = 0.128**	2036

(Any additional planned works i.e. Drainage channels, Soak Pits constructions under MGNREGA or GIA for Grey Water Management may be elaborated here)

III. PLASTIC WASTE:

Quantity of Waste in Tons	During the Month
Total Dry waste segregated	28.86
Total plastic waste segregated	7.165
Total non-plastic waste segregated	21.775
Amount of waste sent to mainland for recycling	-
Amount of waste used for road construction	-

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1840

(A) Information incorporated in the SWM bye laws:

Provisions to collect spot fines from violators in production, distribution, storage sale and use of banned plastic & other items	Yes, exist as per SWM Bye Laws, 2019
Penalty for littering of waste (as per SWM Bye Laws) - Actual Fine imposed during the month (in Rs.)	-
Penalty for open burning of plastics (actual fine imposed per month)	-

(B) Details of Open burning incidents:

	No of team enforcing ban of burning plastic	No of inspections conducted	No of incidents identified	Fine imposed/recovered	No of complaints received	Action taken against the violators
During the month	-	3	-	-	-	-

(C) Creating Awareness among all stakeholders:

	No of awareness programs conducted	Departments/stakeholders participated	No of people participated	Number of Beach Clean-up drive Conducted
During the Month	-	-	-	-

(D) Details of Civil societies or group working with waste pickers:

No of Self Helping Groups(SHGs)	No. of people in SHGs	No. of people engaged in waste
-	-	-

(E) Enforcement of SUP ban:

	No of teams for enforcement of SUP ban	No of field inspections	No of violations observed	No of challans issued	Quantity of plastic seized (in Kg.)	Amount of fine collected (In Rs.)
During the Month	4	11	-	-	-	-

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1841

(F) Elaborate on the gaps, if any, with reasons and justification.

Less households are covered under door to door collection system due to inadequate road connectivity, dispersed settlement of households, insufficient number of sanitation staff. Further, many villagers are unwilling to pay the user fee. Also, many commercial establishments are either closed most of the time or their owners are out of station. So, the GPs are unable to collect user fee from these establishments. Government institutions are also refusing to pay user fee stating that they have not received any direction from their respective department for paying user fee to the GP.

14/6/24

खण्ड विकास अधिकारी
Block Development Officer
आनुदाधिक विकास खण्ड, मायाबंदर
CD Block, Mayabunder

Name and Signature of the Block Development Officer with Seal

Points to be considered while filling up of the monthly report:

1. Nos. covered by Door to Door system at S. No. 5, 9, 13 should match with S. No. 2, 3 and 4 respectively i.e. 100% collection is to be ensured or else public garbage bins is to be ensured for HHs not collected through Door to Door system.
2. Data at S. No. 6,10,14 should match with data t S. No. 5,9,13 i.e. 100 percent practicing segregation at source, if gap in data, measures taken by the Panchayat of fine imposed needs to be appropriately mentioned.
3. Per Day Per capita solid waste generation as per National average is estimated to be 0.5 to 1 Kg in rural. In the Islands, the estimation is taken minimum as 600 gm per Household per day (Dry Waste) and 200 gm (Wet Waste).
   Date reported at S. No. 18 should therefore be in conformity to the above assumption considering the number of HHs, commercial establishments and institutions that are covered.
   Short of data in the above column, should be substantiated with remarks of concerned GP.

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1842

4. For HHs, commercial establishments and Govt. Institutions not covered through Door to Door system, sufficient number of public garbage sites/bins should be clearly shown in the report.
5. Total generation of Solid Waste (Estimation) Both Dry & Wet should be calculated as follows –
   No. of HHs x 0.600 Kg = X
6. Sewage Generation –
   55 Litre x Population x 80% = Y
   Y = A+B+C
   C – Open Drain – 80% of Y
   B – 20% of Y
   C- Zero as no Sewerage system exist in rural presently
7. Any ongoing projects, proposed projects in pipeline or planning stage to bridge the gaps may also be mentioned in the report.

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No.6-75/NGT/NAB/DP/2024-25/ 302

खण्ड विकास अधिकारी का कार्यालय

1843

OFFICE OF THE BLOCK DEVELOPMENT OFFICER

सामूदायिक विकासखण्ड, डिगलीपुर, उत्तरी अण्डमान

C.D. BLOCK, DIGLIPUR, NORTH ANDAMAN

****

Diglipur dated the 06th June, 2024

To

The Director
Directorate of RD, PRIs &ULBs
A&N Administration, Marine Hill
Port Blair

Sub: - Submission of Monthly Progress Report on Solid waste Management under NGT Matter No .673 of 2018 for the Month of May 2024 reg.

Sir,

Please find enclosed herewith the Monthly Progress Report on Solid waste Management under NGT Matter No. 673 of 2018 (in compliance to NGT Order dated 24.09.2020) for the Month of May, 2024 in respect of C.D. Block Diglipur along with the copy of Monthly report received from following Gram Panchayat for further necessary action at your end please.

Sl No.	Name of Gram Panchayat	Remarks
1.	Diglipur	Received
2.	Subashgram	Received
3.	R.K. Gram	Received
4.	Shibpur	Received
5.	Gandhinagar	Received
6.	Keralapuram	Received
7.	Laxmipur	Received
8.	Madhupur	Received
9.	Radhanagar	Received
10.	Sitanagar	Received
11.	Nabagram	Received
12.	Ramnagar	Received
13.	Kalighat	Received
14.	Paschimsagar	Received
15.	Kishorinagar	Received

Yours faithfully

6-6-24

खण्ड विकास अधिकारी
Block Development Officer
सामूदायिक विकासखण्ड, डिगलीपुर
C.D. Block, Diglipur

Copy to:-

1. PA to DC, N&MA, for information of the Deputy Commissioner Mayabunder please.
2. The Assistant Commissioner, Diglipur for kind information please.

6.6.24

खण्ड विकास अधिकारी
Block Development Officer
सामूदायिक विकासखण्ड, डिगलीपुर
C.D. Block, Diglipur

1844

Format for Submission of MONTHLY PROGRESS REPORT in the NGT Matter No. 673 of 2018 (in compliance to NGT order dated 24.09.2020)		
(Report for the Month of May 2024)		
Name of the Block:**Diglipur**		
District: **North & Middle Andaman**		
1.	Total population	40626
2.	No. of households	10658
3.	No. of commercial establishments/private institutions	909
4.	No. of Government Institutions	290
5.	No. of households covered by door to door collection system	9296
6.	No.of households covered by door to door collection system practicing segregation at source	8848
7.	No .of households covered for collection of User-Fees	5946
8.	Total amount collected from HHs as User-Fees**(I)**	384800
9.	No. of commercial establishments/private institution covered by door to door collection system	903
10.	No. of commercial establishments/ private institutions covered by door to door collection system practicing segregation at source	834
11.	No.of commercial establishments/ private institutions covered for collection of User-Fees	795
12.	Total amount collected from commercial establishment/private institutions as User Fees**(II)**	157340
13.	No. of Government Institutions covered by door to door collection system	261
14.	No. of Government Institutions covered by door to door collection system practicing segregation at source	210
15.	No.of Government Institutions covered for collection of User-Fees	36
16.	Total amount collected from Government Institutions as User Fees**(III)**	16800
17.	Total Amount of User-Fee collected **(I+II+III)**	**587140**
18.	Total quantity of waste collected through door to door collection**(A) (in Kg) (Per month)**	**32280**
19.	Dry	32206
20.	Wet	74
21.	No of public garbage sites	876

1845

22.	Total quantity of waste collected from public garbage bins (B) (in Kg) (Per month)	119392.5
23.	Dry	110221.5
24.	Wet	9171
25.	Total quantity of waste collected from door to door collection and public garbage site(A+B) (Per month)	151672.5
26.	Dry	142427.5
27.	Wet	9245

I. SOLID WASTE GENERATION

1	Total generation of Solid Waste (Estimation) Both Dry & Waste	6394.8
2	Total collection of Solid Waste (TPD) -[A]+[B]+[C]	142.735
3	Existing Segregation Facilities with capacity	2000
4	Proposed Segregation Facilities with capacity	3

(A) Dry Waste:

1	Out of the total Solid Waste collected, Quantity of Dry waste (in Kg)(In month)	PET	2627
		All type of Plastics	12134
		Multi Layer Plastics(MLP)	4650
		Paper/Cardboard)	37536
		Tetrapack	19633.5
		Glass	52265
		Metals(All type)	1835
		E-Waste	1671
		Cloth	7186
		Footwear	2890
		Total (A)	142427.5
2	Quantity of dry waste sent for recycling locally		298
3	Quantity of dry waste sent to mainland		4403
4	Quantity of dry waste landfill		0

(A.1) Details of Segregation centres:

Sl No	Name /Location	Design/Installed capacity(in Kg per Day)	Facilities/ machines (No of shredding, Bailing machines with individual capacity)	Capacity Utilization (in Kg per Day)
1	Radhanagar Cluster	500	(1.5) 01	100
2	Gandhinagar (Radhanagar Cluster)	500	(1.5) 01	0
3	Diglipur (Madhupur Cluster)	0	0	0
4	Madhupur Cluster	500	1	300
5	Ramnagar (Nabagram Cluster)	0	1	0
6	Sitanagar (Madhupur Cluster)	0	0	0
7	Laxmipur	0	0	0
8	Nabagram Cluster	500	1 (2 toncapt.)	0
9	Kalighat (Nabagram Cluster)	500	1 (2 toncapt.	0
10	R.K. Gram Madhupur Cluster	0	0	0
11	Keralapuram	500	1	400
12	Kishorinagar Cluster	400	1.5 (ton)	0
13	Paschimsagar (Kishorinagar Cluster)	0	0	0
14	Shibpur	0	0	0
15	Subashgram(Madhupur Cluster)	0	(2 t) 1	0

	(B) Wet Waste	
1	Out of the total Solid Waste collected, Quantity of Segregated wet waste:(TPD) -[B](**Per month**)	0.3075
2	Quantity of wet waste sent for composting etc.	310.29
3	Quantity of wet waste sent for Biomethanation	0
4	Quantity of wet waste sent to landfill	0
5	No. of Processing Facilities Available with individual Capacity	4 Nos. compost pit with 3cbm capacity per tank
6	No. of Proposed Facilities with individual Capacity (sqm)	100

1847

(B) Detailes of wet waste processing units			
Sl. No.	Name	Design capacity	Capacity utilization
1	Radhanagar Cluster	12 cbm compose pit (3 Cbm per tanks total 4	0
2	Gandhinagar (Radhanagar Cluster)	13 cbm compose pit (3 Cbm per tanks total 4	1%
3	Diglipur (Madhupur Cluster)	0	0
4	Madhupru Cluster	10 cbm compose pit (3 Cbm per tanks	0
5	Ramnagar (Nabagram Cluster)	2 cbm compose pit (3 Cbm per tanks	0
6	Sitanagar (Madhupur Cluster)	0	0
7	Laxmipur	0	0
8	Nabagram Cluster	2 cbm compose pit (3 Cbm per tanks	0
9	Kalighat (Nabagram Cluster)	2 cbm compose pit (3 Cbm per tanks	0
10	R.K. Gram Madhupur Cluster	0	0
11	Keralapuram	4 Nos. CC compose pit with 02 cbm	20%
12	Kishorinagar Cluster	0	0
13	Paschimsagar (Kishorinagar Cluster)	0	0
14	Shibpur	0	0
15	Subashgram(Madhupur Cluster)	12 Nos. 2 cbm vermi compose tank	0

(C) Mixed Waste		
1	Out of the total Solid Waste collected, Quantity of Segregated Mixed waste(TPD)-[C] ((Per month in Kg)	0
2	Quantity of mixed waste sent to landfills	0

- List of proposed land fills with capacity and utilization:
- List of proposed land fills with capacity:

(D) Bulk Waste Generators as defined in SWM Rules-2016 (Average Waste generation rate 100kg/day)				
(D.1)List of Bulk Waste generators				
Sl.no	Name	Address	Waste generated per day	Composting Units/ Bio-methanation with existing capacity

1848

1	Vegitable Market	Subashgram	1000 KG	0

II. SEWAGE GENERATION :

(1)Estimated sewage generation (MLD)-[A]+[B]+[C] =1787544

(A)Sewage flowing through Sewerage System

1	Out of total sewage generated, Quantity of sewage flowing to sewerage system-[A]	0
2	No. of Proposed STPs with individual capacity in MLD	0

(B)Sewage flowing through Septic tank

1	Out of total sewage generated, Quantity of sewage treated in Septic Tank(MLD): [B]	357508.8
2	Quantity of Sludge generated:	0
3	No. of FSTP and Quantity of sludge processed in FSTP:	0
4	No. and Capacity of sludge Tanks:	0

(C)Sewage flowing through Open drains:

Out of total sewage generated, Quantity of sewage flowing to open drains (MLD): [C]:

1	Kitchen Garden/Farm	1269055.148
2	Soak Pit/Magic Pits/Leach Pits	92316.052
3	Drainage Channels with Soak Pits	0
4	Drainage Channels without Soak Pits	68664

III. PLASTIC WASTE:

		During the Month
1	Quantity of Waste in Tons	
2	Total Dry waste segregated	129.272
3	Total plastic waste segregated	16.134
4	Total non-plastic waste segregated	113.682
5	Amount of waste sent to mainland for recycling	3.659
6	Amount of waste used for road construction	0

(A) Information incorporated in the SWM bye laws:

1849

1	Provisions to collect spot fines from violators in production, distribution, storage sale and use of banned plastic & other items	Yes exist as per SWM Bye laws 2019.
2	Penalty for littering of waste	0
3	Penalty for open burning of plastics	0

(B) Details of Open burning incidents:

	No of team enforcing ban of burning plastic	No of inspections conducted	No of incidents identified	Fine imposed/recovered	No of complaints received	Action taken against the violators
During the month	8	2	0	0	0	0

(C) Creating Awareness among all stakeholders:

	No of awareness programs conducted	Departments/stakeholders participated	No of people participated	Number of Beach Clean-up drive
During the Month	6	0	124	No Beach under the jusdictions in GP

(D) Details of Civil societies or group working with waste pickers:

No of Self Helping Groups(SHGs)	No. of people in SHGs	No. of people engaged in waste
0	0	0

(E) Enforcement of SUP ban:

	No of teams for enforcement of SUP ban	No of field inspections	No of violations observed	No of challans issued	Quantity of plastic seized (in Kg.)	Amount of fine collected (In Rs.)
During the Month	10	11	0	0	0	0

Note:- For Gap kindly refer report of concerned Gram Panchayat

6.6.24

Block Development Officer
खण्ड विकास अधिकारी, हिसोला

1850

Format for Submission of MONTHLY PROGRESS REPORT in the NGT Matter No. [illegible] of 2018 (in compliance to NGT order dated 24.09.2020)

(Report for the month of **May 2024**)

Name of the Block : Campbell Bay

District : Nicobar

1.	Total population	25624
2.	No. of households	1765
3.	No. of commercial establishments/private institutions	146
4.	No. of Government Institutions	53
5.	No. of households covered by door to door collection system	2215
6.	No. of households covered by door to door collection system practicing segregation at source	2215
7.	No .of households covered for collection of User-Fees	588*
8.	Total amount collected from HHs as User-Fees(I)	Rs. 27080
9.	No. of commercial establishments/private institution covered by door to door collection system	72
10.	No. of commercial establishments/ private institutions covered by door to door collection system practicing segregation at source	72
11.	No. of commercial establishments/ private institutions covered for collection of User-Fees	25*
12.	Total amount collected from commercial establishment/private institutions as User Fees(II)	Rs.8450
13.	No. of Government Institutions covered by door to door collection system	22
14.	No. of Government Institutions covered by door to door collection system practicing segregation at source	11*
15.	No. of Government Institutions covered for collection of User-Fees	01
16.	Total amount collected from Government Institutions as User Fees(III)	0
17.	Total Amount of User-Fee collected **(I+II+III)**	Rs.35530
18.	Total quantity of solid waste collected through door to door collection**(A) (in Kg) (Per month)**	
	Dry	1822 Kg
	Wet	0
19.	No of public garbage sites	25
20.	Total quantity of solid waste collected from public garbage bins **(B) (in Kg) (Per month)**	0
	Dry	481
	Wet	0
21.	Total quantity of solid waste collected from door to door collection and public garbage site**(A+B) (Per month)**	
	Dry	2303 Kg
	Wet	0

BLOCK DEVELOPMENT OFFICER
C.D. Block, CAMPBELL BAY

I. SOLID WASTE GENERATION

1851

Total generation of Solid Waste (Estimation) Both Dry & Wet (TPD)	1.0590 TPD
Total collection of Solid Waste (TPD) – **[A]+[B]+[C]**	0.075 TPD
Existing Segregation Facilities with capacity	SWM Cluster at Vijay Nagar under Laxmi Nagar GP
Proposed Segregation Facilities with capacity (Describe any additional work planned for improving the facilities.)	Proposal for set-apart of land has been sent to the DC Nicobar, for segregation facility under Govind Nagar GP and Campbell Bay GP

(A) Dry Waste:

Out of the total Solid Waste collected, Quantity of Dry waste **(in Kg)(In month)**	PET	0
	All type of Plastics	380
	Multi-Layer Plastics (MLP)	473
	Paper/Cardboard)	165
	Tetra pack	54
	Glass	737
	Metals(All type)	156
	E-Waste	0
	Cloth	208
	Footwear	130
	Total (A)	**2303**
Quantity of dry waste sent for recycling locally		NIL
Quantity of dry waste sent to mainland		NIL
Quantity of dry waste landfill		NIL

(A.1) Details of Segregation centers:

Sl. No	Name /Location	Design/Installed capacity (in Kg per Day)	Facilities/machines (No of shredding, Bailing machines with individual capacity)	Capacity Utilization (in Kg per Day)
1	SWM Cluster at Vijay Nagar under Laxmi Nagar GP(Segregation is done at Vijay Nagar SWM Cluster)	50Kg/Day	1No. Bailing Machine	50 Kg/Day
2	Primary Segregation center at Ward no. 4 under Campbell bay GP, then after sent to SWM Cluster at Vijay Nagar			

BLOCK [illegible] SLOT [illegible] OFFICER
[illegible] BLOCK, [illegible]

1852

3.	Temporary segregation station under Govind Nagar GP, then after sent to SWM Cluster at Vijay Nagar.			

(B) Wet Waste

Out of the total Solid Waste collected, Quantity of Segregated wet waste (TPD) –[B] **(Per month)**	NIL
Quantity of wet waste sent for composting etc.	NIL
Quantity of wet waste sent for Biomethanation	NIL
Quantity of wet waste sent to landfill	NIL
No. of Processing Facilities Available with individual Capacity (Describe the facility, attach separate sheet if required)	NIL
No. of Proposed Facilities with individual Capacity	NIL

(B) Details of wet waste processing units

Sl. No	Name /Location/Technology	Design Capacity	Capacityutilization
	NIL	NIL	NIL

(C) Mixed Waste

Out of the total Solid Waste collected, Quantity of Segregated Mixed waste(TPD)–[C] **(Per month in Kg)**	NIL
Quantity of mixed waste sent to landfills	NIL

- List of proposed land fills with capacity and utilization:
- List of proposed land fills with capacity:

(D) Bulk Waste Generators as defined in SWM Rules-2016 (Average Waste generation rate 100kg/day)

(D.1)List of Bulk Waste generators

Sl.no.	Name	Address	Waste generated per day	Composting Units/ Bio-methanation with existing capacity
-	-	-	-	-

I. SEWAGE GENERATION :

(1)Estimated sewage generation (MLD)-[A] + [B] +[C] = 37.581 MLD

(A)Sewage flowing through Sewerage System

Out of total sewage generated, Quantity of sewage flowing to sewerage system-[A]	NIL
No. of Proposed STPs with individual capacity in MLD	NIL

BLOCK DEVELOPMENT OFFICER
C.D. BLOCK, CAMPBELL BAY

1853

(B)Sewage flowing through Septic tank:

Out of total sewage generated, Quantity of sewage treated in Septic Tank(MLD): [B]	7.516 MLD
Quantity of Sludge generated:	NIL
No. of FSTP and Quantity of sludge processed in FSTP:	NIL
No. and Capacity of sludge Tanks:	NIL

(C)Sewage flowing through Open:

Out of total sewage generated, Quantity of sewage flowing through open (MLD): [C]: **30.064 MLD**

Component	Quantity of Sewage flowing (in MLD)	No. of HHs covered
Soak Pits/Magic Pits/Leach Pits	NIL	NIL
Drainage Channels with Soak Pits	NIL	NIL
Drainage Channels without Soak Pits	24.052 MLD	1765
Kitchen Garden/Farm	6.012 MLD	
Total	**30.064 MLD**	**1765**

(Any additional planned works i.e. Drainage channels, Soak Pits constructions under MGNREGA or SBA for Grey Water Management may be elaborated here)

II. PLASTIC WASTE:

Quantity of Waste in Tons	During the Month
Total Dry waste segregated	2.303 Tons
Total plastic waste segregated	0.850 Tons
Total non-plastic waste segregated	1.450 Tons
Amount of waste sent to mainland for recycling	NIL
Amount of waste used for road construction	NIL

(A) Information incorporated in the SWM bye laws:

Provisions to collect spot fines from violators in production, distribution, storage sale and use of banned plastic & other items	Yes, exist as per SWM Bye Laws, 2019
Penalty for littering of waste (as per SWM Bye Laws) - Actual Fine imposed during the month (in Rs.)	0
Penalty for open burning of plastics (actual fine imposed per month)	0

(B) Details of Open burning incidents:

	No of team enforcing ban of burning plastic	No of inspections conducted	No of incidents identified	Fine imposed/ recovered	No of complaints received	Action taken against the violators

BLOCK DEVELOPMENT OFFICER
C.D. BLOCK, CAMPBELL BAY

1854

During the month	NIL	NIL	NIL	NIL	NIL	NIL

(C) Creating Awareness among all stakeholders:

	No of awareness programs conducted	Departments / stakeholders participated	No of people participated	Number of Beach Clean-up drive Conducted
During the Month	5	6	165	5

(D) Details of Civil societies or group working with waste pickers:

No of Self Helping Groups(SHGs)	No. of people in SHGs	No. of people engaged in waste
17	170	10

(E) Enforcement of SUP ban:

	No of teams for enforcement of SUP ban	No of field inspections	No of violations observed	No of challans issued	Quantity of plastic seized (in Kg.)	Amount of fine collected (In Rs.)
During the Month	0	0	0	0	0	0

(F) Elaborate on the gaps, if any, with reasons and justification.

1*. User fee for every HH couldn't collected as many HH are out of station and due to other reason.

2*. User fee could not collect as the shop owners are out of station and due to other reason.

3*. Government institutions are paying the user fee on a quarterly basis.

07/6/24

Block Development Officer
CD Block, Campbell Bay

1855

Name of the Firm : CM SCRAP TRADERS **Format for submission of report by Recycler** **Month May 2024**

Type of waste collected (Mention Quantity in Kg)																								
S. No	Date	Name of the Gram Panchayat / Cluster from where collected	Plastic	Non Recyclable plastic / MLP	Metal	E- Waste	Expired Medicins	Glass	Paper / Cardboard	Cloth	Marine Litter / Fishing Net	Foot wear	Tetra Packs	Waste Thermacol(Polys	Aluminium	Tin	Lead	Brass	Copper	Copper with PVC Wire	Iron	Any other	Amount paid to the GP/ Cluster	Whether Amount Paid to the GPs (Yes / No)	If Yes, th payment details (Cheque Ref. No. RTGS/NE T Etv)
1	04-05-24	Chouldari	909	2300	-	-	53	-	1147	-	-	-	268	-	92	551	-	-	-	-	-	-	**19,690/-**		
2	09-05-24	Chouldari	1026	92	-	-	-	-	3985	-	-	-	135	-	-	550	-	-	-	-	-	-	**17,075/-**		
3	22-05-24	Chouldari	1635	990	-	-	-	-	1714	-	-	-	163	40	53	389	-	-	-	-	-	-	**19,149/-**		
Processing of waste		Total	3570	3382	-	-	53	-	6846	-	-	-	566	40	145	1490	-	-	-	-	-	-	**55,914/-**		
		Recyling	3570				53		6846				566	40	145	1490									
		Waste to Roads		120																					
Balance		Cop / inc increation																							
		Balance Waste available with the Firm Stocked in A&N		3262																					



1856

Name of the Firm -			Greenworms Eco Solutions LLP									Month -			May											
			Type of Waste collected (Mention Quantity in Kg)																							
S. No.	Date	Name of the Gram Panchayat/ Cluster from where collected	Plastic	Paper/cardboard	Non-recyclable Plastic/MLP	Aluminium	Tin	Cloth	Glass	Tetrapacks	Footwear	Metal	Marine Litter/Fishing Net	Waste Thermocol (Polystyrene)	E-Waste	Expired Medicines	Lead	Brass	Copper	Copper with PVC Wire	Iron	Any Other (Please Specify)	Amount to be Paid to the GP (INR)	Amount Paid (Yes/No)	If Yes, then Payment Details (NEFT)
1	17/05/2024	Kadamtala	220.6	5,154.00	165.50																					
2	04/05/2024	Radhanagar	186.00	588.00																						
3	04/05/2024	Madhupur	1346	1455																						
4	12/05/2024	Shivapuram	4789	1266	665																					
5	27/05/2024	Bakultala	529	1715	2676	121.2	340.5	1166.5		316.5	509			30.5												
6	05/05/2024	Bakultala	171.5	2739.4	2332		360.5	1413.2		1046.3																
Total			7242.1	12917.4	5838.5	121.2	701	2579.7		1362.8	509			30.5												
Processing of Waste		Recycling																								
		W2E Plant																								
		Waste to roads																								
		Cop / incineration																								
Balance		Balance Waste available with the Firm stocked in A&N																								



1857

F. No.P-11046/4/2023-SBM (Gramin).Sec/RD/ 1451

अण्डमान तथा निकोबार प्रशासन
ANDAMAN & NICOBAR ADMINISTRATION
ग्रामीण विकास, पंचायती राज संस्थान एवं शहरी स्थानीय निकाय निदेशालय
DIRECTORATE OF RD, PRIS& URBAN LOCAL BODIES
पोर्टब्लेयर / **Port Blair**
****

पोर्टब्लेयर/*Port Blair*, दिनांक/*dated the* 25th June, 2024

To,

The Member Secretary,
Andaman & Nicobar Pollution Control Committee
Department of Science & Technology
Dollygunj, Port Blair

Sub: - **Submission of monthly report for the month of May 2024 as per the direction issued by the Central Monitoring Committee in the NGT matter O.A No. 673 of 2018 for the year 2023-24-reg.**

Sir/ Madam,

Kindly find enclosed herewith the detailed information on "Monthly Report for the month of May 2024 as per direction issued by the Central Monitoring Committee in the NGT matter O.A No. 673 of 2018" for the year 2023 in the prescribed format as provided for your information and further necessary course of action.

Yours faithfully,

Encl: As above

Assistant Director (RD/Panch)

Copy to:-

1. The PS to Secretary (RD/Panch) for kind information of the Secretary (RD/Panch) please.
2. The PA to Director (RD/Panch) for kind information of the Director (RD/Panch) please.
3. The State Nodal Officer, SBM (G) for information.
4. File concerned.

- 54 -
Assistant Director (RD/Panch)

1858

MAY 2024

Format for submission of Monthly Progress Report for the month of MAY 2024 in the NGT Matter OA No. 673 of 2018 (in compliance to NGT order dated 24.09.2023)

Overall status:

Total Consumption of Water: 12.07 MLD

I. Estimated sewage Generation (MLD): 9.656 MLD

II. Details of Sewage Treatment Plant:

- **Existing no. of STPs and treatment Capacity (in MLD):** Nil
- **Capacity utilization of existing STPs (100%):** NA
- **MLD of sewage being treated through Alternate technology: on** -site Septic Tanks catering to 100% Households with soak pits for dispersion.
- **Gap in Treatment Capacity in MLD.** NA

Future proposal for reducing gap in treatment capacity:

Details of under construction STPs in the State

No.	Location	Capacity of the STP in MLD	Status of I & D or House sewer connections	Physical Progress %	Incremental progress	Completion timeline
	Nil	Nil	Nil	Nil	Nil	Nil

Details of proposed STP's in the State

No.	Location	Capacity of the FSTP proposed in MLD	Status of Project (at DPR Stage/Under Tendering/Work to be awarded)	Incremental progress	Likely date Completion timeline
1	BEODNABAD	5 KLD	State level technical Committee is constituted for preparation of DPR		
2	SHYAMNAGAR	5 KLD			
3	NEIL KENDRA	5 KLD			
4	NETAJI NAGAR	5 KLD			
5	SHORE POINT	10 KLD			
6	CAMPBELL BAY	5 KLD			
7	RANGAT	10 KLD			
8	LONG ISLAND	5 KLD			
9	RAMPUR	5 KLD			
10	MADHUPUR	10 KLD			

Details of STP Progress:

- APWD to re-assess the requirement during the site assessment and DPR preparation.

In this regard, Minutes of the Meeting was issued vide no. P-11046/19/2023-Panchayat-RD/1166, dated 20.05.2024 to the concern department and officials for taking further necessary direction in pursuance to the meeting held under the chairmanship of Secretary (RD/Panchayat), A& N Administration on 09.05.2024 with the State level Technical Committee following the direction of the meeting held earlier on 16.04.2023.

1859

III. Solid Waste Management:

Total number of Local Bodies and their Population: 70 Gram Panchayats & 2, 17,231 Population.

- **Current Solid Waste Generation (In Tons):** 506.5 MT Solid Wastes Generated during May, 2024 Month.

SL.NO.	DRY	WET	MIXED	TOTAL
01.	464	35.9	6.4	506.5 MT

- **Number, installed capacity and utilization of existing SW processing facilities in TPD (bifurcated by type of processing eg- Waste to Energy (Tonnage and Power Output), Compost Plants (Windrow, Vermin, decentralized pit composting), Biomethanation, MRF etc:** 26 SWM Cluster equipped with Bailing Machine and Shredding machine mapped to 70 GPs for processing of dry waste and all cluster having compost pits for wet waste processing by Vermi-composting method.
- **Action plan to bridge gap between installed Capacity and Current Utilization of processing facilities (if Gap > 20%):** -NA
- **No. and capacity of C&D waste processing plants in TPD (existing, proposed and under construction):** -NA
- **Total no. of Panchayats, no. of Panchayats having door to door collection service, no. of Panchayats practicing segregation at source:** 70 Gram Panchayat having 100% D2D collection with segregation at source practice is being done.
- **Details of SW treatment facilities proposed and under construction (no., capacity, and technology):** 26 SWM Cluster operated using Bailing Machine & Shredding Machine Technology.
- **No. of waste dealer vendors authorized for collection, segregation, pre-processing and recycling of dry/recyclable waste within their jurisdiction: South Andaman -** M/s C M Scrap Traders, North & Middle Andaman - M/s Green Worms Eco Solution LLP is an authorized vendor for collection, segregation, pre-processing and recycling of dry/recyclable waste.
- **No. and area (in acres) of uncontrolled garbage dumpsites and Sanitary Landfills:** No Landfills present
- **No. and area (in acres) of legacy waste within that buffer of both side of the rivers:** -Nil

Status of Management of Solid Waste

LB	Total SW generation in TPD	Total SW being processed in TPD	Existing SW facilities	Utilization Capacity of the existing SW facilities	Proposed SW facilities & Completion Timeline
	16.33 TPD (MAY Month)	47 MT PER MONTH/ 1.56 TPD	26 SWM cluster available	26 x 0.5 TPD	Construction of SWM Shed under Nancowry Block, Nicobar District (work started)

IV. Plastic Waste Management:

- **Total Plastic Waste generation:** 133 MT per month/ 4.4 TPD Plastic waste generated during May, 2024 Month.
- **Treatment/ Measures adopted for reduction or management of plastic waste:** Plastic waste are Balled in SWM Cluster of rural areas and collected and transported by authorized vendor for further processing to mainland.
- **Quantity of plastic waste used for construction of roads: 144** KG in South Andaman and 0 Kgs in N& M Andaman for constructing 201 meters road in South Andaman and N &M is Nil.

- **Amount of penalty levied for violation of PWMR:** Rs 4500/- in Prothrapur Block & Little Andaman for 02 no case identified.

1860

V. Details of Alternate Treatment Technology being adopted by the State /UT: -NA

VI. Rain Water Harvesting: Enclosed

VII. Development of Biodiversity Park: -Nil

VIII. Reuse of Treated Water: NIL

REPORT OF RAIN WATER HARVESTING FOR THE MONTH OF MAY 2024

1861

BLOCK	Total No of Building identified for RWH in FY 2023-23 (Target)	Work Completed During the month	Work Completed	Work Ongoing	Technical Sanction in process	Work Tender to adet	Estimate under Preparation	AAE Sin Process	Work Awarded	Awaiting for NOC	Work on Hold	No Space Available for Construction of RWH	Not Used Irrigation by RWH will not be installed as it will be the wastage of money	No Fund LIC Submitted	Work Cancelled	Work to be Awarded	Query processed Issued	Sent for Scheduling	Sent for Revised Estimate	No of Building plan (Residential sanctioned with provision of RWH during the reporting month (11)	Total No of building plan (residential) sanctioned with provision of RWH till now including Column 11	No of Building (residential) in which RWHs is installed and completed during the reporting month (13)	Total No of Building (residential) in which RWHs is installed and completed till now including column 13
Diglipur	31	0	15	0	0	0	1	0	0	0	0	3	3	0	0	1	0	0	0	1	16	0	4
Mayabunder	15	0	4	0	0	0	0	0	0	0	0	3	0	0	1	0	0	0	0	0	4	0	1
Rangat	32	0	8	0	0	0	0	0	0	0	0	14	4	0	3	0	0	0	0	0	31	0	6
Ferrargunj	50	0	22	0	0	0	0	0	0	0	1	2	0	0	2	0	0	0	0	0	230	0	28
Prothrapur	15	0	5	0	0	0	0	0	0	0	0	2	0	0	1	0	0	0	0	0	58	0	9
Little Andamian	10	0	0	0	0	3	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0
Cambell Bay	7	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0
	160	0	60	7	0	3	1	0	0	0	1	22	7	0	8	1	0	0	0	1	344	0	48

1862

F. No.P-11046/4/2023-SBM (Gramin).Sec/RD/ 1833

अण्डमान तथा निकोबार प्रशासन

ANDAMAN & NICOBAR ADMINISTRATION

ग्रामीण विकास, पंचायती राज संस्थान एवं शहरी स्थानीय निकाय निदेशालय

DIRECTORATE OF RD, PRIS& URBAN LOCAL BODIES

पोर्टब्लेयर / **Port Blair**

****

पोर्टब्लेयर / *Port Blair*, दिनांक / *dated the* 31st July, 2024

To,

The Member Secretary,
Andaman & Nicobar Pollution Control Committee
Department of Science & Technology
Dollygunj, Port Blair

Sub: - **Submission of monthly report for the month of June 2024 as per the direction issued by the Central Monitoring Committee in the NGT matter O.A No. 673 of 2018 for the year 2023-24-reg.**

Sir/ Madam,

Kindly find enclosed herewith the detailed information on "Monthly Report for the month of June 2024 as per direction issued by the Central Monitoring Committee in the NGT matter O.A No. 673 of 2018" for the year 2023 in the prescribed format as provided for your information and further necessary course of action.

Yours faithfully,

31/7/24

Assistant Director (RD/Panch)

Encl: As above

Copy to:-

1. The PS to Secretary (RD/Panch) for kind information of the Secretary (RD/Panch) please.
2. The PA to Director (RD/Panch) for kind information of the Director (RD/Panch) please.
3. The State Nodal Officer, SBM (G) for information.
4. File concerned.

-Sd-

Assistant Director (RD/Panch)

1863

JUNE 2024

Format for submission of Monthly Progress Report for the month of JUNE 2024 in the NGT Matter OA No. 673 of 2018 (in compliance to NGT order dated 24.09.2023)

Overall status:

Total Consumption of Water: 12.07 MLD

I. Estimated sewage Generation (MLD): 9.656 MLD

II. Details of Sewage Treatment Plant:

- **Existing no. of STPs and treatment Capacity (in MLD):** Nil
- **Capacity utilization of existing STPs (100%):** NA
- **MLD of sewage being treated through Alternate technology: on** -site Septic Tanks catering to 100% Households with soak pits for dispersion.
- **Gap in Treatment Capacity in MLD.** NA

Future proposal for reducing gap in treatment capacity:

Details of under construction STPs in the State

No.	Location	Capacity of the STP in MLD	Status of I & D or House sewer connections	Physical Progress %	Incremental progress	Completion timeline
	Nil	Nil	Nil	Nil	Nil	Nil

Details of proposed STP's in the State

No.	Location	Capacity of the FSTP proposed in MLD	Status of Project (at DPR Stage/Under Tendering/Work to be awarded)	Incremental progress	Likely date Completion timeline
1	BEODNABAD	5 KLD	State level technical Committee is constituted for preparation of DPR		
2	SHYAMNAGAR	5 KLD			
3	NEIL KENDRA	5 KLD			
4	NETAJI NAGAR	5 KLD			
5	SHORE POINT	10 KLD			
6	CAMPBELL BAY	5 KLD			
7	RANGAT	10 KLD			
8	LONG ISLAND	5 KLD			
9	RAMPUR	5 KLD			
10	MADHUPUR	10 KLD			

31/7/24

1864

Details of STP Progress:

- APWD to re-assess the requirement during the site assessment and DPR preparation.

In this regard, Minutes of the Meeting was issued vide no. P-11046/19/2023-Panchayat-RD/1166, dated 20.05.2024 to the concern department and officials for taking further necessary direction in pursuance to the meeting held under the chairmanship of Secretary (RD/Panchayat), A& N Administration on 09.05.2024 with the State level Technical Committee following the direction of the meeting held earlier on 16.04.2023.

III. Solid Waste Management:

Total number of Local Bodies and their Population: 70 Gram Panchayats & 2, 17,231 Population.

- **Current Solid Waste Generation (In Tons): 332.98MT** Solid Wastes Generated during JUNE, 2024 Month.

SL.NO.	DRY	WET	MIXED	TOTAL
01.	308 MT	18.485 MT	6.5 MT	332.98MT

- **Number, installed capacity and utilization of existing SW processing facilities in TPD (bifurcated by type of processing eg- Waste to Energy (Tonnage and Power Output), Compost Plants (Windrow, Vermin, decentralized pit composting), Biomethanation, MRF etc:** 26 SWM Cluster equipped with Bailing Machine and Shredding machine mapped to 70 GPs for processing of dry waste and all cluster having compost pits for wet waste processing by Vermi-composting method.
- **Action plan to bridge gap between installed Capacity and Current Utilization of processing facilities (if Gap > 20%):** -NA
- **No. and capacity of C&D waste processing plants in TPD (existing. proposed and under construction):** -NA
- **Total no. of Panchayats, no. of Panchayats having door to door collection service, no. of Panchayats practicing segregation at source:** 70 Gram Panchayat having 100% D2D collection with segregation at source practice is being done.
- **Details of SW treatment facilities proposed and under construction (no., capacity, and technology):** 26 SWM Cluster operated using Bailing Machine & Shredding Machine Technology.
- **No. of waste dealer vendors authorized for collection, segregation, pre-processing and recycling of dry/recyclable waste within their jurisdiction: South Andaman -** M/s C M Scrap Traders, North & Middle Andaman - M/s Green Worms Eco Solution LLP is an authorized vendor for collection, segregation, pre-processing and recycling of dry/recyclable waste
- **No. and area (in acres) of uncontrolled garbage dumpsites and Sanitary Landfills:** No Landfills present

- **No. and area (in acres) of legacy waste within that buffer of both side of the rivers:** -Nil

1865

Status of Management of Solid Waste

LB	Total SW generation in TPD	Total SW being processed in TPD	Existing SW facilities	Utilization Capacity of the existing SW facilities	Proposed SW facilities & Completion Timeline
	11.09 TPD (JUNE Month)	300 MT PER MONTH/10 TPD	26 SWM cluster available	26 x 0.5 TPD Some of the bailing machines are under repair	Construction of SWM Shed under Nancowry Block, Nicobar District (work started)

IV. Plastic Waste Management:

- **Total Plastic Waste generation**: 81.9 MT per month/ 2.73 TPD Plastic waste generated during JUNE, 2024 Month.
- **Treatment/ Measures adopted for reduction or management of plastic waste:** Plastic waste are Bailed in SWM Cluster of rural areas and collected and transported by authorized vendor for further processing to mainland.
- **Quantity of plastic waste used for construction of roads:** 527 KG in South Andaman and 0 Kgs in N& M Andaman for constructing 1140.41 meters road in South Andaman and N &M is Nil.
- **Amount of penalty levied for violation of PWMR:**
- **V. Details of Alternate Treatment Technology being adopted by the State /UT:** - NA

VI. Rain Water Harvesting: Enclosed

VII. Development of Biodiversity Park: -Nil

VIII. Reuse of Treated Water: NIL

31

1866

REPORT OF RAIN WATER HARVESTING FOR THE MONTH OF JUNE 2024

BLOCK	Total No of Building identified for RWH in FY 2023-23 (Target)	Work Completed During the month	Work Completed	Work Ongoing	Technical Sanction in process	Work Tender /tender	Estimate under Preparation	AA ES in Process	Work Awarded	Awaiting for NOC	Work on Hold	No Space Available for Construction of RWH	Not Undertaken as no RWH will not be installed as it will be the wastage of money	No Fund UC Submitted	Work Cancelled	Work to be Awarded	Quarry production	Sent for Schools	Sent for Revised Estimate	No of Buildings Plans (Residential sanctioned with provision of RWH during the reporting month (11)	Total No of building plan (residential) sanctioned with provision of RWH till now including Column 11	No of Building (residential) in which RWH s is installed and completed during the reporting month (13)	Total No of Building (residential) in which RWH s is installed and completed till now including column 13
Diglipur	31	0	15	0	0	0	1	0	0	0	0	3	3	0	0	1	0	0	0	1	16	0	4
Mayabunder	15	0	4	0	0	0	0	0	0	0	0	3	0	0	1	0	0	0	0	0	4	0	1
Rangat	32	0	8	0	0	0	0	0	0	0	0	14	4	0	3	0	0	0	0	0	31	0	6
Ferrargunj	50	0	22	0	0	0	0	0	0	0	1	2	0	0	2	0	0	0	0	0	230	0	28
Prothrapur	15	0	5	0	0	0	0	0	0	0	0	2	0	0	1	0	0	0	0	0	58	0	9
Little Andaman	10	0	0	0	0	3	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0
Cambell Bay	7	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0
	160	**0**	**60**	**7**	**0**	**3**	**2**	**0**	**0**	**0**	**1**	**22**	**6**	**0**	**8**	**1**	**0**	**0**	**0**	**0**	**345**	**0**	**48**

31/5/24

F. No.P-11046/4/2023-SBM (Gramin).Sec/RD/ 2275

अण्डमान तथा निकोबार प्रशासन

ANDAMAN & NICOBAR ADMINISTRATION

ग्रामीण विकास, पंचायती राज संस्थान एवं शहरी स्थानीय निकाय निदेशालय

DIRECTORATE OF RD, PRIS& URBAN LOCAL BODIES

पोर्टब्लेयर / **Port Blair**

****

पोर्टब्लेयर / *Port Blair*, दिनांक / *dated the* 05th *Sep, 2024*

To

The Member Secretary,
Andaman & Nicobar Pollution Control Committee
Department of Science & Technology
Dollygunj, Port Blair

Sub: - **Submission of monthly report for the month of July 2024 as per the direction issued by the Central Monitoring Committee in the NGT matter O.A No. 673 of 2018 for the year 2023-24-reg.**

Sir/ Madam,

Kindly find enclosed herewith the detailed information on "Monthly Report for the month of July 2024 as per direction issued by the Central Monitoring Committee in the NGT matter O.A No. 673 of 2018" for the year 2023 in the prescribed format as provided for your information and further necessary course of action.

Yours faithfully,

Encl: As above

Assistant Director (RD/Panch)

Copy to:-

1. The PS to Secretary (RD/Panch) for kind information of the Secretary (RD/Panch) please.
2. The PA to Director (RD/Panch) for kind information of the Director (RD/Panch) please.
3. The State Nodal Officer, SBM (G) for information.
4. File concerned.

Assistant Director (RD/Panch)

1868

JULY 2024

Format for submission of Monthly Progress Report for the month of JULY 2024 in the NGT Matter OA No. 673 of 2018 (in compliance to NGT order dated 24.09.2023)

Overall status:

Total Consumption of Water: 12.07 MLD

I. Estimated sewage Generation (MLD): 9.656 MLD

II. Details of Sewage Treatment Plant:

- **Existing no. of STPs and treatment Capacity (in MLD):** Nil
- **Capacity utilization of existing STPs (100%):** NA
- **MLD of sewage being treated through Alternate technology: on** -site Septic Tanks catering to 100% Households with soak pits for dispersion.
- **Gap in Treatment Capacity in MLD.** NA

Future proposal for reducing gap in treatment capacity:

Details of under construction STPs in the State

No.	Location	Capacity of the STP in MLD	Status of I & D or House sewer connections	Physical Progress %	Incremental progress	Completion timeline
	Nil	Nil	Nil	Nil	Nil	Nil

Details of proposed STP's in the State

No.	Location	Capacity of the FSTP proposed in MLD	Status of Project (at DPR Stage/Under Tendering/Work to be awarded)	Incremental progress	Likely date Completion timeline
1	BEODNABAD	5 KLD	State level technical Committee is constituted for preparation of DPR		
2	SHYAMNAGAR	5 KLD			
3	NEIL KENDRA	5 KLD			
4	NETAJI NAGAR	5 KLD			
5	SHORE POINT	10 KLD			
6	CAMPBELL BAY	5 KLD			
7	RANGAT	10 KLD			
8	LONG ISLAND	5 KLD			
9	RAMPUR	5 KLD			
10	MADHUPUR	10 KLD			

Details of STP Progress: **1869**

- APWD to re-assess the requirement during the site assessment and DPR preparation.

In this regard, Minutes of the Meeting was issued vide no. P-11046/19/2023-Panchayat-RD/1166, dated 20.05.2024 to the concern department and officials for taking further necessary direction in pursuance to the meeting held under the chairmanship of Secretary (RD/Panchayat), A& N Administration on 09.05.2024 with the State level Technical Committee following the direction of the meeting held earlier on 16.04.2023.

III. Solid Waste Management:

Total number of Local Bodies and their Population: 70 Gram Panchayats & 2, 17,231 Population.

- **Current Solid Waste Generation (In Tons):** **542.6 MT** Solid Wastes Generated during JULY, 2024 Month.

SL.NO.	DRY	WET	MIXED	TOTAL
01.	485 MT	17.6 MT	40 MT	542.6 MT

- **Number, installed capacity and utilization of existing SW processing facilities in TPD (bifurcated by type of processing eg- Waste to Energy (Tonnage and Power Output), Compost Plants (Windrow, Vermin, decentralized pit composting), Biomethanation, MRF etc:** 26 SWM Cluster equipped with Bailing Machine and Shredding machine mapped to 70 GPs for processing of dry waste and all cluster having compost pits for wet waste processing by Vermi-composting method.
- **Action plan to bridge gap between installed Capacity and Current Utilization of processing facilities (if Gap > 20%):** -NA
- **No. and capacity of C&D waste processing plants in TPD (existing. proposed and under construction):** -NA
- **Total no. of Panchayats, no. of Panchayats having door to door collection service, no. of Panchayats practicing segregation at source:** 70 Gram Panchayat having 100% D2D collection with segregation at source practice is being done.
- **Details of SW treatment facilities proposed and under construction (no., capacity, and technology):** 26 SWM Cluster operated using Bailing Machine & Shredding Machine Technology.
- **No. of waste dealer vendors authorized for collection, segregation, pre-processing and recycling of dry/recyclable waste within their jurisdiction: South Andaman -** M/s C M Scrap Traders, North & Middle Andaman - M/s Green Worms Eco Solution LLP is an authorized vendor for collection, segregation, pre-processing and recycling of dry/recyclable waste
- **No. and area (in acres) of uncontrolled garbage dumpsites and Sanitary Landfills:** No Landfills present

- **No. and area (in acres) of legacy waste within that buffer of both side of the rivers:** -Nil

Status of Management of Solid Waste

LB	Total SW generation in TPD	Total SW being processed in TPD	Existing SW facilities	Utilization Capacity of the existing SW facilities	Proposed SW facilities & Completion Timeline
	18.08TPD (JULY Month)	300 MT PER MONTH/10 TPD	26 SWM cluster available	26 x 0.5 TPD Some of the bailing machines are under repair	Procurement of machines for the SWM clusters-Nan cowry & Nicobar are under process. Cluster likely to be operation from Oct 2024.

IV. Plastic Waste Management:

- **Total Plastic Waste generation**: 100.9 MT per month/ 3.36 TPD Plastic waste generated during JULY, 2024 Month.
- **Treatment/ Measures adopted for reduction or management of plastic waste:** Plastic waste are Balled in SWM Cluster of rural areas and collected and transported by authorized vendor for further processing to mainland.
- **Quantity of plastic waste used for construction of roads:** 527 KG in South Andaman and 0 Kgs in N& M Andaman for constructing 1140.41 meters road in South Andaman and N &M is Nil.
- **Amount of penalty levied for violation of PWMR:**
- **V. Details of Alternate Treatment Technology being adopted by the State /UT:** - NA

VI. Rain Water Harvesting: Enclosed

VII. Development of Biodiversity Park: -Nil

VIII. Reuse of Treated Water: NIL

1871

REPORT OF RAIN WATER HARVESTING FOR THE MONTH OF JULY 2024

BLOCK	Total No of Buildings identified for RWHs in FY 2022-23 (Target)	Work Completed During the month	Work Completed	Work Ongoing	Technical Sanction in process	Work Tender/ tender	Estimate under Preparation	AA ES in Process	Work Awarded	Awaiting for NOC	Work on Hold	No Space Available for Construction of RWH	Not used frequently so RWH will not be installed as RWH will be the wastage of money	No Fund UC Submitted	Work Cancelled	Work to be Awarded	Quarry products issue	Site for Schedule	Site for Revised Estimate	No of Building Plans (Residential sanctioned with provision of RWH during the reporting month (11)	Total No of building plan (residential) sanctioned with provision of RWH till now including Column 11	No of Building (residential) in which RWHs is installed and completed during the reporting month (13)	Total No of Building (residential) in which RWHs is installed and completed till now including clou m n 13
Diglipur	31	0	15	0	0	0	1	0	0	0	0	3	3	0	0	1	0	0	0	1	16	0	4
Mayabunder	15	0	4	0	0	0	0	0	0	0	0	3	0	0	1	0	0	0	0	0	4	0	1
Rangat	32	0	8	0	0	0	0	0	0	0	0	14	4	0	3	0	0	0	0	0	31	0	6
Ferrargunj	50	0	22	0	0	0	0	0	0	0	1	2	0	0	2	0	0	0	0	0	230	0	28
Prothrapur	15	0	5	0	0	0	0	0	0	0	0	2	0	0	1	0	0	0	0	0	58	0	9
Little Andama	10	0	0	0	0	3	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0

REPORT OF RAIN WATER HARVESTING FOR THE MONTH OF JULY 2024

1872

BLOCK	Total No of Buildings identified for RWHs in FY 2022-23 (Target)	Work Completed During the month	Work Completed	Work Ongoing	Technical Sanction in process	Work Tender/ tender	Estimate under Preparation	AA ES in Process	Work Awarded	Awaiting for NOC	Work on Hold	No Space Available for Construction of RWH	Not Used frequently so RWH will not be installed as it will be the wastage of money	No Fund UC Submitted	Work Cancelled	Work to be Awarded	Quarry product Issue	Sent for Scheduled	Sent for Revised Estimate	No of Building Plans (Residential sanctioned with provision of RWH during the reporting month (11)	Total No of building plan (residential) sanctioned with provision of RWH till now including Column 11	No of Building (residential) in which RWHs is installed and completed during the reporting month (13)	Total No of Building (residential) in which RWHs is installed and completed till now including clo u m n 13
Diglipur	31	0	15	0	0	0	1	0	0	0	0	3	3	0	0	1	0	0	0	1	16	0	4
Mayabunder	15	0	4	0	0	0	0	0	0	0	0	3	0	0	1	0	0	0	0	0	4	0	1
Rangat	32	0	8	0	0	0	0	0	0	0	0	14	4	0	3	0	0	0	0	0	31	0	6
Ferrargunj	50	0	22	0	0	0	0	0	0	0	1	2	0	0	2	0	0	0	0	0	230	0	28
Prothrapur	15	0	5	0	0	0	0	0	0	0	0	2	0	0	1	0	0	0	0	0	58	0	9
Little Andama	10	0	0	0	0	3	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0

1873

Cambell Bay	7	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0
	160	0	60	7	0	3	2	0	0	0	0	22	6	0	8	1	0	0	0	0	345	0	48

Assistant Director (RD/P)

1874

F. No.P-11046/4/2023-SBM (Gramin).Sec/RD/ 2501

अण्डमान तथा निकोबार प्रशासन
ANDAMAN & NICOBAR ADMINISTRATION
ग्रामीण विकास, पंचायती राज संस्थान एवं शहरी स्थानीय निकाय निदेशालय
DIRECTORATE OF RD, PRIS& URBAN LOCAL BODIES
पोर्टब्लेयर / **Port Blair**
****

पोर्टब्लेयर / *Port Blair*, दिनांक / *dated the 26th Sep, 2024*

To,

The Member Secretary,
Andaman & Nicobar Pollution Control Committee
Department of Science & Technology
Dollygunj, Port Blair

Sub: - **Submission of monthly report for the month of Aug 2024 as per the direction issued by the Central Monitoring Committee in the NGT matter O.A No. 673 of 2018 for the year 2023-24-reg.**

Sir/ Madam,

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Yours faithfully,

26/9/24

Encl: As above

Assistant Director (RD/Panch)

Copy to:-

1. PS to Secretary (RD/Panch) for kind information of the Secretary (RD/Panch) please.
2. PA to Director (RD/Panch) for kind information of the Director (RD/Panch) please.
3. The State Nodal Officer, SBM (G) for information.
4. File concerned.

-Sd-
Assistant Director (RD/Panch)

1875

AUGUST 2024

Format for submission of Monthly Progress Report for the month of AUGUST 2024 in the NGT Matter OA No. 673 of 2018 (in compliance to NGT order dated 24.09.2023)

Overall status:

Total Consumption of Water: 12.07 MLD

I. Estimated sewage Generation (MLD): 9.656 MLD

II. Details of Sewage Treatment Plant:

- **Existing no. of STPs and treatment Capacity (in MLD):** Nil
- **Capacity utilization of existing STPs (100%):** NA
- **MLD of sewage being treated through Alternate technology:** on -site Septic Tanks catering to 100% Households with soak pits for dispersion.
- **Gap in Treatment Capacity in MLD.** NA

Future proposal for reducing gap in treatment capacity:

Details of under construction STPs in the State

No.	Location	Capacity of the STP in MLD	Status of I & D or House sewer connections	Physical Progress %	Incremental progress	Completion timeline
	Nil	Nil	Nil	Nil	Nil	Nil

Details of proposed STP's in the State

No.	Location	Capacity of the FSTP proposed in MLD	Status of Project (at DPR Stage/Under Tendering/Work to be awarded)	Incremental progress	Likely date Completion timeline
1	BEODNABAD	5 KLD	State level technical Committee is constituted for preparation of DPR		
2	SHYAMNAGAR	5 KLD			
3	NEIL KENDRA	5 KLD			
4	NETAJI NAGAR	5 KLD			
5	SHORE POINT	10 KLD			
6	CAMPBELL BAY	5 KLD			
7	RANGAT	10 KLD			
8	LONG ISLAND	5 KLD			
9	RAMPUR	5 KLD			
10	MADHUPUR	10 KLD			

Details of STP Progress:

- APWD to re-assess the requirement during the site assessment and DPR preparation.

In this regard, Minutes of the Meeting was issued vide no. P-11046/19/2023-Panchayat-RD/1166, dated 20.05.2024 to the concern department and officials for taking further necessary direction in pursuance to the meeting held under the chairmanship of Secretary (RD/Panchayat), A& N Administration on 09.05.2024 with the State level Technical Committee following the direction of the meeting held earlier on 16.04.2023.

III. Solid Waste Management:

Total number of Local Bodies and their Population: 70 Gram Panchayats & 2, 17,231 Population.

- **Current Solid Waste Generation (In Tons): 352.03 MT** Solid Wastes Generated during AUG, 2024 Month.

SL.NO.	DRY	WET	MIXED	TOTAL
01.	330 MT	18.03 MT	4 MT	352.03 MT

- **Number, installed capacity and utilization of existing SW processing facilities in TPD (bifurcated by type of processing eg- Waste to Energy (Tonnage and Power Output), Compost Plants (Windrow, Vermin, decentralized pit composting), Biomethanation, MRF etc:** 26 SWM Cluster equipped with Bailing Machine and Shredding machine mapped to 70 GPs for processing of dry waste and all cluster having compost pits for wet waste processing by Vermi-composting method.
- **Action plan to bridge gap between installed Capacity and Current Utilization of processing facilities (if Gap > 20%):** -NA
- **No. and capacity of C&D waste processing plants in TPD (existing. proposed and under construction):** -NA
- **Total no. of Panchayats, no. of Panchayats having door to door collection service, no. of Panchayats practicing segregation at source:** 70 Gram Panchayat having 100% D2D collection with segregation at source practice is being done.
- **Details of SW treatment facilities proposed and under construction (no., capacity, and technology):** 26 SWM Cluster operated using Bailing Machine & Shredding Machine Technology.
- **No. of waste dealer vendors authorized for collection, segregation, pre-processing and recycling of dry/recyclable waste within their jurisdiction: South Andaman** - M/s C M Scrap Traders, North & Middle Andaman - M/s Green Worms Eco Solution LLP is an authorized vendor for collection, segregation, pre-processing and recycling of dry/recyclable waste
- **No. and area (in acres) of uncontrolled garbage dumpsites and Sanitary Landfills:** No Landfills present

- **No. and area (in acres) of legacy waste within that buffer of both side of the rivers:** -Nil

Status of Management of Solid Waste

LB	Total SW generation in TPD	Total SW being processed in TPD	Existing SW facilities	Utilization Capacity of the existing SW facilities	Proposed SW facilities & Completion Timeline
	18.08TPD (AUG Month)	300 MT PER MONTH/10 TPD	26 SWM cluster available	26 x 0.5 TPD Some of the bailing machines are under repair	Procurement of machines for the SWM clusters-Nan cowry & Nicobar are under process. Cluster likely to be operation from Oct 2024.

IV. Plastic Waste Management:

- **Total Plastic Waste generation:** 87.2 MT per month/ 2.90 TPD Plastic waste generated during AUGUST, 2024 Month.
- **Treatment/ Measures adopted for reduction or management of plastic waste:** Plastic waste are Bailed in SWM Cluster of rural areas and collected and transported by authorized vendor for further processing to mainland.
- **Quantity of plastic waste used for construction of roads:** 527 KG in South Andaman and 0 Kgs in N& M Andaman for constructing 1140.41 meters road in South Andaman and N &M is Nil.
- **Amount of penalty levied for violation of PWMR:**
- **V. Details of Alternate Treatment Technology being adopted by the State /UT:** - NA

VI. Rain Water Harvesting: Enclosed

VII. Development of Biodiversity Park: -Nil

VIII. Reuse of Treated Water: NIL

REPORT OF RAIN WATER HARVESTING FOR THE MONTH OF AUG 2024

1878

BLOCK	Total No of Buildings identified for RWHs in FY 2022-23 (Target)	Work Completed During the month	Work Completed	Work Ongoing	Technical Sanction in process	Work Tender/ tender	Estimate under Preparation	AA ES in Process	Work Awarded	Awaiting for NOC	Work on Hold	No Space Available for Construction of RWH	Not Used frequently so RWH will not be installed as it will be the wastage of money	No Fund UC Submitted	Work Cancelled	Work to be Awarded	Quarry product Issue	Sent for Scheduled	Sent for Revised Estimate	No of Building plans (Residential sanctioned with provision of RWH during the reporting month (11)	Total No of building plan (residential) sanctioned with provision of RWH till now including Column 11	No of Building (residential) in which RWHs is installed and completed during the reporting month (13)	Total No of Building (residential) in which RWHs is installed and completed till now including column 13
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Mayabunder	15	0	4	0	0	0	0	0	0	0	0	3	0	0	1	0	0	0	0	0	4	0	1
Rangat	32	0	8	0	0	0	0	0	0	0	0	14	4	0	3	0	0	0	0	0	31	0	6
Ferrargunj	50	0	22	0	0	0	0	0	0	0	1	2	0	0	2	0	0	0	0	0	230	0	28
Prothrapur	15	0	5	0	0	0	0	0	0	0	0	2	0	0	1	0	0	0	0	0	58	0	9
Little Andama	10	0	0	0	0	3	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0

1879

n																							
Cambeli Bay	7	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0
	160	0	60	7	0	3	2	0	0	0	0	22	6	0	8	1	0	0	0	345	0	48

21/9/24

Assistant Director (RD/P)



Port Blair Municipal Solid Waste Characterization

giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

On behalf of
Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection
of the Federal Republic of Germany

Ministry of Housing and Urban Affairs
Government of India

स्वच्छ भारत
एक कदम स्वच्छता की ओर

Andaman & Nicobar Administration

Deutsche Gesellschaft für
Internationale Zusammenarbeit (GIZ) GmbH

Registered offices Bonn and Eschborn

Cities Combatting Plastic entering Marine Environment

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Editors
Ms. Carla Rossitto
Ms. Soma Biwas

On behalf of the German Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection

GIZ India is responsible for the contents of this publication.

New Delhi, India
August 2022

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1. Introduction

The world witnessed the industrial revolution resulting in an exponential number of innovations post World War II (Provencher, 2014). The cheap manufacturing cost, durability, and flexibility of plastics are considered as a wonderful invention of the 20th century (PrasunGoswamia, Valsalan, Vinithkumara, & GopalDharani, 2020). Owing to the extraordinary properties, the annual production of plastics had escalated dramatically from 0.5 million tons in the 1940s to 550 million tons in 2018 and has overwhelmingly become an integral part of human day-to-day life (Jeyasanta, 2020).

A baseline study indicates that 192 coastal countries generated 275 million metric tons of plastic waste, of which significant amounts (4.8–12.7 million metric tons) entered the marine systems from land-based sources like rivers, sewage, surface street runoff, etc. (Jambeck, 2015). Given the non-biodegradable nature of plastics, this material is currently encountered on every habitat of the earth and their prevalence threatens all life forms (Landrigan, 2020);(Chassignet, 2021) resulting in death of mammals, seabirds, turtles, and fishes via entanglement, plastic ingestion and others (T.Kaviarasan, 2020).

Cities Combatting Plastic entering Marine Environment (CCP-ME)

The objective of the CCP-ME project is to prevent plastic waste at source through sustainable waste management practices in cities by upgrading infrastructure, strengthening digital monitoring, behaviour change and exchange mechanisms, and supporting the development of national framework conditions.

The project is working in the three cities of Kochi, Kanpur and Port Blair and their respective states and union territory. The overall project is working on interventions to enable selected cities to improve collection, segregation and marketing of plastic waste, to prevent plastic disposal to water bodies, and to improve handling of port and marine waste. This needs to be combined with new tracking, data management and reporting systems, civil society involvement and increased cooperation with the recycling industry. This is in line with the Municipal Solid Waste Management rules of 2016 which stipulates the segregation of waste at source in order to enable its recovery, reuse and recycling. The project activities are also in line with Plastic Waste Management rules of 2016 and its subsequent amendment in 2018 and 2021.

At National level, the project is housed with the Ministry of Housing and Urban Affairs (MoHUA) and works towards the development of a national digital platform together with MoHUA to establish links between states/UTs, cities and the recycling industry. The platform will also enable the monitoring of recycling and reuse quantities of plastic and non-biodegradable waste by standardising reporting mechanisms for cities and states/UTs to the national level related to quantities of different fractions of recycled dry waste (in particular plastics).

Andaman and Nicobar Islands (ANI's) is a Union territory belonging to India situated in the Bay of Bengal. A report indicates ANI's account for 47% unmanaged solid waste as compared to the national average of 14% (Kaladharan, 2017). Port Blair is the capital and single municipal body of ANI, where half of the Islands population lives. Further, Port Blair is the entry point for

tourists since the economy of the archipelago revolves around it. ANIs are strategically important in terms of national security and geopolitically as well hence, a huge population of tri-command defence personnel are deployed here along with the family. Thus, solid waste generated by the floating population like tourists and the defence personnel's apart from the native resident population is a pressure mounting scenario to the Port Blair Municipal Council (PBMC) in handling waste. Thus, a baseline study was initiated by GIZ in collaboration with PBMC to effectively combat the solid waste menace in Port Blair.

2. Objective

The support provided by the CCP-ME project at the national, state, and local levels for the plastic and non-biodegradable waste starts with demonstration of material recovery facility (MRF) at city level which can help divert non-biodegradable waste to circular economy loops and also make MRF operations sustainable.

Earlier interactions with various stakeholders have helped the CCP-ME project to identify around 70 subcategories of non-biodegradable materials which have market potential for recycling. A need was felt to conduct physical characterisation at every stage of waste management in the city of Port Blair, to estimate the characteristics of non-biodegradable waste which will be available to city MRFs if decentralised MRF units are established.

Thus, the objective of the study was to undertake a Municipal Solid waste generation at household and non- households' level in PBMC area and its characterization at different levels including dumpsite, to estimate the characteristics of non-biodegradable waste which will be available for city Solid & Liquid Resource Management Centre (SLRM)/MRFs.

During the tenure of the project, it is also envisaged to develop various knowledge products based on the learnings and this waste characterisation study will aid in developing such relevant documents (knowledge product) to help conduct characterisation studies in other cities of the country.

3. Methodology

The study is an adaptation from the **Waste Wise Cities Tool (WaCT)** (Step by Step Guide to Assess a City's Municipal Solid Waste Management Performance through SDG indicator 11.6.1 Monitoring). The WaCT contains 7 steps to collect data on municipal solid waste (MSW) generated, collected, and managed in controlled facilities. The tool provides a household survey guide for total MSW generation, a questionnaire to identify the MSW recovery chain and criteria to check the environmental control level of waste management facilities in a city.

The sampling methodology from WaCT was adopted fully for the household waste survey, adapted for the commercial waste and extended to dumpsite areas.

Initially, the team involved in waste characterization was oriented by providing an onsite training on waste sample collection, waste fractions and different sub-components (with specific focus on their particular target categories during characterization study, which was followed by orientation on using data entry formats by the team member responsible to record the findings, and safety precautions to be taken.

Households Waste Study

For waste study at household's level total 90 households selected from three categories (HIG, MIG, LIG) in three different locations (Corbyn, RK Mission and Junglighat areas). After the consent of concerned Households, samples were collected daily for 8 days from all 90 households. Collected wastes were studied and sorted into 71 categories of effluents to obtain waste generation rates and household-level waste characteristics.

Non-households Waste Study

For Quantification and Characterization study of non-households, selected stakes were big and small shops (5# total), Hospital (big, small and dispensary- 3# total), restaurant (2#), hotel (3# total), school (1# big), office (2#) with characterization analysis for representative sample from each category of commercial.

Dumpsite Waste Study

For the dumpsite area, 5 samples of each, around 100 Kg was selected from the five different waste transportation vehicles using quartering method. These samples were manually sorted in 71 different categories for waste characterization study. Basic details of waste source were collected from the driver of waste vehicle.

Characterization

The steps followed for the sorting of waste samples included:

1. A precise location was selected to place the sorting table and weigh scale.
2. Site was prepared, the location was cleaned for setting up the tables (with cover sheet), and other necessary equipment were also placed appropriately.
3. The waste containers/bags used for collecting different waste types were marked with numbers and empty weights were recorded (to mark tare weights on specific data sheet).
4. Total 71 pre-weighed bins/bags were kept around the sorting table for depositing the sorted material into different material types.
5. A sample as per Waste Wise Cities Tool EN-7.1 was collected and weighted (for dumpsite using quartering method for determination of composition of unprocessed Municipal Solid waste). Then it was unloaded onto table for further sorting into different categories.
6. Each team member was given responsibility to segregate and collect certain subcategories of waste.
7. After weighted, waste samples were spread out on the sorting table, hand sorted by the team members and collected in bins assigned for different material categories.
8. Once sorting of waste sample was done and no visual traces of any other material category were observed, the remaining sample was swept into the 'Fines' fraction for it to be accounted in others category.
9. The waste containers/bags with the sorted material were weighed on a calibrated scale to obtain gross weights. These weights were noted in the waste sample record sheet for each sample and net weight of each sorted category, correct up to two significant digits, was

obtained by subtracting the tare weight (empty container weight) of each bin from the gross weights.

10. At the end of each waste characterization, the segregated recyclables/materials were disposed off (or diverted to recyclers) as per directions from GIZ team or PBMC officials.

11. Site was cleaned and tables were prepared for next sample.

The above procedure was followed for the characterization of each day of the study.

Table 1 Categories of waste as per TOR and responsible person for waste sorting

S.No.	Material	Sub-Materials	Responsible member
1.1	Plastic	PET Bottle	Team members 01 and 08
1.2		LDPE-Thickness less than 60microns	
1.3		LDPE-Thickness between 60-120 microns	
1.4		LDPE-Thickness more than 120microns	
1.5		HDPE	
1.6		Polypropylene	
1.7		Polycarbonate	
1.8		Polystyrene	
1.9		Multi-layered Plastics	
1.10		HDPE Milk Packets	
1.11		Fiber-reinforced plastic	
1.12		PVC	
1.13		Other plastics	
2.1	Paper& Cardboard	Newspaper	Team member 02
2.2		White Paper	
2.3		Colored Paper	
2.4		Books	
2.5		Magazines	
2.6		Cardboard-3ply	
2.7		Cardboard-5ply	
2.8		Duplex board	
2.9		Other paper and cardboards	
3.1	Metal	Iron	Team member 03
3.2		Steel	
3.3		Aluminum	
3.4		Zinc	
3.5		Brass	
3.6		Copper	
3.7		Tin	
3.8		Other metals	

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S.No.	Material	Sub-Materials	Responsible member
4.1	Glass	Plain Glass	Team member 04
4.2		Colored Glass	
4.3		Mirror	
4.4		Glass cullet (Broken glass)	
4.5		Other glass	
5.1	Rubber& Tyre	2& 3-wheeler tyre	Team member 05
5.2		4-wheelerpassenger	
5.3		4-wheelercommercial	
5.4		Rubber -Chappal	
5.5		Rubber -Gloves	
5.6		Rubber –Tubes/pipes	
5.7		Rubber –Shoe Bottoms	
5.8		Other rubber and tyre	
6.1	E-waste	Batteries-Lithium Ion	Team member 06
6.2		Batteries-Conventional	
6.3		Wires	
6.4		Electrical Appliances	
6.5		Cell Phones	
6.6		Laptops	
6.7		Other e-waste	
7.1	Textile	Rags	Team member 07
7.2		Clothes	
7.3		Others	
8	Used Beverage Cartons		
9	Leather		
10	Coconut Shell		
11	Ceramic		
12	Wood (engineered)		
13.1	Hair –Length more than 6inch		
13.2	Hair –Length-less than 6inch		
14	C&D waste		

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S.No.	Material	Sub-Materials	Responsible member
15.1	Organics	Food scrap waste	Team member 08
15.2		Green/garden waste	
15.3		Wood waste (tree branches)	
15.4		Other Bio-degradables	
16.1	Domestic hazardous waste	Sanitary waste -diapers	Team member 04
16.2		Sanitary waste –Sanitary pads	
16.3		Bio-medical waste (generated from households)	
16.4		Other domestic hazardous waste	
17	Fines (Un-sortable small fragments (generally less than 5 cm or less in diameter); mainly composed of organic material and miscellaneous fines and dirt		Team member 08
18	Others (Any other material that does not specifically fit in other 17 Categories)		Team member 08

4. Findings of the study

Households Waste Study

A field survey was conducted from 8th of March to 9th of March 2022. Waste sample collection started from 10th March 2022 with the support from PBMC. Prior to the study, Shadipur Community Hall was selected with adequate space was to conduct the study. The study was conducted for 71 subcategories of waste.

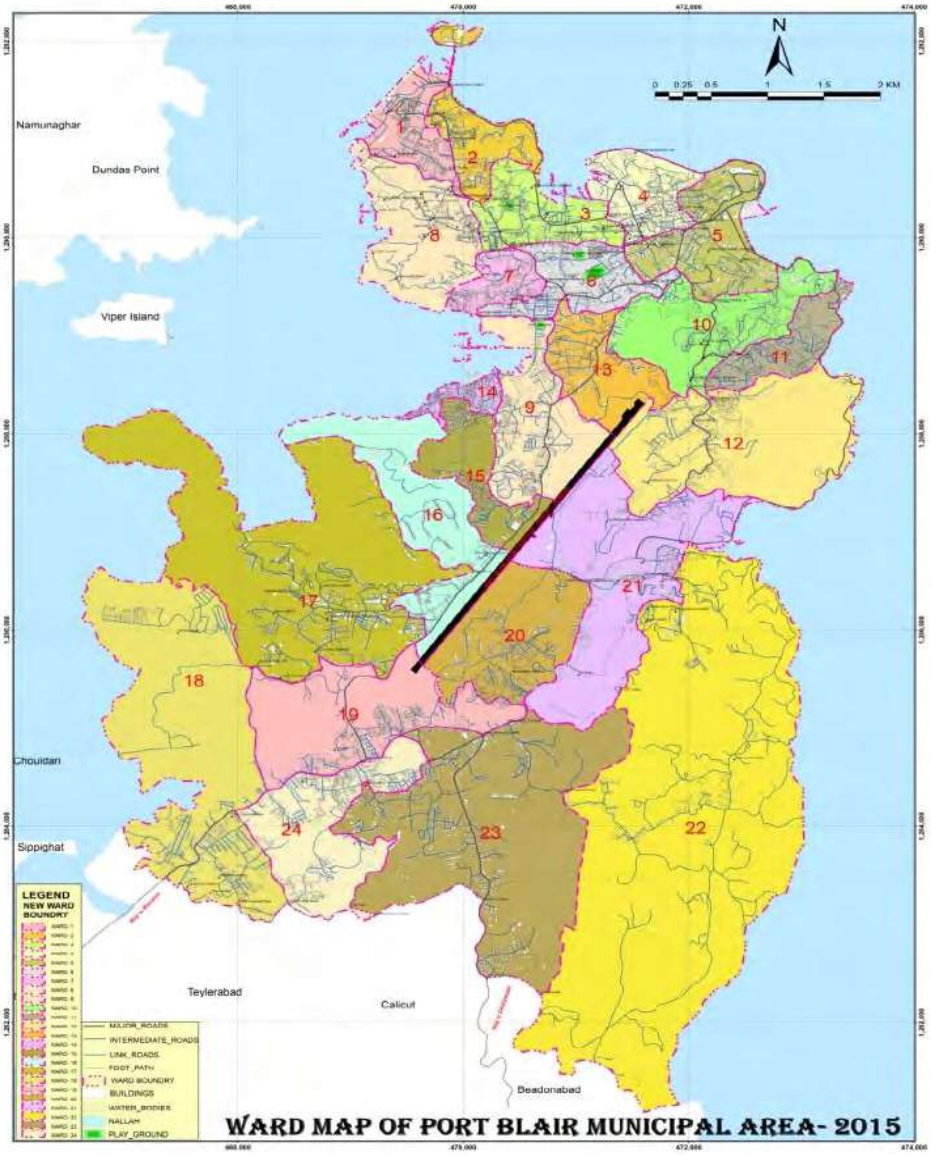


Figure 1: PBMC - Ward boundary map with study locations

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Findings of Households level waste study and overall characteristics of the study are as follows:

Table 2 Population of 10 households selected from each income group of three different areas

Area	Population		
	High Income (10)	Middle Income (10)	Low Income (10)
Corbyns'	38	41	49
R K Mission	45	43	50
Junglighat	38	34	44
Total Population	121	118	143

Table 3 Average Daily Organic Waste Generation per Capita in Kg from different categories

Date	High Income	Middle Income	Low Income
11/3/2022	0.1198	0.0947	0.0900
12/3/2022	0.1312	0.1369	0.0731
13/3/2022	0.1856	0.0948	0.0722
14/3/2022	0.1991	0.1527	0.1509
15/3/2022	0.1679	0.1356	0.1004
16/3/2022	0.1642	0.2111	0.1431
17/3/2022	0.1419	0.1095	0.1093
Average Per Capita Daily Organic Waste Generation Rate (Kg)	0.1585	0.1336	0.1056

Table 4 Households Waste Generation rate (income group wise)

S. No	Area	Income Group (Average Waste Generation (Kg/C/Day))		
		HIG	MIG	LIG
1	Corbyn	0.24734	0.20213	0.14900
2	Junglighat	0.25832	0.27433	0.24463
3	R K Mission	0.18550	0.12901	0.16755
Overall Waste Generation in all areas		0.23039	0.20182	0.18706



Figure 2 Households bags distribution



Figure 3 Door to door sample collection

From Table 4 Households Waste Generation rate (income group wise), it was found that total waste generation for high income group is maximum (0.230Kg/C/D) and for low-income group is 0.187Kg/C/D.

Below the **Error! Reference source not found.**show the average waste characteristics in different income groups.

Table 5 Port Blair average waste characterization data for different income group (Households),

S.N.		WASTE MATERIALS	HIG	MIG	LIG
			7.44%	6.82%	8.05%
1	1.1	PET Bottle	0.870%	0.619%	1.324%
2	1.2	LDPE - Thickness less than 60 microns	1.466%	1.623%	2.003%
3	1.3	LDPE - Thickness between 60-120 microns	1.495%	1.445%	1.394%
4	1.4	LDPE - Thickness more than 120 microns	0.000%	0.000%	0.000%
5	1.5	HDPE	1.209%	0.888%	0.672%
6	1.6	Polypropylene	0.423%	0.301%	0.281%
7	1.7	Polycarbonate	0.079%	0.039%	0.000%
8	1.8	Polystyrene	0.037%	0.026%	0.000%
9	1.9	Multi-layered Plastics	1.140%	0.745%	0.983%
10	1.1	HDPE Milk Packets	0.360%	0.817%	0.010%
11	1.11	Fibre-Reinforced plastic	0.000%	0.000%	0.298%
12	1.12	PVC	0.000%	0.000%	0.000%
13	1.13	Other plastics	0.360%	0.318%	1.085%
		Paper & Cardboard	7.568%	6.085%	6.270%
14	2.1	Newspaper	1.419%	1.409%	1.284%
15	2.2	White Paper	0.983%	0.716%	1.092%
16	2.3	Colored Paper	0.300%	0.586%	0.209%

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17	2.4	Books	0.365%	0.000%	0.096%
18	2.5	Magazines	0.000%	0.065%	0.109%
19	2.6	Cardboard- 3 ply	1.293%	0.875%	1.520%
20	2.7	Cardboard-5 ply	0.901%	0.117%	0.122%
21	2.8	Duplex board	2.223%	2.067%	1.559%
22	2.9	Other paper and cardboards	0.084%	0.249%	0.278%
		METAL	2.381%	1.121%	0.913%
23	3.1	Iron	0.145%	0.000%	0.000%
24	3.2	Steel	0.533%	0.013%	0.212%
25	3.3	Aluminum	0.297%	0.920%	0.228%
26	3.4	Zinc	0.000%	0.000%	0.000%
27	3.5	Brass	0.000%	0.000%	0.000%
28	3.6	Copper	0.000%	0.000%	0.000%
29	3.7	Tin	0.893%	0.136%	0.076%
30	3.8	Other Metal	0.512%	0.052%	0.397%
		GLASS	0.991%	1.827%	2.880%
31	4.1	Plain Glass	0.773%	1.730%	0.947%
32	4.2	Colored Glass	0.000%	0.000%	1.831%
33	4.3	Mirror	0.000%	0.000%	0.000%
34	4.4	Glass cullet (Broken glass)	0.218%	0.097%	0.103%
35	4.5	Other Glass	0.000%	0.000%	0.000%
		RUBBER AND TYRE	0.318%	0.314%	0.864%
36	5.1	2 & 3-wheeler tyre	0.000%	0.052%	0.000%
37	5.2	4-wheeler passenger	0.000%	0.000%	0.000%
38	5.3	4-wheeler commercial	0.000%	0.000%	0.000%
39	5.4	Rubber - Chappal	0.000%	0.185%	0.000%
40	5.5	Rubber - Gloves	0.000%	0.000%	0.000%
41	5.6	Rubber - Tubes	0.032%	0.000%	0.000%
42	5.7	Rubber - Shoe Bottoms	0.286%	0.039%	0.000%
43	5.8	Other rubber and tyre	0.000%	0.039%	0.864%
		E-WASTE	0.368%	0.868%	0.285%
44	6.1	Batteries- Lithium Ion	0.013%	0.049%	0.152%
45	6.2	Batteries- Conventional	0.011%	0.000%	0.000%
46	6.3	Wires	0.000%	0.013%	0.000%
47	6.4	Electrical Appliances	0.344%	0.807%	0.132%
48	6.5	Cell Phones	0.000%	0.000%	0.000%
49	6.6	Laptops	0.000%	0.000%	0.000%
50	6.7	Other e-waste	0.000%	0.000%	0.000%
		TEXTILE	1.022%	1.500%	3.426%
51	7.1	Rags	0.725%	1.183%	1.721%
52	7.2	Clothes	0.289%	0.000%	1.705%

53	7.3	Other textile	0.008%	0.318%	0.000%
		Other Non-Biodegradable materials	4.853%	4.212%	3.135%
54	8	Used Beverage Cartons	1.500%	0.894%	1.794%
55	9	Leather	0.000%	0.000%	0.060%
56	10	Coconut Shell	1.238%	2.019%	0.391%
57	11	Ceramic	0.184%	0.000%	0.288%
58	12	Wood (Engineering wood)	1.369%	0.075%	0.546%
59	13.1	Hair - Length more than 6 inches	0.087%	0.606%	0.056%
60	13.2	Hair - Length less than 6 inches	0.476%	0.606%	0.000%
61	14	C&D waste (including earthen pots)	0.000%	0.013%	0.000%
		Other- Organics	68.994%	66.990%	70.002%
62	15.1	Food waste	68.994%	66.854%	69.985%
63	15.2	Green garden waste	0.000%	0.136%	0.017%
64	15.3	Wood waste (Tree branches etc.)	0.000%	0.000%	0.000%
65	15.4	Other biodegrables	0.000%	0.000%	0.000%
		Other- Domestic hazardous waste	5.148%	8.615%	2.900%
66	16.1	Sanitary waste - diapers	3.876%	6.574%	2.132%
67	16.2	Sanitary waste - sanitary pads	0.268%	0.551%	0.089%
68	16.3	Bio-medical waste (generated from households)	0.660%	1.183%	0.652%
69	16.4	Other domestic hazardous waste	0.344%	0.308%	0.026%
		Fines (combined with organics, dirt and miscellaneous materials less than 5 cm)	0.920%	1.646%	1.275%
70	17	Fines (Unsortable small fragments (generally less than 5 cm or less in diameter); mainly composed of organic material and miscellaneous fines and dirt	0.920%	1.646%	1.275%
71	18	Others (to be defined)	-	-	-



Figure 4 Weighing of households waste samples



Figure 5 waste sample transfer to the table for sorting

Waste Study for Non-households-

Field survey, collection, and study of waste from the selected stakeholders were as follows:

Table 6 Schedule for Non-household's waste study

S. No	Stakeholders	Date of Survey	Date of sample collection and waste study
1	Shops	19/03/2022	20/03/2022
2	Hospital	19/03/2022	20/03/2022
3	Hotel	21/03/2022	22/03/2022
4	Office	23/03/2022	24/03/2022
5	Restaurants	23/03/2022	24/03/2022
6	School	24/03/2022	25/03/2022



Figure 6 Selected Shop for waste sampling



Figure 7 Selected Restaurants for waste sampling

Table 7 % of dry and wet waste in different stakeholders of non-households

Stakeholders	Dry Waste	Wet Waste
Shops	95.874%	4.126%
Hospitals	67.750%	30.748%
Hotels	48.105%	50.801%
Schools	8.722%	91.278%
Office	72.025%	23.347%
Restaurants	24.801%	69.032%

Given *Table 8 Average Waste Generation in Non-households' stakes*, shows the total waste generation per day in Kg for commercials with different respective.

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Table 8 Average Waste Generation in Non-households' stakes

Stake Holders	No of stakes selected	Total received waste (KG)	Average Total Waste Generation Rate	Unit
Shops	5	55.791	1.93	**Kg/Staff/Day**
Clinic	1	1.73	0.02	**Kg/Patient/Day**
Hospitals	2	12.765	0.38	**Kg/Bed/Day**
Hotels	3	18.95	0.77	**Kg/Room/Day**
Schools	1	16.52	0.01	**Kg/Capita/Day**
Office	2	12.162	0.28	**Kg/Staff/Day**
Restaurant	2	22.87	0.34	**Kg/Seat/Day**

After sorting the collected waste sample from different commercial stakeholders in 71 categories, results are showing below in Table 9 Port Blair waste characterization Study for Non-households' stakes

Table 9 Port Blair waste characterization Study for Non-households' stakes

S.N.		WASTE MATERIALS	Shops	Hospitals	Hotels	Schools	Office	Restaurants
			Weight Percentage					
		PLASTIC	6.607%	15.420%	31.207%	0.151%	7.025%	9.461%
1	1.1	PET Bottle	2.508%	5.841%	1.815%	0.000%	0.372%	2.653%
2	1.2	LDPE - Thickness less than 60 microns	0.458%	0.699%	2.670%	0.000%	0.661%	3.028%
3	1.3	LDPE - Thickness between 60-120 microns	0.692%	0.454%	0.828%	0.000%	0.413%	1.105%
4	1.4	LDPE - Thickness more than 120 microns	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
5	1.5	HDPE	0.090%	7.511%	0.988%	0.000%	3.430%	0.818%
6	1.6	Polypropylene	0.036%	0.454%	8.329%	0.000%	0.496%	0.420%
7	1.7	Polycarbonate	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
8	1.8	Polystyrene	0.090%	0.000%	9.237%	0.000%	0.413%	0.000%
9	1.9	Multi-layered Plastics	1.816%	0.461%	7.154%	0.091%	0.702%	0.597%
10	1.1	HDPE Milk Packets	0.917%	0.000%	0.000%	0.000%	0.413%	0.000%
11	1.1	Fibre-Reinforced plastic	0.000%	0.000%	0.000%	0.061%	0.124%	0.000%
12	1.1	PVC	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
13	1.1	Other plastics	0.000%	0.000%	0.187%	0.000%	0.000%	0.840%

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		Paper & Cardboard	86.277%	42.863%	8.035%	6.844%	61.116%	1.790%
14	2.1	Newspaper	0.413%	0.349%	0.214%	0.000%	3.306%	0.398%
15	2.2	White Paper	0.405%	1.642%	0.908%	5.360%	35.248%	0.000%
16	2.3	Colored Paper	0.000%	0.000%	0.240%	1.121%	12.521%	0.000%
17	2.4	Books	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
18	2.5	Magazines	0.000%	0.349%	0.214%	0.000%	0.165%	0.000%
19	2.6	Cardboard- 3 ply	39.228%	7.336%	0.694%	0.000%	1.901%	0.420%
20	2.7	Cardboard-5 ply	45.260%	28.296%	0.854%	0.000%	0.000%	0.000%
21	2.8	Duplex board	0.971%	2.515%	4.271%	0.000%	1.198%	0.752%
22	2.9	Other paper and cardboards	0.000%	2.375%	0.641%	0.363%	6.777%	0.221%
		METAL	0.832%	0.419%	0.934%	0.000%	0.000%	4.576%
23	3.1	Iron	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
24	3.2	Steel	0.000%	0.000%	0.000%	0.000%	0.000%	0.243%
25	3.3	Aluminum	0.374%	0.419%	0.614%	0.000%	0.000%	0.663%
26	3.4	Zinc	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
27	3.5	Brass	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
28	3.6	Copper	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
29	3.7	Tin	0.000%	0.000%	0.320%	0.000%	0.000%	0.000%
30	3.8	Other Metal	0.458%	0.000%	0.000%	0.000%	0.000%	3.669%
		GLASS	0.000%	0.000%	3.737%	0.000%	0.000%	1.768%
31	4.1	Plain Glass	0.000%	0.000%	1.548%	0.000%	0.000%	0.000%
32	4.2	Colored Glass	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
33	4.3	Mirror	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
34	4.4	Glass cullet (Broken glass)	0.000%	0.000%	2.189%	0.000%	0.000%	1.768%
35	4.5	Other Glass	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
		RUBBER AND TYRE	0.000%	0.000%	0.000%	0.000%	0.083%	3.139%
36	5.1	2 & 3-wheeler tyre	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
37	5.2	4-wheeler passenger	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
38	5.3	4-wheeler commercial	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
39	5.4	Rubber - Chappal	0.000%	0.000%	0.000%	0.000%	0.000%	1.503%
40	5.5	Rubber - Gloves	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
41	5.6	Rubber - Tubes	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
42	5.7	Rubber - Shoe Bottoms	0.000%	0.000%	0.000%	0.000%	0.000%	1.636%
43	5.8	Other rubber and tyre	0.000%	0.000%	0.000%	0.000%	0.083%	0.000%

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		E-WASTE	0.000%	0.000%	0.000%	0.000%	0.661%	0.000%
44	6.1	Batteries- Lithium Ion	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
45	6.2	Batteries- Conventional	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
46	6.3	Wires	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
47	6.4	Electrical Appliances	0.000%	0.000%	0.000%	0.000%	0.661%	0.000%
48	6.5	Cell Phones	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
49	6.6	Laptops	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
50	6.7	Other e-waste	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
		TEXTILE	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
51	7.1	Rags	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
52	7.2	Clothes	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
53	7.3	Other textile	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
		Other Non-Biodegradable materials	0.279%	0.629%	0.507%	1.726%	3.058%	3.603%
54	8	Used Beverage Cartons	0.279%	0.629%	0.427%	1.726%	3.058%	3.603%
55	9	Leather	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
56	10	Coconut Shell	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
57	11	Ceramic	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
58	12	Wood (Engineering wood)	0.000%	0.000%	0.080%	0.000%	0.000%	0.000%
59	13	Hair - Length more than 6 inches	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
60	13	Hair - Length less than 6 inches	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
61	14	C&D waste (including earthen pots)	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
		Other- Organics	4.126%	30.748%	50.801%	91.278%	23.347%	69.032%
62	15	Food waste	4.126%	30.748%	50.801%	30.769%	23.347%	69.032%
63	15	Green garden waste	0.000%	0.000%	0.000%	60.509%	0.000%	0.000%
64	15	Wood waste (Tree branches etc.)	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
65	15	Other biodegrables	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
		Other- Domestic hazardous waste	1.879%	8.419%	3.684%	0.000%	0.083%	0.464%
66	16	Sanitary waste - diapers	0.000%	7.301%	0.000%	0.000%	0.000%	0.000%
67	16	Sanitary waste - sanitary pads	0.000%	0.000%	0.641%	0.000%	0.000%	0.000%
68	16	Bio-medical waste (generated from households)	0.000%	1.118%	0.294%	0.000%	0.000%	0.000%
69	16	Other domestic hazardous waste	1.879%	0.000%	2.750%	0.000%	0.083%	0.464%
		Fines (combined with organics, dirt and miscellaneous materials less than 5 cm)	0.000%	1.502%	1.095%	0.000%	4.628%	6.167%

70	17	Fines (Un-sortable small fragments (generally less than 5 cm or less in diameter); mainly composed of organic material and miscellaneous fines and dirt	0.000%	1.502%	1.095%	0.000%	4.628%	6.167%
71	18	Others (to be defined)	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%



Figure 8 Team sorting the waste sample



Figure 9 Selected shop for non-household sampling

Dumpsite waste sampling and its study

PBMC area divided into 24 wards, and each ward has a waste transportation truck, which are used for transporting the waste from secondary collection Centre to Brookshabad dumpsite. And two trucks are available for two commercial area Bathu Basti and Golghar market.

For waste sampling at the dumpsite, 5 different waste transportation trucks were selected. Four trucks were from different wards and one from the commercial area (Bathu Basti).

Waste transported from the truck was adjusted into a square and divided into four square parts using JCB Hitachi. The diagonal portion was discarded, and other diagonal part of waste are again mixed and divided into four parts. And the sample was collected from the one part. Figure 10 Waste Sampling using quartering method, showing the quartering method for waste sampling.



Figure 10 Waste Sampling using quartering method

Table 10 Dumpsite Waste Samples, vehicle and schedule Information

S. No	Transportation Vehicle No	Date	Area for the collection	Location type	Sample Weight (Kg) (G. wt.- Tier wt.)
Dumpsite 1	AN01L1819	24-03-2022	Ward - 5	Residential	102.565
Dumpsite 2	AN01I3186	25/03/2022	Ward- 19	Residential	101.559
Dumpsite 3	AN01D1922	26/03/2022	Ward- 23	Residential	100.202
Dumpsite 4	AN01K8621	23/03/2022	Bathu Basti and nearby area	Commercial	101.045
Dumpsite 5	AN01E0820	25/03/2022	Ward-10	Residential	101.203

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Table 11 Dumpsite Waste Characterization study result

S.N.		WASTE MATERIALS	Dumpsite 1	Dumpsite 2	Dumpsite 3	Dumpsite 4	Dumpsite 5	Average Percentage
			Weight Percentage					
		PLASTIC						
1	1.1	PET Bottle	2.623%	0.379%	1.712%	2.148%	3.765%	2.125%
2	1.2	LDPE - Thickness less than 60 microns	3.135%	2.777%	2.879%	4.087%	1.507%	2.877%
3	1.3	LDPE - Thickness between 60-120 microns	1.341%	2.570%	2.275%	3.711%	2.683%	2.516%
4	1.4	LDPE - Thickness more than 120 microns	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
5	1.5	HDPE	3.022%	0.773%	0.903%	2.722%	2.451%	1.974%
6	1.6	Polypropylene	0.400%	0.300%	0.215%	1.103%	1.151%	0.634%
7	1.7	Polycarbonate	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
8	1.8	Polystyrene	0.175%	0.005%	0.339%	0.000%	1.077%	0.319%
9	1.9	Multi-layered Plastics	1.243%	0.847%	0.753%	1.415%	5.005%	1.853%
10	1.1	HDPE Milk Packets	1.009%	0.404%	2.101%	1.287%	2.031%	1.366%
11	1.11	Fibre-Reinforced plastic	0.073%	0.921%	0.085%	0.000%	2.233%	0.662%
12	1.12	PVC	0.463%	0.905%	0.000%	0.000%	0.000%	0.274%
13	1.13	Other plastics	0.877%	0.975%	1.113%	2.083%	1.067%	1.223%
		Paper & Cardboard						
14	2.1	Newspaper	1.584%	2.063%	0.594%	2.276%	2.307%	1.765%
15	2.2	White Paper	0.551%	1.196%	1.198%	1.574%	1.151%	1.134%
16	2.3	Colored Paper	0.000%	0.266%	0.324%	1.781%	1.047%	0.684%
17	2.4	Books	0.000%	0.000%	0.130%	0.000%	0.000%	0.026%
18	2.5	Magazines	0.000%	0.000%	0.983%	0.000%	0.000%	0.197%
19	2.6	Cardboard- 3 ply	1.072%	0.197%	1.502%	1.351%	1.077%	1.040%
20	2.7	Cardboard-5 ply	6.235%	2.604%	4.236%	4.731%	1.556%	3.873%
21	2.8	Duplex board	3.271%	1.305%	2.989%	3.395%	3.686%	2.929%
22	2.9	Other paper and cardboards	1.419%	0.197%	0.409%	0.475%	5.983%	1.697%
		METAL						
23	3.1	Iron	0.000%	0.000%	2.066%	0.000%	0.000%	0.413%
24	3.2	Steel	3.690%	0.000%	0.000%	1.593%	0.000%	1.057%
25	3.3	Aluminum	0.341%	0.660%	0.384%	1.267%	1.695%	0.869%
26	3.4	Zinc	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
27	3.5	Brass	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
28	3.6	Copper	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
29	3.7	Tin	0.760%	0.438%	1.347%	1.692%	2.791%	1.406%
30	3.8	Other Metal	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
		GLASS						
31	4.1	Plain Glass	3.578%	3.909%	1.163%	2.915%	2.134%	2.740%

32	4.2	Colored Glass	0.278%	0.000%	0.464%	0.000%	1.700%	0.488%
33	4.3	Mirror	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
34	4.4	Glass cullet (Broken glass)	1.965%	0.551%	0.559%	0.000%	2.480%	1.111%
35	4.5	Other Glass	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
		RUBBER AND TYRE						
36	5.1	2 & 3-wheeler tyre	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
37	5.2	4-wheeler passenger	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
38	5.3	4-wheeler commercial	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
39	5.4	Rubber - Chappal	0.000%	0.414%	0.000%	3.345%	1.512%	1.054%
40	5.5	Rubber - Gloves	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
41	5.6	Rubber - Tubes	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
42	5.7	Rubber - Shoe Bottoms	1.238%	0.478%	0.000%	0.000%	0.000%	0.343%
43	5.8	Other rubber and tyre	0.000%	0.975%	3.784%	0.000%	1.462%	1.244%
		E-WASTE						
44	6.1	Batteries- Lithium Ion	0.044%	0.000%	0.190%	0.000%	0.000%	0.047%
45	6.2	Batteries- Conventional	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
46	6.3	Wires	0.000%	0.000%	0.015%	0.000%	0.000%	0.003%
47	6.4	Electrical Appliances	0.570%	0.202%	1.602%	1.351%	1.401%	1.025%
48	6.5	Cell Phones	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
49	6.6	Laptops	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
50	6.7	Other e-waste	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
		TEXTILE						
51	7.1	Rags	5.002%	2.275%	0.459%	11.935%	1.117%	4.157%
52	7.2	Clothes	1.014%	1.487%	2.485%	3.360%	0.000%	1.669%
53	7.3	Other textile	2.038%	0.064%	0.000%	3.612%	0.000%	1.143%
		Other Non-Biodegradable materials						
54	8	Used Beverage Cartons	1.014%	0.901%	0.314%	0.000%	1.927%	0.831%
55	9	Leather	0.000%	0.000%	2.495%	0.000%	0.000%	0.499%
56	10	Coconut Shell	0.980%	5.017%	4.172%	11.990%	0.000%	4.432%
57	11	Ceramic	0.205%	0.000%	0.000%	0.000%	0.000%	0.041%
58	12	Wood (Engineering wood)	0.127%	0.246%	1.113%	0.000%	3.019%	0.901%
59	13.1	Hair - Length more than 6 inches	0.000%	0.153%	0.035%	0.000%	2.935%	0.624%
60	13.2	Hair - Length less than 6 inches	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
61	14	C&D waste (including earthen pots)	2.969%	9.891%	1.627%	6.364%	0.000%	4.170%
		Other- Organics						
62	15.1	Food waste	13.967%	36.964%	26.337%	4.557%	13.715%	19.108%
63	15.2	Green garden waste	18.320%	4.249%	8.842%	2.850%	4.723%	7.797%
64	15.3	Wood waste (Tree branches etc.)	0.000%	0.000%	0.000%	1.425%	2.806%	0.846%
65	15.4	Other biodegrables	0.000%	0.000%	0.000%	1.099%	0.000%	0.220%

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		Other- Domestic hazardous waste						
66	16.1	Sanitary waste - diapers	6.157%	1.541%	2.540%	1.757%	3.572%	3.113%
67	16.2	Sanitary waste - sanitary pads	0.000%	0.359%	1.991%	0.871%	1.453%	0.935%
68	16.3	Bio-medical waste (generated from households)	0.000%	1.310%	1.642%	1.658%	1.235%	1.169%
69	16.4	Other domestic hazardous waste	0.751%	0.000%	0.928%	1.133%	1.739%	0.910%
		Fines (combined with organics, dirt and miscellaneous materials less than 5 cm)						
70	17	Fines (Un-sortable small fragments (generally less than 5 cm or less in diameter); mainly composed of organic material and miscellaneous fines and dirt	6.498%	9.236%	8.707%	1.089%	6.808%	6.468%
71	18	Others (to be defined)	0.000%	0.000%	0.000%	0.000%	0.000%	-

Table 12 Broad characteristics of individual samples of dumpsite

Waste Categories	Dumpsite1	Dumpsite2	Dumpsite3	Dumpsite4	Dumpsite5
PLASTIC	14.362%	10.855%	12.375%	18.556%	22.969%
Paper & Cardboard	14.133%	7.828%	12.365%	15.582%	16.808%
METAL	4.792%	1.098%	3.797%	4.552%	4.486%
GLASS	5.821%	4.460%	2.186%	2.915%	6.314%
RUBBER AND TYRE	1.238%	1.866%	3.784%	3.345%	2.974%
E-WASTE	0.614%	0.202%	1.806%	1.351%	1.401%
Textile	8.053%	3.825%	2.944%	18.907%	1.117%
Other Non-Biodegradable materials	5.294%	16.207%	9.755%	18.353%	7.880%
Organics	32.287%	41.212%	35.179%	9.931%	21.244%
Domestic Hazardous Waste	6.908%	3.210%	7.101%	5.418%	7.999%
Fines (combined with organics, dirt and miscellaneous materials less than 5 cm)	6.498%	9.236%	8.707%	1.089%	6.808%
Others (to be defined)	0.000%	0.000%	0.000%	0.000%	0.000%

Table 12 Broad characteristics of individual samples of dumpsite shows the broad categories of waste in all individual samples of the dumpsite.

5. Results and discussions

Waste Study at Households level

Given Table 13 Overall Waste Characteristics in broad category shows that organic waste has the highest amount. Percentage of plastic waste in generated waste at house-holds level is maximum in low-income group.

Table 13 Overall Waste Characteristics in broad category

Waste Categories	Waste Characteristics		
	HIG	MIG	LIG
PLASTIC	7.439%	6.820%	8.050%
Paper & Cardboard	7.568%	6.085%	6.270%
METAL	2.381%	1.121%	0.913%
GLASS	0.991%	1.827%	2.880%
RUBBER AND TYRE	0.318%	0.314%	0.864%
E-WASTE	0.368%	0.868%	0.285%
Textile	1.022%	1.500%	3.426%
Other Non-Biodegradable materials	4.853%	4.212%	3.135%
Organics	68.994%	66.990%	70.002%
Domestic Hazardous Waste	5.148%	8.615%	2.900%
Fines (combined with organics, dirt and miscellaneous materials less than 5 cm)	0.920%	1.646%	1.275%
Others	0.000%	0.000%	0.000%

Legend: HIG – High Income Group; MIG – Middle Income Group; LIG – Low Income Group;

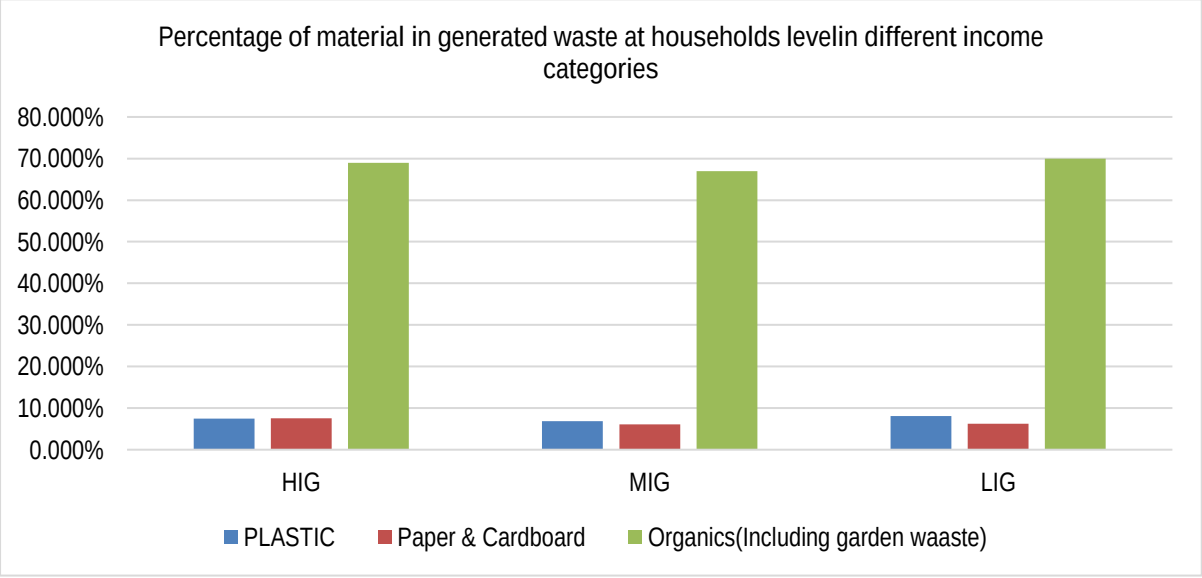


Figure 11 Percentage of material in generated waste at household's level

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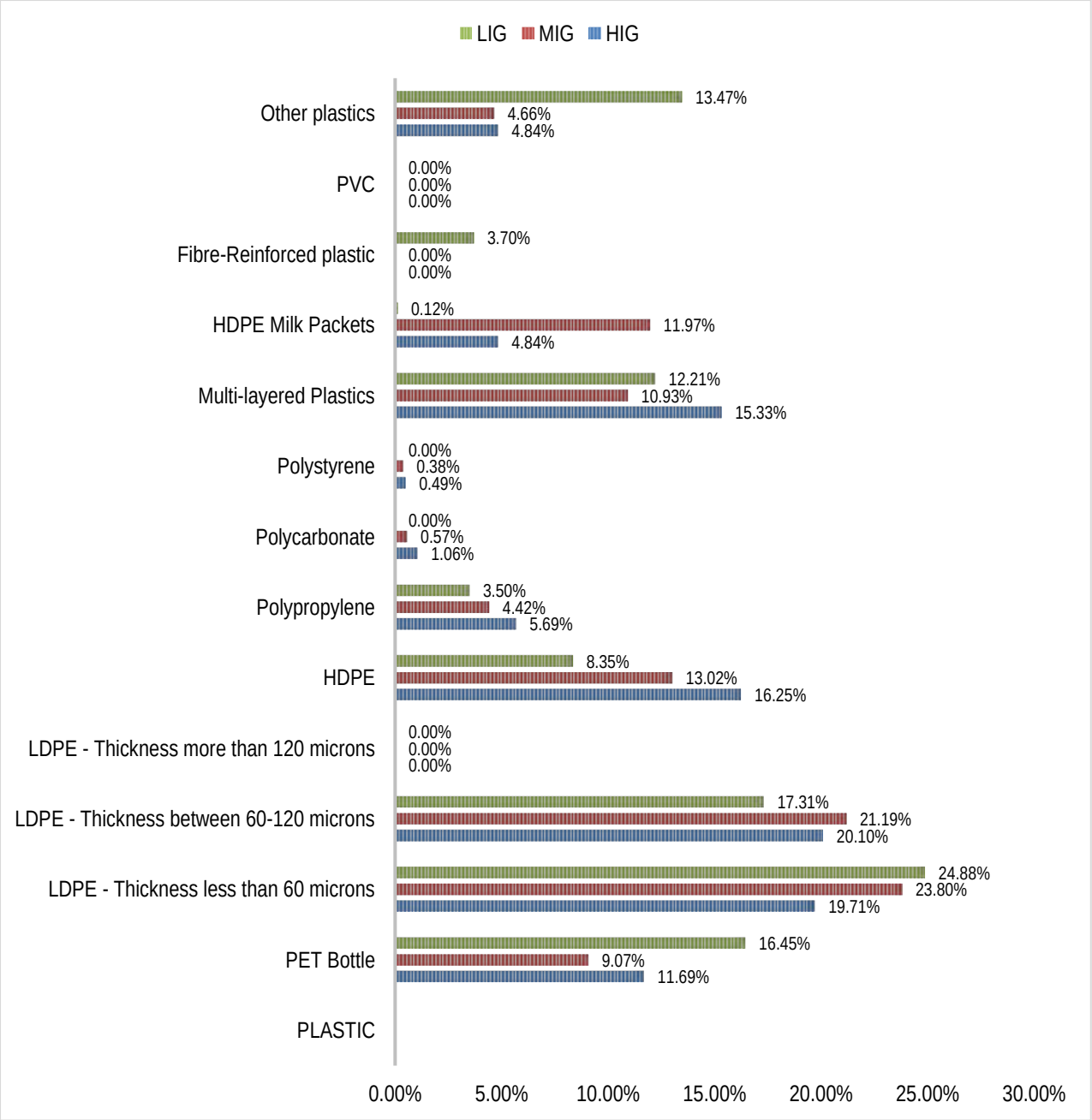


Figure 12 Percentage of different types of plastics in overall plastic waste generation at household level

In above Figure 12 Percentage of different types of plastics in overall plastic waste generation at household level, percentage of LDPE (<60 microns) is maximum.

Figures 13, 14 and 15 are showing the PI chart broad waste characterization for different income group.

1906

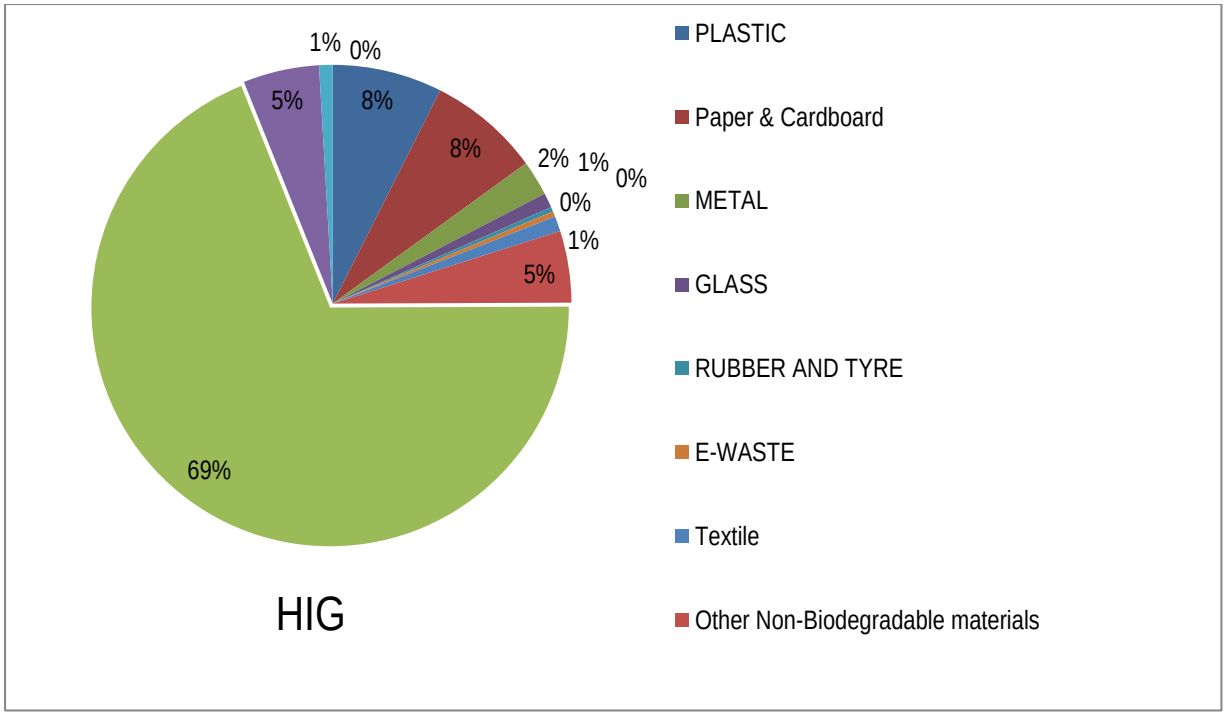


Figure 13 Broad waste characterization for high income group

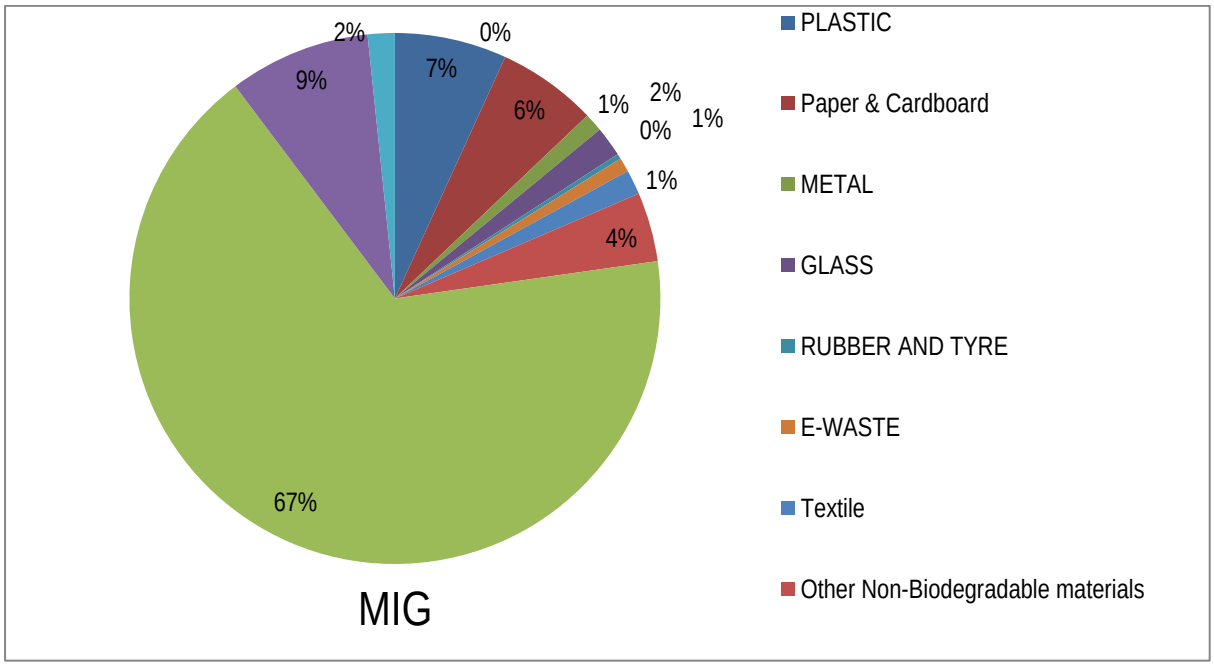


Figure 14 Broad waste characterization for middle income group

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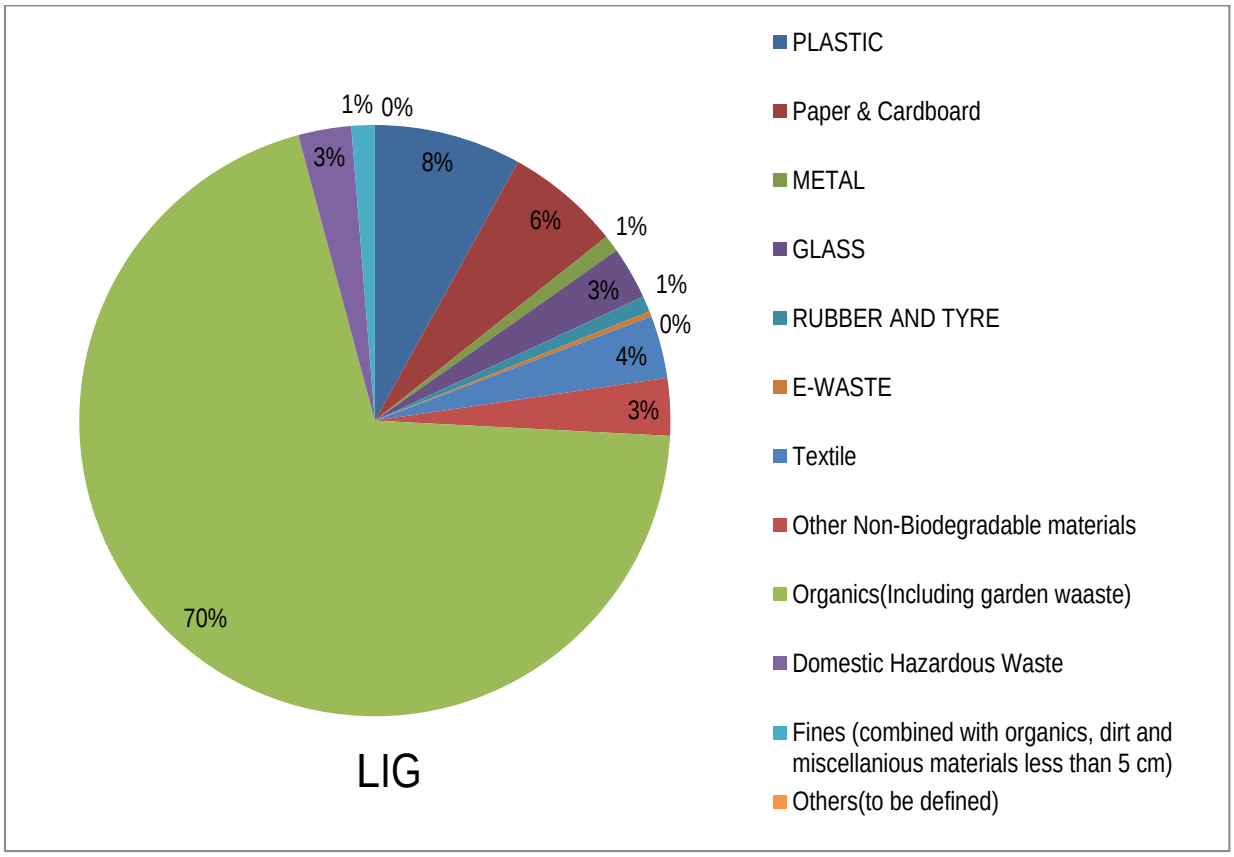


Figure 15 Broad waste characterization for low-income group

Waste Study for Non-household's level

Below table 14 are showing the broad characterization of waste from different stakeholders of commercial area. The average characteristic of non-households in broad categories is calculated by weight average.

Table 14 Individual Stake Non households broad Waste Characterization

Waste Material	Shops	Hospitals	Hotels	Schools	Office	Restaurants	Average characteristic from nonresidential source
PLASTIC	6.61%	15.42%	31.21 %	0.15%	7.02%	9.46%	10.54%
Paper & Cardboard	86.28%	42.86%	8.04%	6.84%	61.12%	1.79%	46.15%
METAL	0.83%	0.42%	0.93%	0.00%	0.00%	4.58%	1.24%
GLASS	0.00%	0.00%	3.74%	0.00%	0.00%	1.77%	0.79%
RUBBER AND TYRE	0.00%	0.00%	0.00%	0.00%	0.08%	3.14%	0.51%
E-WASTE	0.00%	0.00%	0.00%	0.00%	0.66%	0.00%	0.06%
Textile	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Other Non-Biodegradable materials	0.28%	0.63%	0.51%	1.73%	3.06%	3.60%	1.29%
Organics	4.13%	30.75%	50.80 %	91.28%	23.35%	69.03%	35.54%
Domestic Hazardous Waste	1.88%	8.42%	3.68%	0.00%	0.08%	0.46%	2.18%
Fines (combined with organics, dirt and miscellaneous materials less than 5 cm)	0.00%	1.50%	1.09%	0.00%	4.63%	6.17%	1.70%
Others (to be defined)	0.000%	0.000%	0.000 %	0.000%	0.000%	0.000%	0.000%

Waste Study at Dumpsite



Figure 16 Sampling of Waste using quartering method at dumpsite



Figure 17 weighing and collection of sample from dumpsite.

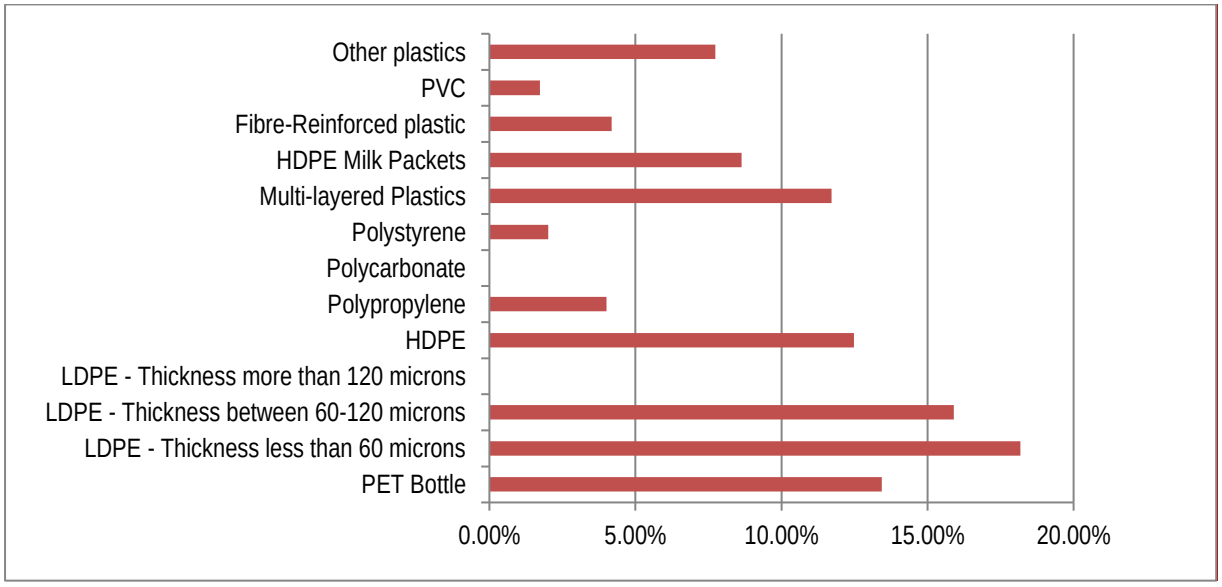


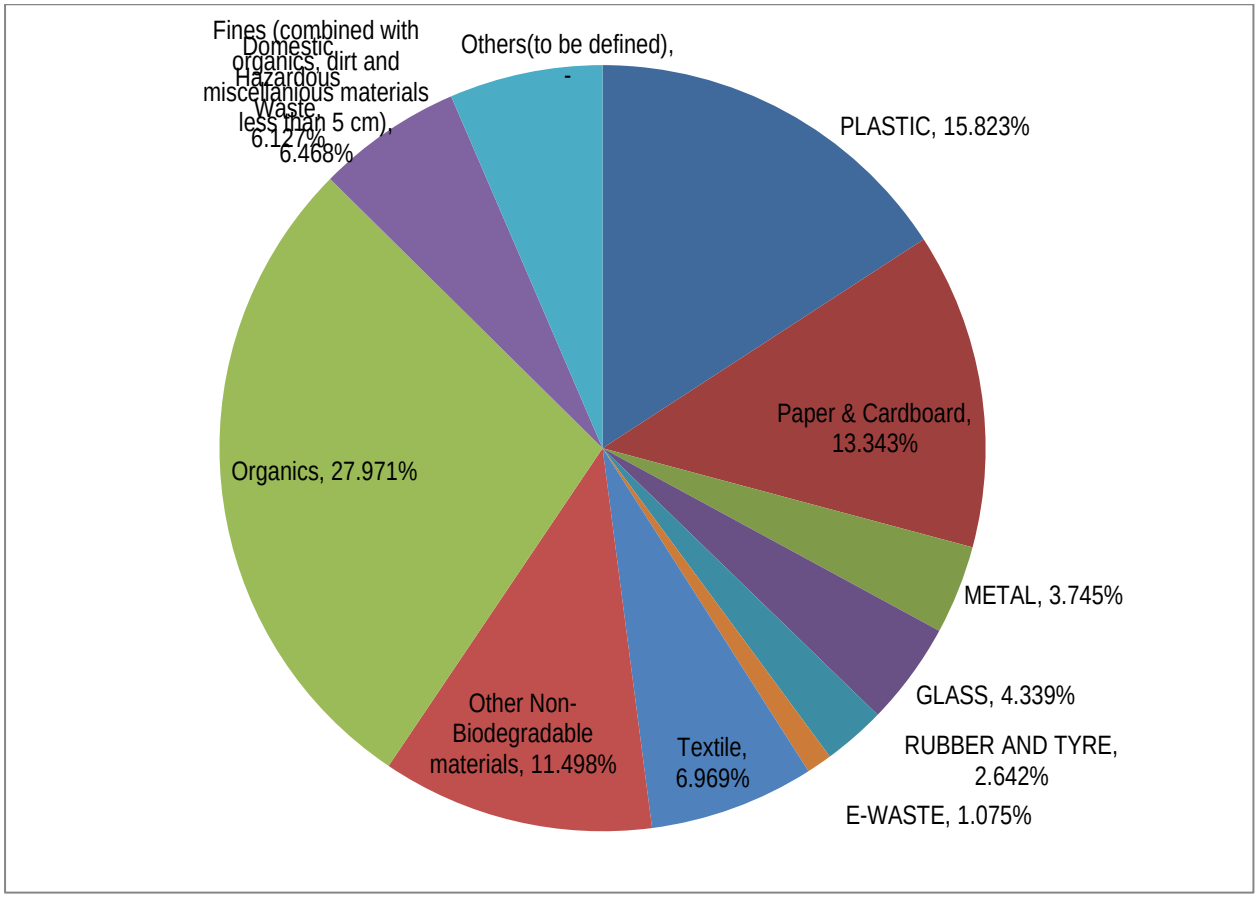
Figure 18 Percentage of different types of plastics reaching at dumpsite

From Figure 18 Percentage of different types of plastics reaching at dumpsite, It is seen that the percentage of LDPE (< 60 microns) is highest among all types of plastics that are being disposed of at dump sites.

In below Table 15 Overall Dumpsite Waste Characteristics in broad category showing that percentage of organic waste is maximum and then plastic waste that are being disposed of at dump sites.

Table 15 Overall Dumpsite Waste Characteristics in broad category

Waste Categories	Percentage
PLASTIC	15.823%
Paper & Cardboard	13.343%
METAL	3.745%
GLASS	4.339%
RUBBER AND TYRE	2.642%
E-WASTE	1.075%
Textile	6.969%
Other Non-Biodegradable materials	11.498%
Organics	27.971%
Domestic Hazardous Waste	6.127%
Fines (combined with organics, dirt and miscellaneous materials less than 5 cm)	6.468%
Others (to be defined)	-



Statistical analysis of data:

Arithmetic mean: The arithmetic mean of a data set is what is usually called the average of the values, or in other words, the sum of the values divided by the number of values in the data set.

Standard deviation: a parameter that indicates the way in which a probability function or a probability density function is centered around its mean and that is equal to the square root of the moment in which the deviation from the mean is squared

Best Estimate of Precision Analysis: It is the sum of squares of the errors, which are the function of true value.

Best estimate of uncertainty in data: It represents the extent of random error in the measured values.

Table 16 Statistic analysis of Dumpsite waste study

	Landfil l 1	Landfil l 2	Landfil l 3	Landfil l 4	Landfill 5	MEAN	STANDARD DEVIATION	Best Estimate of Precision Analysis	Best estimate of uncertainty in data
PLASTIC									
PET Bottle	2.623%	0.379%	1.712%	2.148%	3.765%	0.02125126	0.01240568	0.013869977	0.006202842
LDPE - Thickness less than 60 microns	3.135%	2.777%	2.879%	4.087%	1.507%	0.02876931	0.00924455	0.010335717	0.004622273
LDPE - Thickness between 60-120 microns	1.341%	2.570%	2.275%	3.711%	2.683%	0.02515979	0.00851274	0.009517538	0.004256372
LDPE - Thickness more than 120 microns	0.000%	0.000%	0.000%	0.000%	0.000%	0	0	0	0
HDPE	3.022%	0.773%	0.903%	2.722%	2.451%	0.01974136	0.01057639	0.011824763	0.005288195
Polypropylene	0.400%	0.300%	0.215%	1.103%	1.151%	0.0063385	0.00455519	0.005092855	0.002277594
Polycarbonate	0.000%	0.000%	0.000%	0.000%	0.000%	0	0	0	0
Polystyrene	0.175%	0.005%	0.339%	0.000%	1.077%	0.00319356	0.00446105	0.004987608	0.002230526
Multi-layered Plastics	1.243%	0.847%	0.753%	1.415%	5.005%	0.01852679	0.01783172	0.019936465	0.008915858
HDPE Milk Packets	1.009%	0.404%	2.101%	1.287%	2.031%	0.01366141	0.00714355	0.007986727	0.003571773
Fibre-Reinforced plastic	0.073%	0.921%	0.085%	0.000%	2.233%	0.00662347	0.00955708	0.010685138	0.004778539
PVC	0.463%	0.905%	0.000%	0.000%	0.000%	0.00273603	0.004059	0.004538101	0.002029501
Other plastics	0.877%	0.975%	1.113%	2.083%	1.067%	0.01223088	0.00489238	0.005469842	0.002446188
Paper & Cardboard									
Newspaper	1.584%	2.063%	0.594%	2.276%	2.307%	0.01764892	0.00715614	0.008000811	0.003578071
White Paper	0.551%	1.196%	1.198%	1.574%	1.151%	0.01133902	0.00367925	0.004113523	0.001839623
Colored Paper	0.000%	0.266%	0.324%	1.781%	1.047%	0.00683797	0.0072601	0.008117044	0.003630052
Books	0.000%	0.000%	0.130%	0.000%	0.000%	0.00025948	0.00058021	0.00064869	0.000290103
Magazines	0.000%	0.000%	0.983%	0.000%	0.000%	0.00196603	0.00439617	0.004915072	0.002198087
Cardboard- 3 ply	1.072%	0.197%	1.502%	1.351%	1.077%	0.01039863	0.00505781	0.005654799	0.002528903
Cardboard-5 ply	6.235%	2.604%	4.236%	4.731%	1.556%	0.03872551	0.01831901	0.020481271	0.009159503
Duplex board	3.271%	1.305%	2.989%	3.395%	3.686%	0.02928982	0.00941854	0.010530249	0.004709271

Other paper and cardboards	1.419%	0.197%	0.409%	0.475%	5.983%	0.01696555	0.02441793	0.027300072	0.012208963
METAL						#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Iron	0.000%	0.000%	2.066%	0.000%	0.000%	0.00413165	0.00923866	0.010329135	0.00461933
Steel	3.690%	0.000%	0.000%	1.593%	0.000%	0.01056738	0.01625878	0.018177864	0.008129388
Aluminum	0.341%	0.660%	0.384%	1.267%	1.695%	0.00869312	0.00591013	0.006607722	0.002955063
Zinc	0.000%	0.000%	0.000%	0.000%	0.000%	0	0	0	0
Brass	0.000%	0.000%	0.000%	0.000%	0.000%	0	0	0	0
Copper	0.000%	0.000%	0.000%	0.000%	0.000%	0	0	0	0
Tin	0.760%	0.438%	1.347%	1.692%	2.791%	0.01405935	0.00916268	0.010244186	0.004581339
Other Metal	0.000%	0.000%	0.000%	0.000%	0.000%	0	0	0	0
GLASS									
Plain Glass	3.578%	3.909%	1.163%	2.915%	2.134%	0.02739759	0.01112951	0.012443175	0.005564757
Colored Glass	0.278%	0.000%	0.464%	0.000%	1.700%	0.00488298	0.00705138	0.007883682	0.00352569
Mirror	0.000%	0.000%	0.000%	0.000%	0.000%	0	0	0	0
Glass cullet (Broken glass)	1.965%	0.551%	0.559%	0.000%	2.480%	0.01111009	0.01055411	0.011799855	0.005277056
Other Glass	0.000%	0.000%	0.000%	0.000%	0.000%	0	0	0	0
RUBBER AND TYRE									
2 & 3-wheeler tyre	0.000%	0.000%	0.000%	0.000%	0.000%	0	0	0	0
4-wheeler passenger	0.000%	0.000%	0.000%	0.000%	0.000%	0	0	0	0
4-wheeler commercial	0.000%	0.000%	0.000%	0.000%	0.000%	0	0	0	0
Rubber - Chappal	0.000%	0.414%	0.000%	3.345%	1.512%	0.01054082	0.01422189	0.015900552	0.007110943
Rubber - Gloves	0.000%	0.000%	0.000%	0.000%	0.000%	0	0	0	0
Rubber - Tubes	0.000%	0.000%	0.000%	0.000%	0.000%	0	0	0	0
Rubber - Shoe Bottoms	1.238%	0.478%	0.000%	0.000%	0.000%	0.00343159	0.00541411	0.006053163	0.002707057
Other rubber and tyre	0.000%	0.975%	3.784%	0.000%	1.462%	0.01244313	0.01554722	0.017382325	0.007773612
E-WASTE									
Batteries-Lithium Ion	0.044%	0.000%	0.190%	0.000%	0.000%	0.00046698	0.00082122	0.000918149	0.000410609
Batteries-Conventional	0.000%	0.000%	0.000%	0.000%	0.000%	0	0	0	0
Wires	0.000%	0.000%	0.015%	0.000%	0.000%	2.994E-05	6.6947E-05	7.48488E-05	3.34734E-05
Electrical Appliances	0.570%	0.202%	1.602%	1.351%	1.401%	0.01025203	0.00605103	0.006765262	0.003025517
Cell Phones	0.000%	0.000%	0.000%	0.000%	0.000%	0	0	0	0
Laptops	0.000%	0.000%	0.000%	0.000%	0.000%	0	0	0	0
Other e-waste	0.000%	0.000%	0.000%	0.000%	0.000%	0	0	0	0
TEXTILE									
Rags	5.002%	2.275%	0.459%	11.935 %	1.117%	0.04157433	0.04681818	0.052344311	0.023409088
Clothes	1.014%	1.487%	2.485%	3.360%	0.000%	0.01669136	0.01301222	0.014548107	0.006506111
Other textile	2.038%	0.064%	0.000%	3.612%	0.000%	0.01142797	0.01633622	0.018264451	0.008168111

Other Non-Biodegradable materials									
Used Beverage Cartons	1.014%	0.901%	0.314%	0.000%	1.927%	0.00831226	0.00741059	0.008285292	0.003705295
Leather	0.000%	0.000%	2.495%	0.000%	0.000%	0.00498992	0.0111578	0.012474801	0.005578901
Coconut Shell	0.980%	5.017%	4.172%	11.990 %	0.000%	0.04431587	0.04719338	0.052763799	0.023596688
Ceramic	0.205%	0.000%	0.000%	0.000%	0.000%	0.0004095	0.00091566	0.001023741	0.000457831
Wood (Engineering wood)	0.127%	0.246%	1.113%	0.000%	3.019%	0.0090087	0.01261894	0.014108406	0.006309471
Hair - Length more than 6 inches	0.000%	0.153%	0.035%	0.000%	2.935%	0.00624449	0.01292988	0.014456041	0.006464938
Hair - Length less than 6 inches	0.000%	0.000%	0.000%	0.000%	0.000%	0	0	0	0
C&D waste	2.969%	9.891%	1.627%	6.364%	0.000%	0.04169973	0.03963553	0.044313865	0.019817763
Other- Organics									
Food waste	13.967 %	36.964 %	26.337 %	4.557%	13.715%	0.19107934	0.12632501	0.14123565	0.063162503
Green garden waste	18.320 %	4.249%	8.842%	2.850%	4.723%	0.07796877	0.06291597	0.070342194	0.031457985
Wood waste (Tree branches etc.)	0.000%	0.000%	0.000%	1.425%	2.806%	0.0084627	0.01257483	0.014059092	0.006287417
Other biodegrables	0.000%	0.000%	0.000%	1.099%	0.000%	0.00219704	0.00491273	0.005492602	0.002456366
Other- Domestic hazardous waste									
Sanitary waste - diapers	6.157%	1.541%	2.540%	1.757%	3.572%	0.03113318	0.01878598	0.021003361	0.009392988
Sanitary waste - sanitary pads	0.000%	0.359%	1.991%	0.871%	1.453%	0.0093476	0.00805074	0.009000999	0.004025369
Bio-medical waste (generated from households)	0.000%	1.310%	1.642%	1.658%	1.235%	0.01168817	0.00680613	0.007609482	0.003403064
Other domestic hazardous waste	0.751%	0.000%	0.928%	1.133%	1.739%	0.00910221	0.00630667	0.007051069	0.003153334
Fines (combined with organics, dirt and miscellaneous materials less than 5 cm)									

Fines (Un-sortable small fragments (generally less than 5 cm or less in diameter); mainly composed of organic material and miscellaneous fines and dirt	6.498%	9.236%	8.707%	1.089%	6.808%	0.06467692	0.03229981	0.036112289	0.016149907
Others (to be defined)	0.000%	0.000%	0.000%	0.000%	0.000%	0	0	0	0

6. Key observations and learnings

- MLP and LDPE (less than 60 micron thick) constituted around half of the total plastic waste that reached these transfer stations – indicating a scope of banning single use plastics more efficiently and linking MLPs with combustion units.
- Waste collection fleet often removed easy recyclables with high value like cardboard and metals from collected waste.
- During Non-household's waste sampling, people gave the waste in segregated manner. So, that percentage of fines are less.
- Sanitary waste and other domestic hazardous waste were mixed with other wastes in packets from households. There was a need to have better awareness regarding the appropriate management of domestic hazardous waste.
- Residual waste, termed as fines, was non-segregable fraction of waste which mostly consisted of organic fractions laden with inert materials like dirt and ashes. If better segregation could be achieved, quantity of fines will automatically reduce.
- All the arrangements were done on time to avoid last hour hassles.
- All the samples (dumpsite) were collected in a manner that overall weight of the entire sorted sample was greater than 90 kgs.
- PVC material was found in the study and non-woven plastic carry bags were also found in a good quantity.
- Separate collection of waste from city in bags lead to ease of segregation. Thus, indicating an increase in MRF efficiency for segregating.
- During sorting, sanitary pads were found in wrapped in paper or plastic carry bags while diapers (Child and adult) were found open or in plastic carry bags.
- Metals like zinc and brass were not found in the waste that indicated that metals did not come with waste.

7. Annexure

7.1 Template of public consent

No.: 71/EE-III/SWM/MC/2018-19/ 330
नगरपालिका परिषद् का कार्यालय
OFFICE OF THE MUNICIPAL COUNCIL
पोर्ट ब्लेयर
PORT BLAIR

Port Blair, dated08.03.2022

LETTER OF INTRODUCTION

Sir/ Madam,

We are glad to inform you that M/s Foursome Enterprises is conducting a survey to collect data on the Sustainable Development Goal indicator 11.6.1 with the permission of Port Blair Municipal Council in Port Blair Municipal Council area under the supervision of GIZ India.

This includes collecting information and waste from households and institutions. The objective of the Contract is to undertake a Municipal Solid waste generation & Characterization within the Municipal limits of Port Blair Municipal Council. This analysis will contribute to analysing feasibility of MRF at these zones and will also help GIZ under the project to develop standard operating procedures for undertaking the waste generation & characterisation studies in other parts of the country.

During the study, surveyor will collect your 08 days daily households waste (organic, non-organic, domestic hazardous and sanitary waste) for the study. The data obtained from the survey will be used to develop strategies and plans to improve waste management and achieve better urban living environment for residents in Port Blair Municipal Council.

We would appreciate your collaboration in allowing M/s Foursome Enterprises staff to collect the information & material, necessary for assessing SDG indicator 11.6.1.

Yours Sincerely,

Executive Engineer-III (Works & SWM)
Municipal Council

Declaration of consent for the use photographs taken during in the waste characterisation study: *With your attendance, you are confirming your awareness of the fact that any photo taken of you in the context of this study may be used by GIZ for PR and documentation purposes, both in print and online. You therefor confirm that you do not object to or limit this usage in temporal or spatial terms. If you do not agree, please contact the study organisers.*

Name of Person- Ward No-

Address- Contact No-

Email- Signature -

Name of Surveyor with Signature-

List of surveyor is attached

7.2 Template for tare weight of waste containers

CONTAINER TARE WEIGHT TRACKING
WASTE CHARACTERISATION STUDY

Sample No.
Vehicle Details:
Sample Location: Date/Time:……..

CONTAINER NO.	TARE WEIGHT	CONTAINER NO.	TARE WEIGHT
1.		36.	
2.		37.	
3.		38.	
4.		39.	
5.		40.	
6.		41.	
7.		42.	
8.		43.	
9.		44.	
10.		45.	
11.		46.	
12.		47.	
13.		48.	
14.		49.	
15.		50.	
16.		51.	
17.		52.	
18.		53.	
19.		54.	
20.		55.	
21.		56.	
22.		57.	
23.		58.	
24.		59.	
25.		60.	
26.		61.	
27.		62.	
28.		63.	
29.		64.	
30.		65.	
31.		66.	
32.		67.	
33.		68.	
34.		69.	
35.		70.	

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7.3 Table for sample collection

WASTE SAMPLE RECORD				
WASTE CHARACTERIZATION STUDY				
SAMPLE INFORMATION:				
Date: Sample No:				
		Bucket/container no	**Bucket/container weight**	**net weight**

7.4 Waste sample record sheet

WASTE SAMPLE RECORD							
WASTE CHARACTERIZATION STUDY							
SAMPLE INFORMATION:							
FACILITY:		SAMPLE SIZE:					
VEHICLE INFORMATION:		DATE/TIME:		WEATHER:			
VEHICLE NO.		VEHICLE TYPECOLLECTION LOCATION					
S.N.		WASTE MATERIALS	GROSS WEIGHTS	CONTAINER NUMBER OR TYPE	Tare Weight	Net Weight	COMMENTS
	PLASTIC						
1	1.1	PET Bottle					
2	1.2	LDPE - Thickness less than 60 microns					
3	1.3	LDPE - Thickness between 60-120 microns					
4	1.4	LDPE - Thickness more than 120 microns					
5	1.5	HDPE					
6	1.6	Polypropylene					
7	1.7	Polycarbonate					
8	1.8	Polystyrene					
9	1.9	Multi-layered Plastics					
10	1.10	HDPE Milk Packets					
11	1.11	Fibre-reinforced plastic					
12	1.12	PVC					
13	1.13	Other plastics					
	Paper & Cardboard						
14	2.1	Newspaper					
15	2.2	White Paper					
16	2.3	Colored Paper					
17	2.4	Books					

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18	2.5	Magazines					
19	2.6	Cardboard- 3 ply					
20	2.7	Cardboard-5 ply					
21	2.8	Duplex board					
22	2.9	Other paper and cardboards					
	METAL						
23	3.1	Iron					
24	3.2	Steel					
25	3.3	Aluminum					
26	3.4	Zinc					
27	3.5	Brass					
28	3.6	Copper					
29	3.7	Tin					
30	3.8	Other Metal					
	GLASS						
31	4.1	Plain Glass					
32	4.2	Colored Glass					
33	4.3	Mirror					
34	4.4	Glass cullet (Broken glass)					
35	4.5	Other Glass					
	RUBBER AND TYRE						
36	5.1	2 & 3-wheeler tyre					
37	5.2	4-wheeler passenger					
38	5.3	4-wheeler commercial					
39	5.4	Rubber - Chappal					
40	5.5	Rubber - Gloves					
41	5.6	Rubber - Tubes					
42	5.7	Rubber - Shoe Bottoms					
43	5.8	Other rubber and tyre					
	E-WASTE						
44	6.1	Batteries- Lithium Ion					

45	6.2	Batteries- Conventional					
46	6.3	Wires					
47	6.4	Electrical Appliances					
48	6.5	Cell Phones					
49	6.6	Laptops					
50	6.7	Other e-waste					
	TEXTILE						
51	7.1	Rags					
52	7.2	Clothes					
53	7.3	Other textile					
Other Non-Biodegradable materials							
54	8	Used Beverage Cartons					
55	9	Leather					
56	10	Coconut Shell					
57	11	Ceramic					
58	12	Wood					
59	13.1	Hair - Length more than 6 inches					
60	13.2	Hair - Length less than 6 inches					
61	14	C&D waste					
	Others- Organics						
62	15.1	Food waste					
63	15.2	Green garden waste					
64	15.3	Wood waste (Tree branches etc.)					
65	15.4	Other biodegrables					
	Others- Domestic Hazardous waste						
66	16.1	Sanitary waste - diapers					
67	16.2	Sanitary waste – Sanitary pads					
68	16.3	Bio-medical waste (generated from households)					

69	16.4	Other domestic hazardous waste					
70	17	Fines (Unsortable small fragments (generally less than 5 cm or less in diameter); mainly composed of organic material and miscellaneous fines and dirt)					
71	18	Others (any other material)					
COMMENTS/OBSERVATIONS:							

7.5 Items required during study

S.N.	Material/PPEs used during study	Quantity	Remarks
	Materials		
1	Dustbin*Large	2	
2	Dustbin*small	30	
3	Garbage bags	60 pcs	1 pc contains 15 garbage bags
4	Table	4	
5	Chair	5	
6	Weighing machine	3	
7	Polythene	16 mtr *5 ft	Used for spreading out on table
8	Shovel	1	For collection of samples
9	House- broom	1	
10	Dustpan	1	
11	Duster cloth	2	
	PPEs		
1	Safety Gloves*Latex	125 pair	
2	Safety Gloves*Cotton	18	Rubber coated gloves
3	Safety mask (N95)	12	
4	Safety mask (Surgical)	120	
5	Safety goggles	12	
6	Safety vest	10	Reflective jackets
7	Shoe cover	100	
8	Head cap	100	
9	Hand Sanitizer Liquid	3 Bottle	500 ML per bottle
10	Hand Sanitizer Gel	2	100 ML per bottle
11	Hand wash	1	
12	First Aid kit	1	
13	Tissue paper	4 box	200 pulls per box

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ANNEXURE-III A

Details of existing wet waste facilities in SVPMC Area along with photographs

S.No.	Name /Location/Technology	Design Capacity (TPD)
1.	Gandhi Park Vermi Compost Facility    	5.0
2.	Brookshabad Compost Facility    	5.0

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3.	Anarkali Compost Facility-1&2    	5.0 (3.0 & 2.0)
4.	Brichgunj composting unit    	2.00

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5.	Junglighat compost unit:  	1.0
6.	Garacharama compost plant:  	8.0 (5.0 & 3.0)
7.	Junglighat Electric Composting Unit    	0.25

8.	Mohanpura Electric Composting unit  	0.25
9.	Fish waste processing unit    	2.0
10.	Coconut Shredding unit    	4.0
TOTAL		**32.5 TPD**

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Annexure-III B

S.No.	Location	Capacity in TPD	Photographs
1.	Shivapuram	5	
2.	Rangat	5	
3.	Kadamtala	5	
4.	Nilambur	5	
5	Neil Kendra	5	
6	Bakultala	5	
7	Rampur	5	
8	Pahalgaon	5	
9	Basantipur	5	
10	Madhupur	5	
11	Nabagram	5	

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12	Kishori Nagar	5	
13	Radha Nagar	5	
14	Kerlapuram	5	
15	Beodnabad	5	
16	Shyam Nagar	5	
17	Neil Kendra	5	
18	Netaji Nagar	5	
19	Rabindra Nagar	5	
20	Shore Point	5	
21	Manarghat	5	
22	Collinpur	5	
23	Brindaban	5	

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24	Chouldari	5	
25	Wandoor	5	
26	Laxmi Nagar	5	
TOTAL		**130 TPD**	

COMPOST DISRTIBUTION BY SVPMC TO VARIOUS DEPARTMENTS AND INSTITUTIONS

24 July 2024	Inauguration of semi automatic MRF at Brookshabad	The occasion of inauguration of semi automatic MRF at Brookshabad , Shri Keshav Chandra IAS Chief Secretary A & N islands handed over a compost bag of 5 kg symbolically to horticulture officer. PBMC handed over 8 MT organic compost prepared at Brookshabad compost plant to horticulture deptt . Dr Dilraj Kaur IAS Comm cum Secretary,Sh Amit Kale IAS Secy PBMC , Sh Avinash Kumar Singh SE ,Sh Rajiv Kumar Jain Consultant and other senior officers were also present	
25 July 2024	PBMC handed over 500 kg organic compost to KAMARAJ English medium senior secondary school	As part of #SafaiApnaoBimaariBhagao PBMC handed over 500 kg organic compost to KAMARAJ English medium senior secondary school for use in the green area .This organic compost was prepared at Brookshabad compost plant by PBMC	

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25 july 2024	PBMC distributed bags of organic compost prepared at Brookshabad compost plant to Councillors.	As part of #SafaiApnaoBimaariBhagao and to promote source segregation, home composting , spread awareness about processing of wet waste ,PBMC distributed bags of organic compost prepared at Brookshabad compost plant to Councillors.	

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26 July 2024	PBMC distributed bags of organic compost to 9 Councillors	Under the dynamic leadership of Sh Amit Kale IAS , Secretary PBMC , 4 TPD wet waste is being processed at Brookshabad compost plant. As part of #SafaiApnaoBimaariBhagao PBMC distributed bags of organic compost to 9 Councillors today.	

30 July 2024	Secretary PBMC along with Horticulture Officer distributed 200 kgs of organic compost to Raj Niwas and Secretariat.	In an effort to promote #SwachtaApnaoBimariBhagao campaign, Sh Amit Kale, IAS, Secretary PBMC along with Horticulture Officer distributed 200 kgs of organic compost to Raj Niwas and 300 kg to the Secretariat.	 'Swachhta Apnao Bimari Bhagao' campaign **PBMC distributes 200 kgs of organic compost to agricultural staff at Raj Niwas and 300 kgs to Secretariat** Port Blair, July 29 In line with the vision of the Chief Secretary, A & N Administration, Shri Amit Kale, IAS, Secretary, PBMC distributed 200 kilograms of organic compost to the agricultural staff at Raj Niwas and 300 kilograms to the Secretariat. This compost, generated at PBMC's Brookshabad Compost Plant, will enhance the growth of fruit-bearing trees, vegetables and other plants, leading to improved yield and quality. PBMC as part of its Swachhta Apnao Bimari Bhagao (#SABB) campaign, is also planning to distribute the organic compost to schools, colleges, RWAs, and residents for use in home composting. This initiative serves as an effective wet waste management practice and demonstrates the benefits of converting organic waste into a valuable resource as a (Contd. on last page)
11 Sep 2024	Organic Compost	Today as part of #SwachhataHiSeva20 24 PBMC handed over 500 kg organic Compost to Registrar, High Court Portblair to enrich the soil with nutrients & to promote healthier plant growth.	

1938

13 Sep 2024	Compost Distribution	As part of #SwachhataHiSeva2024 PBMC handed over 500 kg organic compost at ANPCC office (A& N Pollution Control Committee) Portblair to enrich the soil with nutrients & to promote healthier plant growth.	
20 Sep 2024	organic compost to Forest deptt and PM Shri Kendriya Vidyalaya no 1	As part of #SwachhataHiSeva2024 staff handed over 1000 kg organic compost to Forest deptt and PM Shri Kendriya Vidyalaya no 1 to enrich the soil with nutrients .	

1939

25 Sep 2024	Compost	As part of #SwachhataHiSeva2024 today 1000 kg organic compost handed over to Govt Senior Secondary School, Haddo ward no 1 and Govt Senior Secondary School Haddo ward no 2 to enrich the soil with nutrients for plant growth.	
26 Sep 2024	compost	As part of #SwachhataHiSeva2024 campaign, 1000 kg organic compost was handed over to Govt Sr Secondary Schools of ward no 4 and 5 Sri Vijaya Puram in the presence of students and staff of schools.	

1940

27 Sep 2024	Compost distribution	As part of #SwachhataHiSeva2024 campaign, today 1500 kg organic compost was handed over to Sagritara Pry School ,Tagore College of Education and Indian Coast Guard colony of ward no 6,7 & 8	
28 Sep 2024	Compost distribution	500 kg organic compost to the incharge of community hall Haddo for use in the green area for enriching soil with nutrients.	

1941

28 Sep 2024	Compost distribution	As part of #SwachhataHiSeva2024 campaign,500 kg organic compost was handed over to Sr Secondary School (Telugu medium) Haddo in the presence of student for awareness regarding the importance of segregation of waste	
30 Sep 2024	Compost distribution	As part of #SwachhataHiSeva2024 campaign,500 kg organic compost was handed over to Govt Polytechnic (ward no 17) and 500 kg organic compost to Govt school Garacharama (ward no 18) in the presence of students.	

1942

Compost generation and its utilization details				
S.No.	**Month & Year**	**Quantity of wet waste collected (TPD)**	**Quantity of compost generated (TPD)**	**Utilization of compost**
1	May, 2024	30.38	3.05	• Self-Utilized by SVPMC in the Parks and gardens
2	June, 2024	20.66	2.2	• Self-Utilized by SVPMC in the Parks and gardens
3	July, 2024	31.60	3.5	• Self-Utilized by SVPMC in the Parks and gardens, • Distribution among schools, • Distribution among ward councillors, • Distribution to various departments under A&N Administration
4	August, 2024	37.96	4.18	• Self-Utilized by SVPMC in the Parks and gardens, • Distribution among schools, • Distribution among ward councillors, • Distribution to various departments under A&N Administration
5	September, 2024	32.56	3.5	• Self-Utilized by SVPMC in the Parks and gardens, • Distribution among schools, • Distribution among ward councillors, • Distribution to various departments under A&N Administration
6	October, 2024	33.51	3.6	• Self-Utilized by SVPMC in the Parks and gardens, • Distribution among schools, • Distribution among ward councillors, • Distribution to various departments under A&N Administration

1943

LETTER OF CHIEF SECRETARY, A&N ADMINISTRATION TO ALL THE DEPARTMENTS TO UTILISATION OF ORGANIC COMPOST WITHIN THE GOVT. INSTITUTIONS

केशव चंद्र,भा.प्र.से
Keshav Chandra, IAS
मुख्य सचिव
Chief Secretary

सत्यमेव जयते

फोन/Ph.No. 03192-233110/234087
फैक्स सं/Fax No. 03192-232656
ई-मेल/E-mail: cs-andaman@nic.in

अण्डमान तथा निकोबार प्रशासन
ANDAMAN & NICOBAR ADMINISTRATION
सचिवालय /**SECRETARIAT**

D.O No. Mtg/18/2024-O/o SE (PBMC)-PBMC_AN
Port Blair, dated the 06th September, 2024

Dear Colleagues,

I am writing to request the utilization of the organic compost produced by the Port Blair Municipal Council (PBMC). The council has been dedicated to producing high-quality organic compost, which can significantly benefit various sectors including agriculture, gardening, and other related fields within government institutions.

The compost produced by PBMC is derived from the organic wet waste of the city. By utilizing this compost, you will not only enhance your operations but also support our commitment to the principles of REDUCE, REUSE, and RECYCLE.

I encourage you to take advantage of this opportunity to collaborate with PBMC and contribute to the advancement of sustainable practices in our islands.

With regards.

Yours sincerely

(Keshav Chandra)

All Secretaries/Special Secretaries/HoDs.

File No. Mtg/18/2024-O/o SE(PBMC)-PBMC_AN (Computer No. 92067)
Generated from eOffice by P. UMAMAHESWARA RAO, JE(PU)-SWM, JUNIOR ENGINEER(SWM)-PBMC, PORT BLAIR MUNICIPAL COUNCIL on 24/09/2024 11:19 PM

1944

Annexure-III D

VERMI COMPOSTING FACILITY AT HOUSE HOLDS







Vermi composting is being practiced by each and every household using earthworms which convert the organic waste into manure rich in high nutritional content and further used in Kitchen/terrace gardening. Vermi composting practiced at Shivapram GP is shown by above photographs.

ANNEXURE-IV A

Details of Dry waste processing facilities in Sri Vijaya Puram City:

Sl. No.	Material Recovery Facility-Dry recyclable waste management at DRC	Photograph of the facility	Design Capacity in TPD
1.	Anarkali DRC-1	 	1.0
2.	Anarkali DRC-2	   	1.0

1946

3.	Anarkali DRC-3	   	0.8
4.	Mohanpura DRC	 	1.0
5.	VIP Road DRC	2  	1.0

		1947  	
6.	Junglighat DRC	   	1.0

1948

7.	Brookshabad DRC-1	   	1.0
8.	Brookshabad DRC-2	   	1.0
9.	Brookshabad DRC-3	 	1.0

10	New Pahargaon DRC	   	1.0
11	School Line DRC	   	0.8

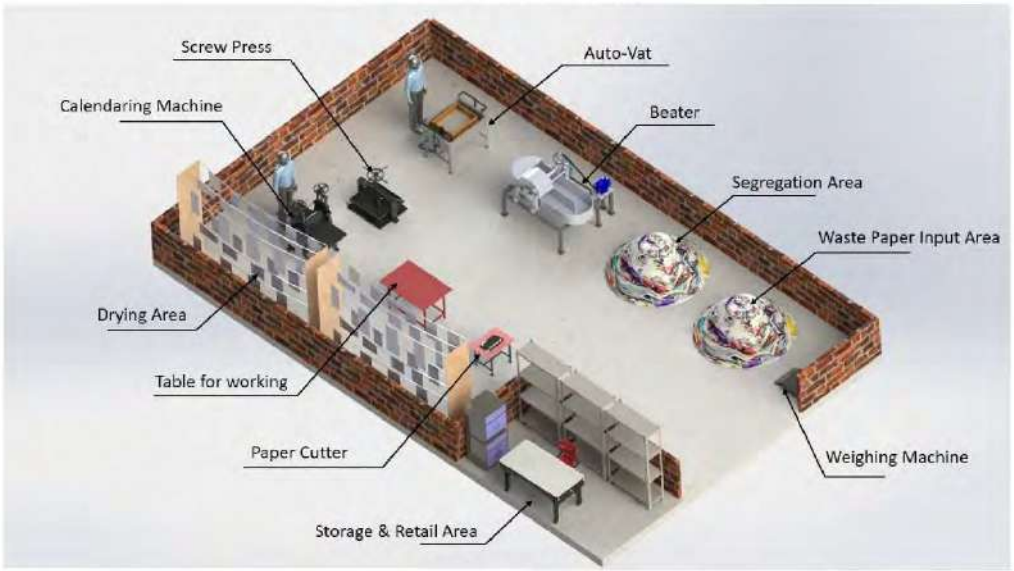
12	Dollygunj DRC-1	1950    	1.0
13	Dollygunj DRC-2	   	1.0

14	Garacharama DRC-1	   	1.0
15	Bathubasti DRC	   	0.8

16	Brookshabad MLP MRF	 	5
17	Brookshabad MRF Glass	   	4
18	Birdline DRC		0.8
	TOTAL		23 TPD

PAPER RECYCLING UNIT

PAPER RECYCLING FACILITY



SWAAHA RESOURCE MANAGEMENT PRIVATE LIMITED
RELEASED

Swaaha Resource Management Private Limited

ELECTRICAL CONNECTION DETAILS
PAPER RECYCLING FACILITY

SWAAHA RESOURCE MANAGEMENT PRIVATE LIMITED
RELEASED

- Input Mains Electrical Connection to be provided by client:

Input Main Electrical Connection Board



1. Switch Board; Weighing Machine & Internal Lighting & Fans



2. MCB & Starter for Beater (25A, 4 Pole MCB with 5 HP Starter)





3. MCB & Starter for Calendaring Machine (16A, 4 Pole MCB with 2 HP Starter)





Item Descriptions

S. No.	Description	Quantity
1	Buzzbar 8ax with 10 HP Supply	1
2	25A; 4 Pole MCB; L&T	1
3	16A; 4 Pole MCB; L&T	1
4	Starter 2-5 HP; L&T	2
5	6A; Socket with Switch; Anchor	2
6	16A; Socket with Switch; Anchor	2
7	Switches; for Internal Shed Lightings & Fans	10

*This is just a guideline for proper selection. The client may select any other similar make and model as per the availability and requirement.

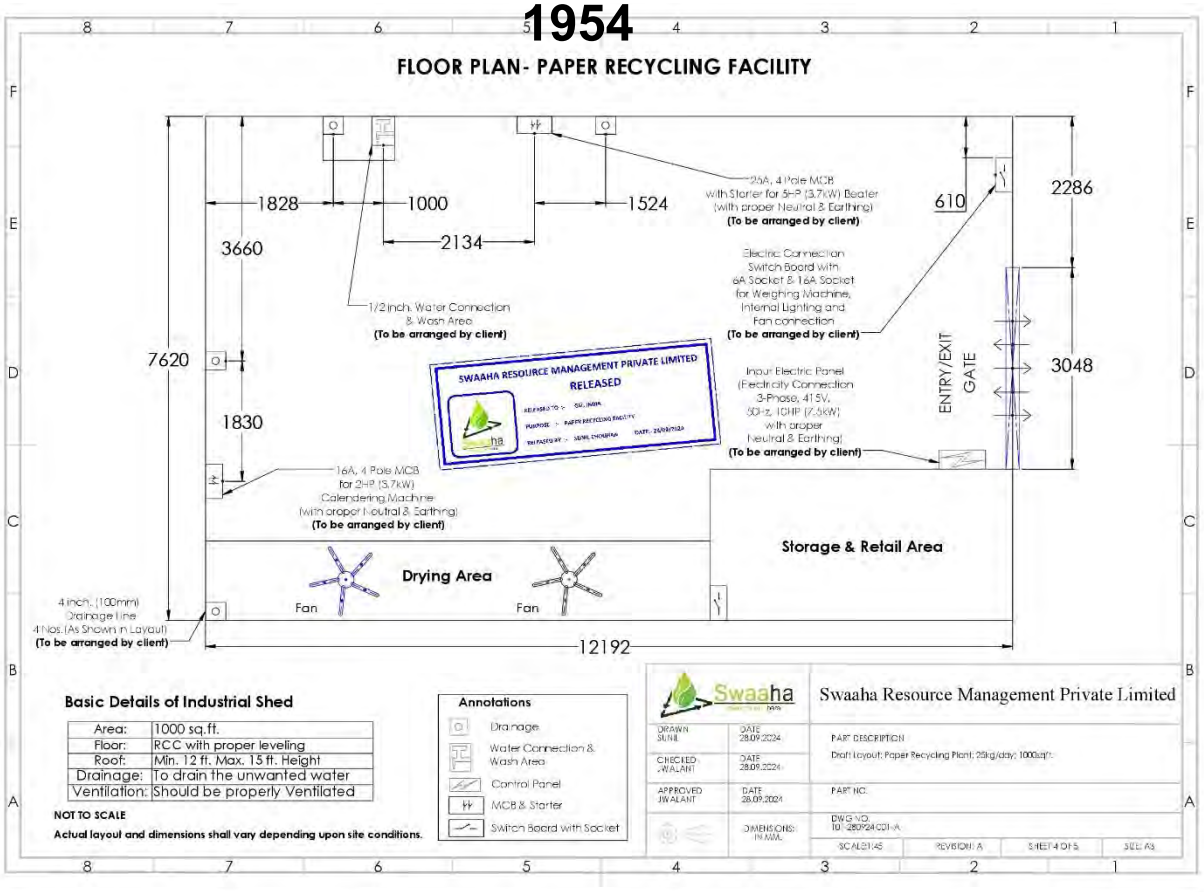
Swaaha Resource Management Private Limited

- Electrical Connection Required:

Sr. No.	Parameter	Unit	Value
1.	Phase	-	3 (R-Y-B) along with Neutral and Earthing
2.	Rated Load	HP & kW	10 HP; 7.5kW
3.	Frequency	Hz	50
4.	Volt	V	415

1954

FLOOR PLAN- PAPER RECYCLING FACILITY



Basic Details of Industrial Shed

Area:	1000 sq.ft.
Floor:	RCC with proper leveling
Roof:	Min. 12 ft. Max. 15 ft. Height
Drainage:	To drain the unwanted water
Ventilation:	Should be properly Ventilated

NOT TO SCALE

Actual layout and dimensions shall vary depending upon site conditions.

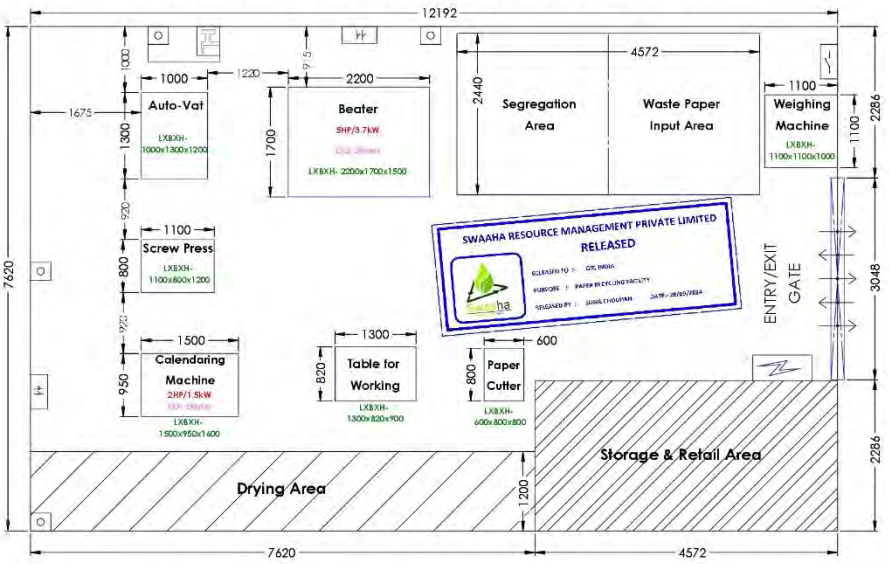
Annotations

- Drainage
- Water Connection & Wash Area
- Control Panel
- MCB & Starter
- Switch Board with Socket

Swaaha Resource Management Private Limited

DRAWN SUNIL — DATE 28.09.2024
CHECKED J.WALANT — DATE 28.09.2024
APPROVED J.WALANT — DATE 28.09.2024
DIMENSIONS: IN MM.
PART DESCRIPTION: Draft Layout: Paper Recycling Plant; 25kg/day; 1000sq/ft.
PART NO.
DWG NO. TO: 280924:CD1-A
SCALE 1:45 — REVISION: A — SHEET 4 OF 5 — SIZE: A3

INSTALLATION LAYOUT- PAPER RECYCLING FACILITY



Basic Details of Layout Plan

Area:	1000 sq.ft.
Floor:	RCC with proper leveling
Roof:	Min. 12 ft. Max. 15 ft. Height
Ventilation:	Should be properly Ventilated

NOT TO SCALE

Actual layout and dimensions shall vary depending upon site conditions.

Annotations

- Drainage
- Water Connection & Wash Area
- Control Panel
- MCB & Starter
- Switch Board with Socket

Swaaha Resource Management Private Limited

DRAWN SUNIL — DATE 28.09.2024
CHECKED J.WALANT — DATE 28.09.2024
APPROVED J.WALANT — DATE 28.09.2024
DIMENSIONS: IN MM.
PART DESCRIPTION: Draft Layout: Paper Recycling Plant; 25kg/day; 1000sq/ft.
PART NO.
DWG NO. TO: 280924:CD1-A
SCALE 1:45 — REVISION: A — SHEET 5 OF 5 — SIZE: A3

1955

ANNEXURE-IV-C

Details of Existing waste processing Facility in Rural Area:

Sl.No	Name of SWM Cluster	Design Capacity	Photograph of SWM cluster
1.	Shivapuram	0.5TPD	
2.	Rangat	0.5TPD	
3.	Kadamtala	0.5TPD	

4.	Long Island	0.5TPD	
5.	Nilambur	0.5TPD	
6.	Bakultala	0.5TPD	
7.	Rampur	0.5TPD	

1956

8.	Pahalgaon	0.5TPD	
9.	Basantipur	0.5TPD	
10.	Madhupur	0.5TPD	
1	Nabagram	0.5TPD	

1957

12.	Kishori Nagar	0.5TPD	
13.	Radha Nagar	0.5TPD	
14.	Kerlapuram	0.5TPD	
15.	Beodnabad	0.5TPD	
16.	Shyam Nagar	0.5TPD	

17.	Neil Kendra	0.5TPD	
18.	Netaji Nagar	0.5TPD	
19.	Rabindra Nagar	0.5TPD	
20.	Shore Point	0.5TPD	

1959

21.	Manarghat	0.5TPD	
22.	collinpur	0.5TPD	
23.	Brindaban	0.5TPD	
24.	Chouldari	0.5TPD	
25.	Wandoor	0.5TPD	

1960

1961

26.	Laxmi Nagar	0.5TPD	
	TOTAL	**13 TPD**	

1962

BIOMINING OF LEGACY WASTES DUMPED AT BROOKSHABAD DUMP SITE

FINAL PROGRESS REPORT



Prepared By

Executive Engineer-III

Port Blair Municipal Council

Port Blair

1

1963

1.0. INTRODUCTION

Unscientifically constructed and landfills create irreversible damage to the environment: They generate leachates, emit greenhouse gases, pollute groundwater, etc. A leachate is any liquid that, in the course of passing through waste, extracts soluble or suspended contaminants. It is hazardous in nature. The environmental, ecological and socio-economic implications often make land disposal a menace to be managed. There is an urgent need, therefore, to reclaim the prevailing dumpsites to ensure land availability (referred to as extended landfill capacity) and recycle untapped resources deposited at old dumpsites. Notably, two approaches can undertake to treat legacy waste—or aged waste:

1. Scientific capping, which is typically applied to landfills constructed scientifically (engineered landfills/ sanitary landfills).
2. Landfill mining/ biomining, which is a technically assisted and economically managed extraction of recyclables and other revenue-generating fractions from waste materials already been disposed of by land filling.

Biomining of dumpsites is typically aided by a process called bioremediation. It is microbe-mediated degradation of organic waste carried out by adding biological inoculums to the dumpsite. The guidelines by the Central Pollution Control Board recommend 'bioremediation' for the treatment of legacy waste and reclamation of old dumpsites. It is, however, imperative to note that bioremediation is only possible for dumpsites having a higher organic content (such it is where fresh waste is disposed of along with legacy waste). Bioremediation of legacy waste does not necessarily give efficient results in old / aged landfills (un-operated and closed dumpsites) where the waste has already reached the maximum level of microbial degradation. Therefore, the very first step towards dumpsite reclamation is to analyze the technical parameters such as characteristics and composition of legacy waste for assessing the feasibility of conducting bioremediation of dumpsites.

Biomining (also referred as landfill mining) refers to the process of digging out the previously dumped/ disposed of materials from a Landfill (in our case Open dumpsite) to recover metal, plastic, glass, combustibles, soil and other fine materials. It also refers to clearing the open dumpsites by segregating the prevailing waste into different constituents and converting the biodegradable portion in to compost, and the remaining non-recyclable plastic as refused derived

fuels, which in turn can be used as an alternate fuel in Industries. The Compostable portion of the waste is removed through sieving and sold for use as soil enriches/ fertilizer or for landscaping The first step for land fill mining is the stabilization of the existing waste in the dumpsite. Mining of unsterilized or in sufficiently decomposed wastes would result in an unacceptable generation of nuisances and will have a negative impact with regard to the health and safety of the people operating and also affects the ecosystem. The technology mainly targets to excavate the materials and process in such a way that the target materials can be separated from the excavated mass and further process to meet its required grade for any reuse or recycling operations. Generally, excavation is conducted using technologies used for open-cast mining, usually a front-end loader, a backhoe, a clamshell, a hydraulic excavator, or a combination of these. The Excavated material may be directly processed in –situ or will be stock piled for later processing via different methodologies to segregate the components. Based on the extent of resource recovery, the quantum and number of streams of segregation of the excavated quantum into varies. The process starts with the excavation of materials and the excavated materials are discharged into coarse screens; and oversize, non-process able wastes are removed. The residual fraction is further sent to relatively smaller screens and the material fraction that passes through the second screen is considered as soil fraction.

Further to segregate the soil fraction from the excavated waste, an efficient unit process named trammel screen is widely used. After this, the non-ferrous fraction is processed through an air classifier which separates the light organic materials from the heavy organics and commonly, this is used to recover waste-derived fuel (RDF).

The processing at the landfill site is typically accomplished by means of equipment mounted on trailers, which usually consists of conveyors belts, a coarse screen, a fine screen and magnet separator. In the final stage after recovery of metals, plastics, etc and combustible materials, the processing rejects and inert is disposed of as a back filling material after confirming its required geophysical properties.

The Indian Union territory of Andaman and Nicobar Islands (ANI's) is situated in the Bay of Bengal. ANI is strategically important in terms of national security and geopolitical. Nearly half of ANI’s population resides in Port Blair – with close to 150,000 inhabitants (Census of India, 2011), the municipality is the capital city of ANI and the center for most of ANI's economic activities, being the entry point for tourists and fisheries. Solid waste generated by the floating

population like tourists and the defence personnel's, apart from the native resident population, is a pressure mounting scenario for the Port Blair Municipal Council (PBMC) waste management. A report by Kaladharan et al. (2017) indicates that 47% of ANI solid waste is unmanaged, as compared to the national average of 14%. An affidavit submitted by the Andaman and Nicobar Pollution Control Committee (ANPCC) to the National Green Tribunal (NGT) indicates that PBMC generates about 115 metric tons of municipal waste per day, of which organic waste accounts for 60% (ANPCC 2019). In terms of generated volume, the main organic waste streams identified in the ANI are fish processing waste (FPW), Coconut Shell Waste (CW), Flower Waste (FW), and Saw Mill Waste (SMW). In this regard, a detailed study was commissioned under the Indo-German technical cooperation project Management of Organic Waste in India, to assess the practicality of the uptake/recycling of the main organic wastes in Port Blair, A&N Islands, and contribute to the sustainable waste management in the islands.

2.0. DESCRIPTION OF BROOKSHABAD DUMP SITE

The project must adopt an integrated approach to propose all the activities required for Dumpsite Remediation. It may be detailed as follows:

- ✓ Lowest ground level attains.
- ✓ Raking of garbage layer through long spike harrow operating in cross directions was done regularly to pull out rags, plastics, rubber, textiles, etc.
- ✓ Coarse material and garbage are screened through rotary / horizontal screens.
- ✓ The recovered earth is spread in the dedicated area.
- ✓ The stone, bricks, ceramics which are removed while screening and raking to be sent for land filling or for filling up of low lying area.
- ✓ The recyclables like plastic, glass, metal, and rugs cloth recovered from the waste was bundled and sold.
- ✓ The soil recovered to be used for refilling the ground on the same site for greenery.
- ✓ The recovered construction and demolition waste sent to C&D processing facility for producing building materials and left over the waste to be sent a secured landfill.
- ✓ Valuable land to be recovered by bio remediation process of legacy waste
- ✓ The Project Machines to be deployed: -Trommels, Horizontal Screens, Excavator, back hoe loaders, workers.
- ✓ Progressof Work to be monitored by aexpert team.

1966

The remediation of Dumpsite leads to the following advantages:-

- ✓ Elimination of foul odor to be refits the citizen living nearby.
- ✓ Decline in vector burned is eases arising out of the dumpsite.
- ✓ Significant Reduction of air pollution happens of the entire area.
- ✓ Elimination of dump fires and leachate generation.
- ✓ Up lifting of the environmental, aesthetic and social parameters of entire area.
- ✓ Reduction in Green House Gas emissions, Soil Pollution and Ground Water Contamination
- ✓ Increase in nearby real estate value and rental values.
- ✓ Dumpsite land becomes available for other use.

3.0. PROGRESS OF WORK AT BROOKSHABAD DUMP SITE

Figure.1 represent the Views of Brookshabad dumpsite before the commencement of bio mining operations. M/s. Aqua World Exports Pvt. Limited, Chennai proceeded with the activities of 1. Installation of Trommels and conveyors with adequate capacity of motors and gear boxes. 2. Engaging chain dozer/ excavator for loosening and excavating the legacy waste. 3. Heaping the excavated garbage in to windrows for drying and waste stabilization. 4. Processing the legacy waste to segregate the recyclable materials and the enriched soil, debris like stone, and shredding the remaining matter mixed with plastics in to RDF. 5. Selling of recovered incinerable fraction as refused derived fuel (RDF) and fine fraction as Compost.

Process Flow Diagram of the Biomining facility at Brookshabad is depicted in Figure.2. The View of the machinery installed at the Brookshabad Biomining facility is presented in figure.3. The full-fledged operations were started on 16th December 2022. The biomining operations were carried out after the Weighment of each truck. The excavated materials are fed on to conveyor. The trammel of 8 MM separates the fine fraction called Bio earth (<8mm). The coarse fraction (>10MM) such as heavier stones, tyres, tubes, glass bottles etc. are separated manually from the RDF. The general work flow for biomining facility at Brookshabad as follows:-

- ✓ Estimation of legacy waste quantity.
- ✓ Execution Plan, Drawings of Scientific Reclamation Layout and required infrastructure.
- ✓ Site Assessment Report (SAR), Environment Monitoring Plan and Implementation Mechanism.

1967

- ✓ Resource mobilization
- ✓ Construction of Processing Facility
- ✓ Excavation, resource recovery, sale and disposal of the recovered materials
- ✓ Scientific disposal of the process rejects.
- ✓ Reclamation of land, leveling, grading and compaction

1968

Table.1. Consolidated Details of Operating Hours of JCB and Power Consumption at Dumpsite.

Biomining Daily Progress Report - Cumulative												
Date	Total Qty. Of Legacy Waste in Tons	Quantity Handled Up to The Date-Tons	Quantity Handled on the Day-Tons	Total Qty. Handled In Tons	Balance to be Handled In Tons	EB Reading		Total Units	JCB Running Hours	Machinery Running Hours	Man power	Remarks
						Starting Unit	Ending Unit					
16.12.2022	100000	0	260	260	99740	14.5	15.8	26	8.7	6.5	5	
17.12.2022	100000	260	360	620	99380	15.8	17.6	36	12.6	9	11	
19.12.2022	100000	620	360	980	99020	17.6	19.4	36	13.4	9	9	
20.12.2022	100000	980	360	1340	98660	19.4	21.2	36	12.8	9	12	
21.12.2022	100000	1340	320	1660	98340	21.2	22.8	32	11.8	8	13	
22.12.2022	100000	1660	380	2040	97960	23	24.9	38	12.36	9.5	11	
23.12.2022	100000	2040	500	2540	97460	25.1	27.6	50	13.8	12.5	10	
24.12.2022	100000	2540	280	2820	97180	27.8	29.2	28	9.7	7	8	
25.12.2022	100000	0	0	0	0	0	0	0	0	0	0	Christmas Leave
26.12.2022	100000	2820	400	3220	96780	29.6	31.6	40	13.2	10	12	
27.12.2022	100000	3220	500	3720	96280	31.6	34.1	50	13.6	12.5	13	
28.12.2022	100000	3720	320	4040	95960	34.4	36	32	14.6	8	11	
29.12.2022	100000	4040	180	4220	95780	36.2	36.7	10	18.7	4.5	10	GeneratorRunning-2.5 Hrs
30.12.2022	100000	4220	500	4720	95280	37.1	39.6	50	14.7	12.5	10	
31.12.2022	100000	4720	340	5060	94940	39.9	41.6	34	12.4	8.5	7	
01.01.2023	100000	0	0	0	0	0	0	0	0	0	0	Machine Repair Work
02.01.2023	100000	0	0	0	0	0	0	0	0	0	0	Due to Rain
03.01.2023	100000	5060	680	5740	94260	42.3	45.7	68	18.7	17	14	
04.01.2023	100000	5740	540	6280	93720	45.9	48.6	54	17.4	13.5	12	
05.01.2023	100000	6280	480	6760	93240	49	51.4	48	15.2	12	11	

1969

06.01.2023	100000	6760	680	7440	92560	51.6	55	68	18.9	17	12	
07.01.2023	100000	7440	320	7760	92240	55.2	56.2	20	14.2	8	10	Generator Running 3 Hrs
08.01.2023	100000	0	0	0	0	0	0	0	0	0	0	Due to Rain
09.01.2023	100000	7760	540	8300	91700	56.6	59.3	54	16.4	13.5	7	
10.01.2023	100000	8300	480	8780	91220	59.5	61.9	48	15.8	12	6	
11.01.2023	100000	8780	280	9060	90940	62.1	63.5	28	11.2	7	9	
12.01.2023	100000	9060	420	9480	90520	63.5	65.6	42	16.4	10.5	11	
13.01.2023	100000	9480	280	9760	90240	65.9	66.9	20	14.8	7	4	Dg Run1.5 Hrs
14.01.2023	100000	9760	340	10100	89900	0	0	0	12.1	8.5	5	Dg Run
15.01.2023	100000	0	0	0	0	0	0	0	0	0	0	Pongal Festival
17.01.2023	100000	10100	450	10550	89450	0	0	0	14.7	11.25	11	DG Run Due to Internal Eb Problem
18.01.2023	100000	10550	320	10870	89130	0	0	0	11.2	8	6	DG Run Due to Internal Eb Problem
19.01.2023	100000	10870	380	11250	88750	0	0	0	12.3	9.5	10	DG Run Due to Internal Eb Problem
20.01.2023	100000	11250	330	11580	88420	66.9	68.2	26	11.7	8.25	9	2.5 Hrs DG Run
21.01.2023	100000	11580	380	11960	88040	68.2	69.8	32	12.6	9.5	9	
22.01.2023	100000	11960	430	12390	87610	69.8	71.6	36	14.8	10.75	9	
23.01.2023	100000	12390	380	12770	87230	0	0	0	11.8	9.5	9	
24.01.2023	100000	12770	410	13180	86820	0	0	0	14.6	10.25	9	
25.01.2023	100000	13180	420	13600	86400	0	0	0	14.5	10.5	9	Dg Run
26.01.2023	100000	13600	350	13950	86050	0	0	0	12.6	8.75	10	
27.01.2023	100000	13950	370	14320	85680	0	0	0	11.8	9.25	10	
28.01.2023	100000	14320	320	14640	85360	0	0	0	12.4	8	10	
30.01.2023	100000	14640	360	15000	85000	71.6	73.4	36	13.1	9	10	
31.01.2023	100000	15000	330	15330	84670	73.5	74.6	22	11.8	8.25	10	
01.02.2023	100000	15330	960	16290	83710	74.6	79.4	96	22.6	24	16	
02.02.2023	100000	16290	860	17150	82850	79.4	83.7	86	21.6	21.5	14	
03.02.2023	100000	17150	340	17490	82510	83.8	85.5	34	11.7	8.5	10	
04.02.2023	100000	17490	330	17820	82180	85.5	86.6	22	11.6	8.25	10	DG SET
06.02.2023	100000	17820	380	18200	81800	86.6	88.5	38	12.1	9.5	10	

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07.02.2023	100000	18200	320	18520	81480	88.5	90.1	32	11.8	8	10	
08.02.2023	100000	18520	280	18800	81200	0	0	0	10.9	7	10	
09.02.2023	100000	18800	410	19210	80790	0	0	0	13.4	10.25	10	
10.02.2023	100000	19210	380	19590	80410	0	0	0	11.2	9.5	9	
11.02.2023	100000	19590	320	19910	80090	0	0	0	10.7	8	9	DG Set Run
13.02.2023	100000	19910	390	20300	79700	0	0	0	12.7	9.75	8	
14.02.2023	100000	20300	410	20710	79290	0	0	0	13.7	10.25	9	
15.02.2023	100000	20710	400	21110	78890	0	0	0	13.4	10	9	
16.02.2023	100000	21110	300	21410	78590	92.5	94	30	12.9	7.5	9	
17.02.2023	100000	21410	380	21790	78210	0	0	0	12.7	9.5	6	DG Set Run
18.02.2023	100000	21790	320	22110	77890	0	0	0	12.6	8	9	
20.02.2023	100000	22110	520	22630	77370	95.6	98.2	52	14.1	13	6	
21.02.2023	100000	22630	440	23070	76930	98.2	100.4	44	13.7	11	10	
22.02.2023	100000	23070	500	23570	76430	100.4	102.9	50	14.2	12.5	10	
23.02.2023	100000	23570	320	23890	76110	102.9	104.5	32	12.7	8	9	
24.02.2023	100000	23890	520	24410	75590	104.5	107.1	52	14.7	13	10	
25.02.2023	100000	24410	340	24750	75250	107.1	108.4	26	11.6	8.5	7	DG SET
27.02.2023	100000	24750	260	25010	74990	108.4	109.2	16	10.2	6.5	7	DG SET
28.02.2023	100000	25010	300	25310	74690	109.2	110.7	30	10.8	7.5	5	
01-03-2023	100000	25310	610	25920	74080	110.7	111.4	14	17	15.25	10	Dg Set Running 4 Hrs
03-03-2023	100000	25920	770	26690	73310	111.4	112.7	26	22	19.25	14	Dg Set Running 3 Hrs
04-03-2023	100000	26690	740	27430	72570	112.7	113.5	16	21	18.5	12	Dg Set Running 4 Hrs
05-03-2023	100000	27430	640	28070	71930	113.5	114.1	12	18	16	15	Dg Set Running Hours 5
06-03-2023	100000	28070	680	28750	71250	114.1	116	38	19	17	15	Dg Set Running Hours 3.5
08-03-2023	100000	28750	780	29530	70470	116	118.9	58	22	19.5	15	DG Running 0.5 Hrs
09-03-2023	100000	29530	810	30340	69660	118.9	121	42	23	20.25	14	DG Running 1.5 Hrs
10-03-2023	100000	30340	620	30960	69040	121	121.3	6	18	15.5	16	DG Running Hours-6 Hrs
11-03-2023	100000	30960	980	31940	68060	121.3	124.9	72	28	24.5	12	
12-03-2023	100000	31940	740	32680	67320	124.9	126.9	40	21	18.5	18	Dg Running Hours 4.5

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13-03-2023	100000	32680	920	33600	66400	126.9	129.9	60	26	23	16	
14-03-2023	100000	33600	780	34380	65620	129.9	131.3	28	22	19.5	14	Dg Running Hours 3.5
15-03-2023	100000	34380	810	35190	64810	131.3	133.6	46	23	20.25	12	
16-03-2023	100000	35190	840	36030	63970	133.6	134.8	24	24	21	19	Dg Running Hours 3.5
17-03-2023	100000	36030	810	36840	63160	134.8	137	44	23	20.25	18	Dg Running Hours 3.5
18-03-2023	100000	36840	740	37580	62420	137	139.6	52	21	18.5	16	
20-03-2023	100000	37580	980	38560	61440	139.6	143.8	84	28	24.5	12	
21-03-2023	100000	38560	810	39370	60630	143.8	145.8	40	23	20.25	16	Dg Running Hours 3.5
22-03-2023	100000	39370	820	40190	59810	145.8	148	44	23	20.5	16	Dg Running Hours 3.5
24-03-2023	100000	40190	810	41000	59000	148	150.5	50	23	20.25	16	Dg Running Hours 2
25-03-2023	100000	41000	810	41810	58190	150.5	152.3	36	23	20.25	16	Dg Running Hours 3.5
27-03-2023	100000	41810	820	42630	57370	152.3	155.4	62	23	20.5	15	
28-03-2023	100000	42630	980	43610	56390	155.4	161.3	118	28	24.5	15	
29-03-2023	100000	43610	810	44420	55580	161.6	164.1	50	23	20.25	15	Dg Running Hours 2
31-03-2023	100000	44420	840	45260	54740	164.1	167	58	24	21	15	
01-04-2023	100000	45260	840	46100	53900	167	169.5	50	24	21	16	Dg Running Hours 2
03-04-2023	100000	46100	920	47020	52980	169	172	60	26	23	17	
04-04-2023	100000	47020	840	47860	52140	172	173.6	32	24	21	17	Dg Running Hours 2.4
05-04-2023	100000	47860	880	48740	51260	173.6	175.2	32	25	22	17	Dg Running Hours 2.5
06-04-2023	100000	48740	780	49520	50480	175.2	176.6	28	22	19.5	17	Dg Running Hours 4.5
07-04-2023	100000	49520	870	50390	49610	176.6	179.3	54	25	21.75	17	
08-04-2023	100000	50390	840	51230	48770	179.3	181.5	44	24	21	16	Dg Running Hours 3
09-04-2023	100000	51230	740	51970	48030	181.5	182.7	24	21	18.5	15	Dg Running Hours 3.5
10-04-2023	100000	51970	840	52810	47190	182.7	185.3	52	24	21	16	Dg Running Hours 2
11-04-2023	100000	52810	820	53630	46370	185.3	188.2	58	23	20.5	16	Dg Running Hours 3
13-04-2023	100000	53630	880	54510	45490	188.2	191.4	64	25	22	16	
14-04-2023	100000	54510	820	55330	44670	191.4	193.1	34	23	20.5	16	Dg Running Hours 3.5
15-04-2023	100000	55330	760	56090	43910	193.1	194.1	20	22	19	16	Dg Running Hours 3-3.5
17-04-2023	100000	56090	820	56910	43090	194.1	197.2	62	23	20.5	16	Dg Running Hours 4.5

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18-04-2023	100000	56910	880	57790	42210	197.2	200.4	64	25	22	16	Dg Running Hours 4
19-04-2023	100000	57790	870	58660	41340	200.4	202.9	50	25	21.75	16	Dg Running Hours 2-3
20-04-2023	100000	58660	860	59520	40480	202.9	205.4	50	25	21.5	16	
21.04.2023	100000	59520	840	60360	39640	205.4	208.2	56	21	18.7	14	Dg Set Running Hours 1.5
22.04.2023	100000	60360	820	61180	38820	208.2	209.2	20	21	18.2	12	Dg Set Running 3.5 Hrs
26.04.2023	100000	61180	1020	62200	37800	209.2	213.4	84	26	22.7	15	
27.04.2023	100000	62200	910	63110	36890	213.4	215.9	50	23	20.2	17	Dg Set Running 1.5 Hrs
28.04.2023	100000	63110	950	64060	35940	215.9	218.6	54	24	21.1	19	Dg Set Running 2 Hrs
29.04.2023	100000	64060	970	65030	34970	218.6	220.9	46	24	21.6	19	Dg Set Running 3 Hrs
02.05.2023	100000	65030	1040	66070	33930	220.9	225	82	26	23.1	21	
03.05.2023	100000	66070	850	66920	33080	225	227.1	42	21	18.9	18	DG Set Running 1 hr
04-01-1900	100000	66920	870	67790	32210	227.1	227.7	12	22	19.3	15	DG Set Running 3.2 hr
06.05.2023	100000	67790	1080	68870	31130	227.7	232	86	27	24.0	18	
08.05.2023	100000	68870	950	69820	30180	232	234.7	54	24	21.1	19	DG Set Running 2 Grs
09.05.2023	100000	69820	850	70670	29330	234.7	236.6	38	21	18.9	16	DG Set Running 3 Grs
16.05.2023	100000	70670	970	71640	28360	240.8	241.7	18	24	21.6	19	Dg Set Running 4 Grs
17.05.2023	100000	71640	1200	72840	27160			0	30	26.7	19	Dg Set Running 14.5 Hrs
18.05.2023	100000	72840	1240	74080	25920			0	31	27.6	19	Dg Set Running 14.8 Hrs
19.05.2023	100000	74080	1220	75300	24700			0	31	27.1	19	Dg Set Running 15.10 Hrs
20.05.2023	100000	75300	1310	76610	23390	242.7	247.1	88	33	29.1	19	Dg Set Running 4.5 Hrs
22.05.2023	100000	76610	970	77580	22420	247.1	249.7	52	24	21.6	18	Dg Set Running 4.5 Hrs
23.05.2023	100000	77580	1350	78930	21070	249.7	255.4	114	34	30.0	19	
26.05.2023	100000	78930	1210	80140	19860	257.5	261.7	84	30	26.9	19	
30.05.2023	100000	80140	1100	81240	18760	261.7	263.7	40	28	24.4	19	DG Set 2 Hrs
11.12.2023	100000	81240	680	81920	18080	Due to EB Payment Issue Connection Discontinued 5 Days		0	17	15.1	6	Dg Set Running Hours 8.6
12.12.2023	100000	81920	670	82590	17410			0	17	14.9	10	Dg Set Running 8.02 Hrs
13.12.2023	100000	82590	750	83340	16660			0	19	16.7	11	Dg Set Running 9.02 Hrs
14.12.2023	100000	83340	740	84080	15920			0	19	16.4	13	Dg Set Running 9.5 Hrs
15.12.2023	100000	84080	730	84810	15190			0	18	16.2	12	Dg Set Running 9.5 Hrs

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16.12.2023	100000	84810	700	85510	14490	531.56	534.21	53	18	15.6	10	Due Power Supply Interruption Process was continued by Dg Set in minimum 10 to 15 minutes per day
18.12.2023	100000	85510	730	86240	13760	535.27	538.74	69.4	18	16.2	14	
19.12.2023	100000	86240	750	86990	13010	539.45	543.01	71.2	19	16.7	15	
20.12.2023	100000	86990	780	87770	12230	543.56	547.2	72.8	20	17.3	16	
21.12.2023	100000	87770	720	88490	11510	547.72	550.97	65	18	16.0	13	
22.12.2023	100000	88490	670	89160	10840	551.24	554.01	55.4	17	14.9	12	
23.12.2023	100000	89160	670	89830	10170	554.18	556.84	53.2	17	14.9	12	
25.12.2023	100000	89830	690	90520	9480	557.14	560.01	57.4	17	15.3	12	
26.12.2023	100000	90520	630	91150	8850	560.24	563	55.2	16	14.0	10	
27.12.2023	100000	91150	680	91830	8170	563.04	565.9	57.2	17	15.1	13	
28.12.2023	100000	91830	670	92500	7500	565.97	568.7	54.6	17	14.9	13	
29.12.2023	100000	92500	760	93260	6740	568.74	572.01	65.4	19	16.9	12	
30.12.2023	100000	93260	730	93990	6010	572.07	575.12	61	18	16.2	12	
02.01.2024	100000	93990	780	94770	5230	576.24	579.94	74	20	17.3	12	
03.01.2024	100000	94770	690	95460	4540	580.01	582.9	57.8	17	15.3	12	
04.01.2024	100000	95460	770	96230	3770	582.94	586.47	70.6	19	17.1	12	
05.01.2024	100000	96230	680	96910	3090	586.87	590.02	63	17	15.1	12	
06.01.2024	100000	96910	640	97550	2450	590.05	593.42	67.4	16	14.2	12	
08.01.2024	100000	97550	780	98330	1670	594.21	597.7	69.8	20	17.3	12	
09.01.2024	100000	98330	750	99080	920	597.8	600.9	62	19	16.7	12	
Total Qty Processed as On 09.01.2024			**99080**					**5913.4**	**2816.96**	**2367.11**	**1917**	**Apprax.415 Genset Hours**

Total Machine Hours	2367
Total Power Consumption in Units	5913
Total Genset Running Hours	415
Total Earth Movers Running Hours	2817
Total Man Power (Only Labours)	1917
Total Quantity Processed as on 09.01.2024	**99080**

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Table.2. Details of Legacy Waste Intake

Sl.No.	Month	Quantity Weighed in Tons	Status
1.	December-2022	5060.00	Completed
2.	January-2023	10270.00	Completed
3.	February-2023	9980.00	Completed
4.	March-2023	19950.00	Completed
5.	April-2023 (up to 20th April-2023)	14260.00	Completed
6.	21st Apr-23 to 31st May-23	21720.00	Completed
7.	11th Dec 2023 to 09.01.2024	17840.00	Completed
Total Legacy waste Treated till 09.01.2024		**99080.00**	**Completed**

Table.3. Details of Recovered Materials

Sl.No	Month	Bio-Earth/ Compost (Tons)	Inert & Stone Debris (Tons)	RDF and others (Tons)
1.	December-2022	1270.00	3500.00	290.00
2.	January-2023	2259.40	7590.60	420.00
3.	February-2023	1996.45	7613.15	370.40
4.	March-2023	4292.70	17857.62	450.27
5.	April-2023 (up to 20.04.23)	2169.57	8928.81	124.46
6.	21st April 2023 to 31st May23	5183.70	16441.590	94.71
7.	**11th Dec 23 to 12th Jan 24**	**4760.200**	**12710.600**	**369.200**
	Total	**21932.02**	**74642.370**	**2119.04**

Table.4. Details of Waste Composition Percentage Calculation Table

Date	Materials	Vehicle No.	Gross Weight	Tare Weight	Net Weight	Inert & Stone Debris Weight	RDF & Others Weight	Organic Manure
19.12.2022	Legacy	AN01D7281	12150	6300	5850	4519.13	96.53	1171.76
07.01.2023	Legacy	AN01D7281	11960	6320	5640	4435.86	101.52	1040.58
11.02.2023	Legacy	AN01D7281	12220	6340	5880	4645.79	94.67	1068.98
Total					17370.0	13600.78	292.72	3281.32

Total Quantity In Take	**Proportionate of Fractions**						**Lost Fraction**	
	Manure Below 6 MM		Inert & Stone Debris <6MM >35 MM		RDF & Others 100 MM >		All Conveyors and Feeding Point	
Kgs	Kgs	%	Kgs	%	Kgs	%	Kgs	%
17370.00	3281.32	18.89 %	13600.78	78.3%	292.72	1.68%	195.18	1.12%

Average quantity of Manure, Inert, RDF &Others in one ton of Legacy waste is 200 Kgs, 780 Kgs, and 20 Kgs respectively.

The Municipal Council Officials, Port Blair visited the site on 20.06.2022, 11.07.2022, 17.08.2022, 19.08.2022, 01.09.2022, 21.02.2023, 07.03.2023, 10.04.2023, 27.04.2023, 12.05.2023, 17.05.2023, 19.10.2023, 07.11.2023, 20.12.2023 to inspect the progress of bio mining operations. Table 1 indicates the consolidated operation along of waste excavation and handling machinery and monthly power consumption log during 11th December 2023 to 10th January 2024. Table.2 represents quantity of Legacy waste intake for processing in tons.Table.3 represents the consolidated dispatch details of the processed and recovered materials. Table.4 represents the fractions proportionate of legacy waste at Brookshabad Biomining facility. Photographs of the all relevant activities presented in figure 1 to 10. (Weighment slip, Soil Test Report, Diversion, Inspection, Manure Diversion Letter, and Plastic Vendor Details., etc)

4.0 Conclusion and Recommendations:-

The DPR Evaluation is done by Executive Engineer, Port Blair Municipal Council, Port Blair for a volume of 86350 Tons. The work order has been issued to M/s. Aqua World Export Private Limited, Chennai. The full-fledged operations at Port Blair Biomining Facility started after the installation of biomining machinery on 17th December 2022. As per the Request from the Aqua World Exports Private limited for Excess quantity Legacy waste, PBMC inspected the site and quantify the excess Legacy waste at Brookshabad Dump yard on 7th November 2023 and an additional quantity of 13650 Tons of waste was measured. Thus, the total quantity of waste at Port Blair Municipal Council Brookshabad dumpsite is 100000 Tons.

Based on site observations and analysis of records it was observed that 17840 Tons (4760.200 Tons of Bio Earth + 12710.600 Inert Materials+369.200 Tons of RDF) of Legacy Waste has been screened and disposed from Brookshabad Biomining Facility as of 10th January 2024.During the Site inspection 7th November 2023 800 Tons of RDF & Others was stored at site but however based on disposal records only 369.200 tons of RDF & Others disposed from 11th Decemeber 2023 to Till Date. As there is a variation between the site observation and disposal record, it is assumed that the recovered RDF & others are either burnt or disposed to unauthorized recyclers. Hence the payment quantity of 920 Tons

deducted from the total measured Quantity as the RDF stored at site is not reflected in the disposal records. Thus, 99080 Tons of Legacy waste is considered to be disposed from Brookshabad Dump Yard of which payment for 81240 Tons has been recommended till 12th January 2023 and hence the final payment for 17840 Tons as summarized in Table.5.

Table.5. Details of Progress of Work at Brookshabad Biomining Facility

Progress Report	**Period**	**Cumulative Volume Processed & Disposed in Tons**
1.	16thDecember2022–28th February 2023	25310 Tons
2.	1st March 2023 – 20th April 2023	34210 Tons
3.	21st April 2023 – 31st May 2023	21720 Tons
4.	**11th December 2023 – 12th January 2024**	**17840 Tons**
Total Quantity Processed and Disposed up to 10.01.2024		**99080 Tons**

1977

Fig.1.The views of Brookshabad Dumpsite before the Commencement of Biomining Operations.



1978







1979




PORT BLAIR MUNICIPAL COUNCIL
Name of the Work
Project Cost/ Tender Amount
Project period
Method of Operation
Name of Contractor
Windrow Aerobic Method
M/s. Aqua World Exports Pvt Ltd., Chennai

1980

Electrical Arrangement

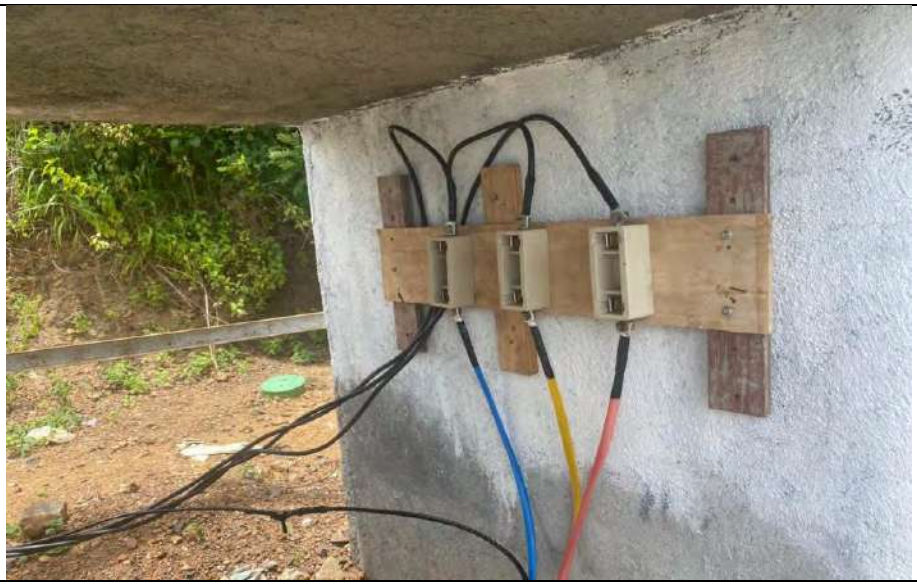






Fig.3. Bio Earth Test Report

SGS

Test Report

SAMPLE NOT DRAWN BY SGS INDIA PVT. LTD.

Sample / Report No : CG23-004537.001 **Issue Date** : 21/03/2023 **JOE No** : CG23-004537

Report Control No : CGR0001566956

Customer Provided Information

Sample Name	: ORGANIC MANURE
Customer Name	: AQUA WORLD EXPORTS PRIVATE LIMITED
Customer Address	: NO.7, Ground Floor, "ALSA TOWERS"
	: 186/187, Poonamalle High Road
City	: Kilpauk
Postal Code	: 600010
State	: Tamil Nadu
Country	: INDIA
Sample Qty. Recd.	: APPROX 500g

Lab Provided Information

Sample Type	: ORGANIC MANURE
Received on	: 08/03/2023
Registered on	: 08/03/2023
Test Start-End Date	: 08/03/2023 - 21/03/2023

Test/Parameter	Method	Result	Unit
Electrical conductivity (of 10% aqueous suspension)	by Electrical conductivity Meter	526	µS/cm
pH	by pH meter	6.44	
Total nitrogen	FCO 1985 (Amended-2021)	0.62	% (w/w)
Total Phosphorous (as P)	FCO 1985 (Amended-2021)	0.321	% (w/w)
Potassium content (as K)	FCO 1985 (Amended-2021)	0.40	% (w/w)
Potassium content (as K2O)	FCO 1985 (Amended-2021)	0.484	% (w/w)
Mercury (as Hg)	SO-IN-MUL-TE-109 (by ICPOES)	ND(DL : 0.5)	mg/kg
Selenium (as Se)	SO-IN-MUL-TE-109 (by ICPOES)	ND(DL : 0.5)	mg/kg
Cadmium (as Cd)	SO-IN-MUL-TE-109 (by ICPOES)	ND(DL : 0.5)	mg/kg
Chromium (as Cr)	SO-IN-MUL-TE-109 (by ICPOES)	153	mg/kg
Lead (as Pb)	SO-IN-MUL-TE-109 (by ICPOES)	205	mg/kg
Zinc (as Zn)	SO-IN-MUL-TE-109 (by ICPOES)	917	mg/kg
Copper (as Cu)	SO-IN-MUL-TE-109 (by ICPOES)	468	mg/kg
Manganese (as Mn)	SO-IN-MUL-TE-109 (by ICPOES)	757	mg/kg
Iron (as Fe)	SO-IN-MUL-TE-109 (by ICPOES)	1.15	% (w/w)

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Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 7 days (in case of perishable items) and 30 days for all other samples. The samples from regulatory bodies are to be retained as specified. This document cannot be reproduced except in full, without prior written approval of the Company.

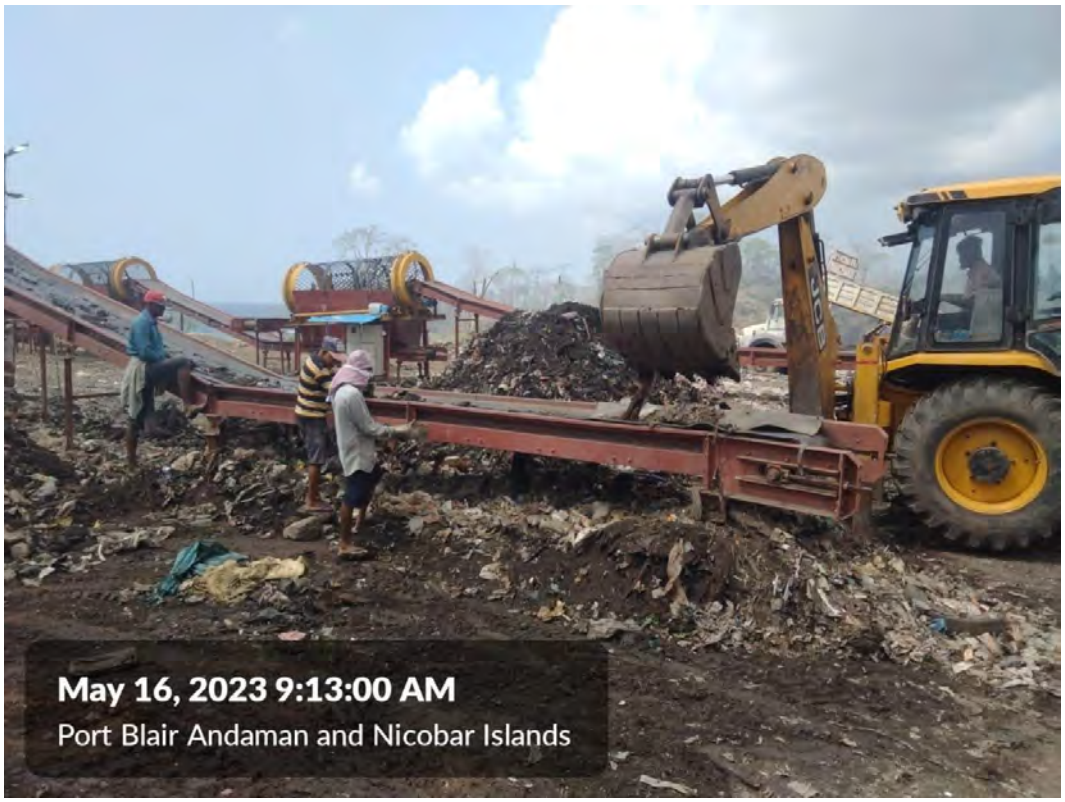
For your valuable feedback please click on this link https://qasurveys.qualtrics.com/jfe/form/SV_ePTWYtkgNbiE4vl

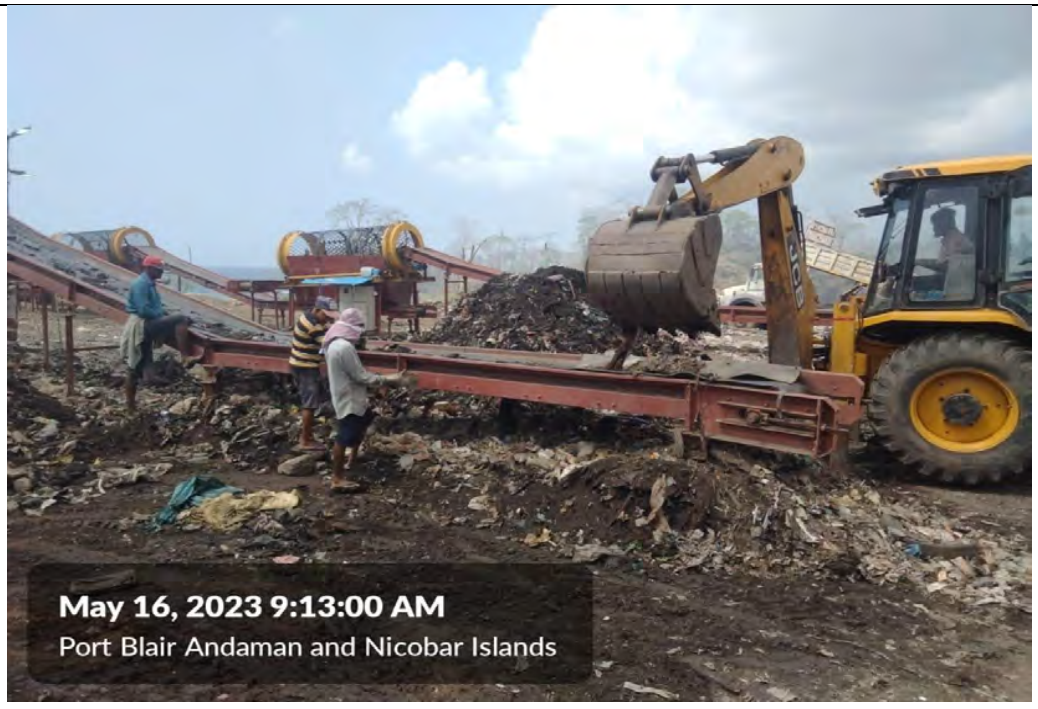
SGS India Pvt. Ltd. Multi Laboratory, 28 B/1 (SP), 28 B/2 (SP), IInd Main Road, Opposite to State Bank of India, Ambattur Industrial Estate, Chennai - 600 058. Tel: 91-44-66081600

Regd & Corp. Off : SGS House, 4B, A.S. Marg, Vikhroli (West), Mumbai-400083. Tel : (022) 25798421 to 28 Fax : (022) 25798431 to 35 www.sgs.com

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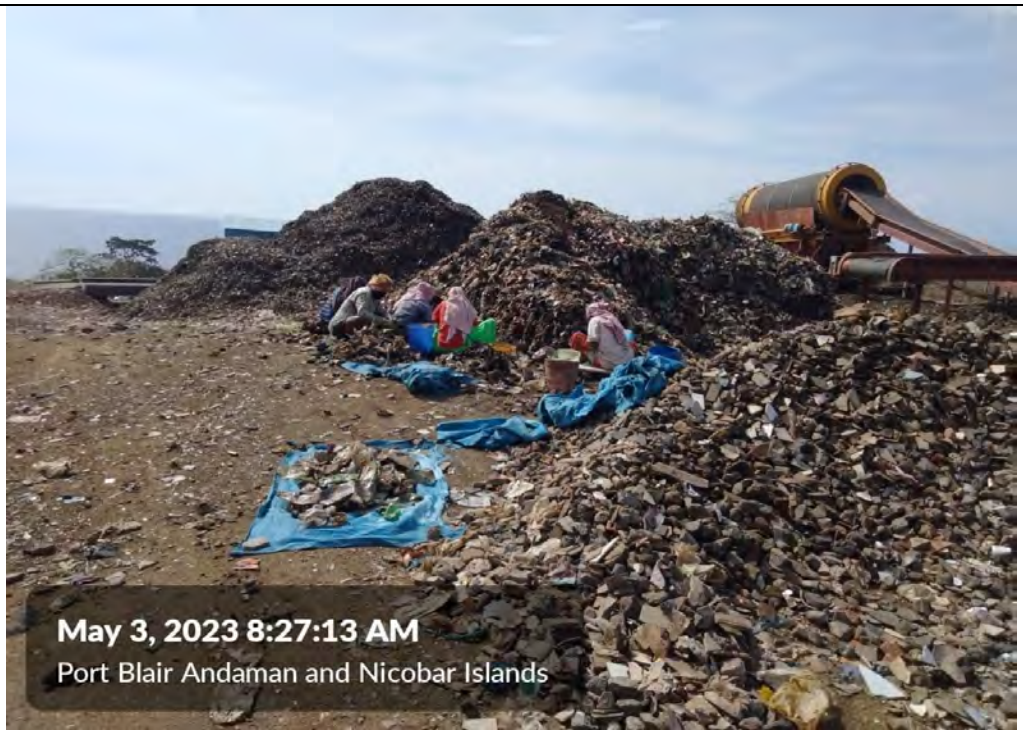
Fig.4.Process Photos





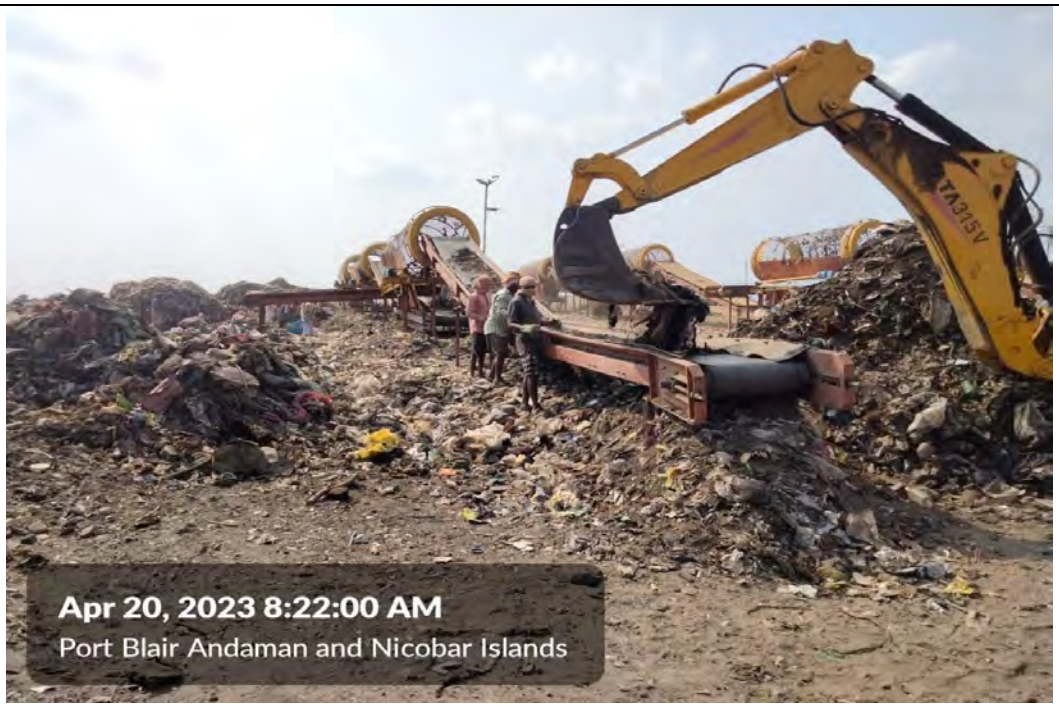
1983


Apr 29, 2023 8:41:25 AM
Port Blair Andaman and Nicobar Islands

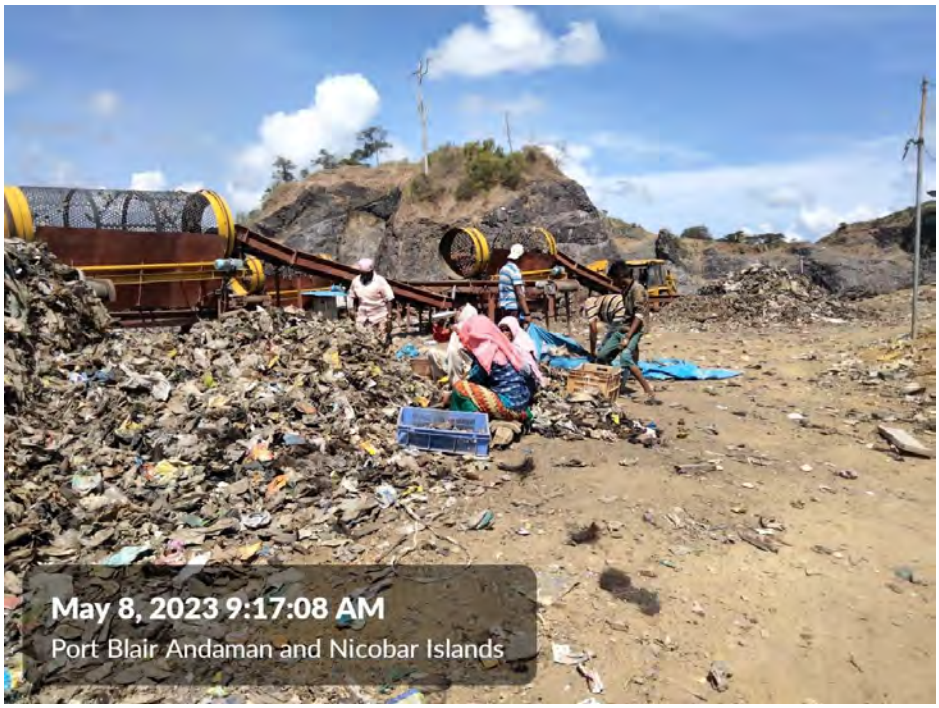

May 3, 2023 8:27:13 AM
Port Blair Andaman and Nicobar Islands

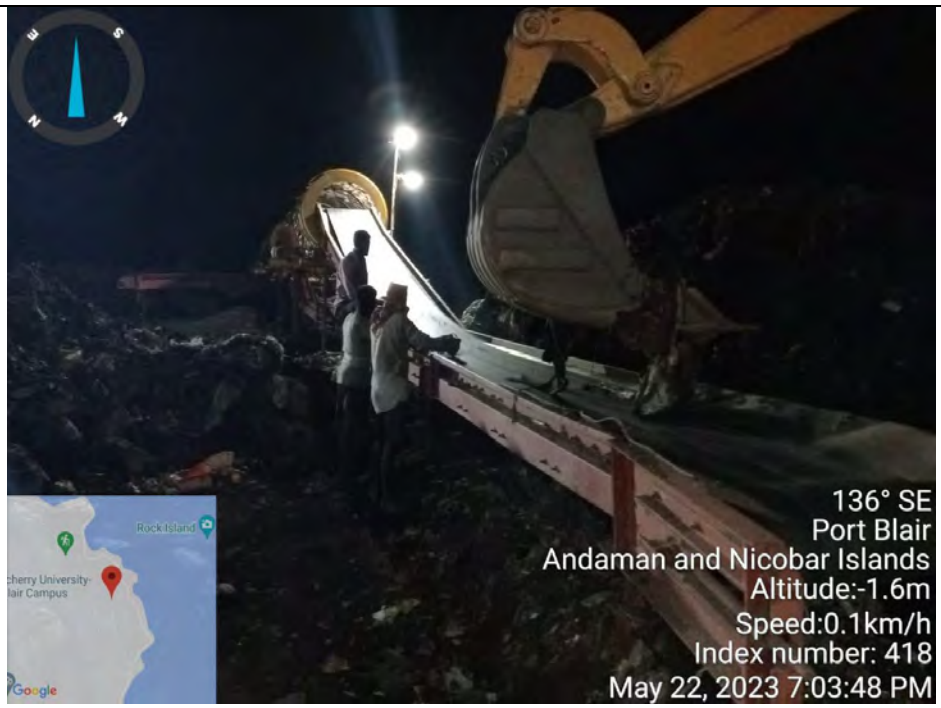
1984


Apr 29, 2023 8:41:46 AM
Port Blair Andaman and Nicobar Islands


Apr 20, 2023 8:22:00 AM
Port Blair Andaman and Nicobar Islands

1985


May 8, 2023 9:17:08 AM
Port Blair Andaman and Nicobar Islands


136° SE
Port Blair
Andaman and Nicobar Islands
Altitude:-1.6m
Speed:0.1km/h
Index number: 418
May 22, 2023 7:03:48 PM
Rock Island
Google

1986


E
N
S
W
Rock Island
Google
83° E
Port Blair
Andaman and Nicobar Islands
Altitude:-17.1m
Speed:0.4km/h
Index number: 411
May 20, 2023 7:10:42 PM


Apr 5, 2023 8:34:31 AM
Port Blair Andaman and Nicobar Islands

1987





1988





1989

Fig.4-1. Cleared Area

Before

After


1990

Fig.4-1. Cleared Area

After

After


1991

After

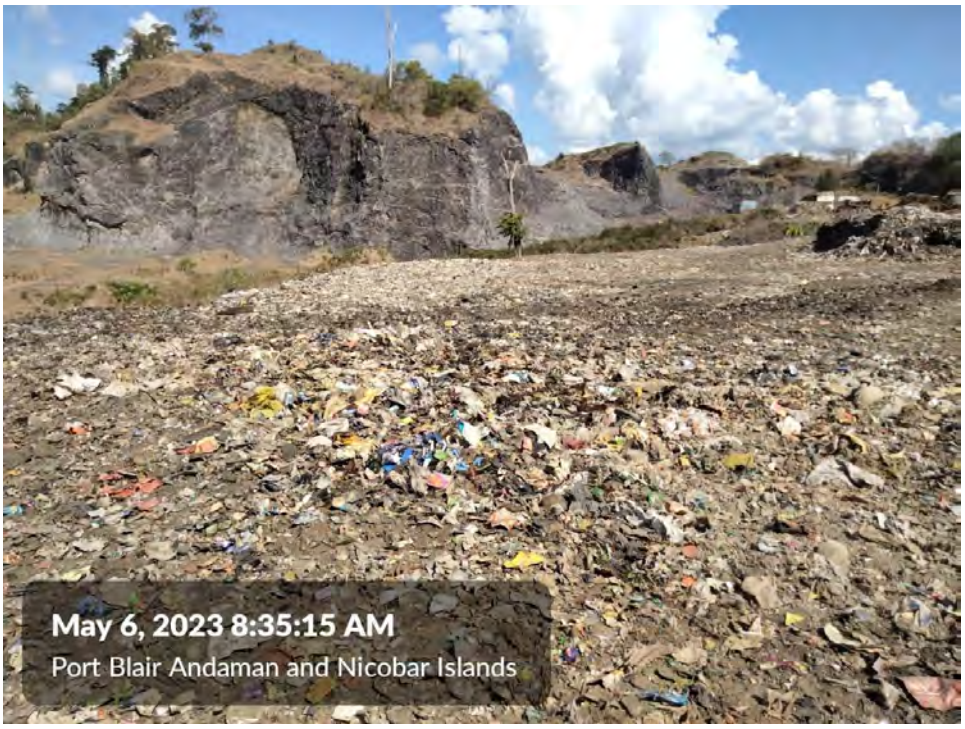
After


1992

Before

After


1993

After

After


1994

After

After

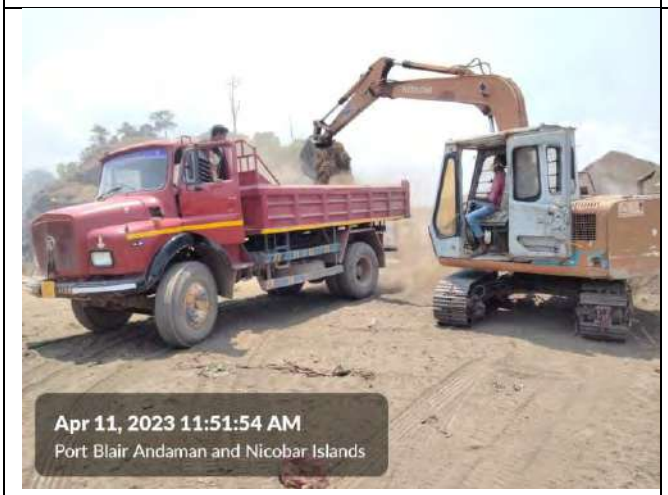

Fig.5.Diversion Photos







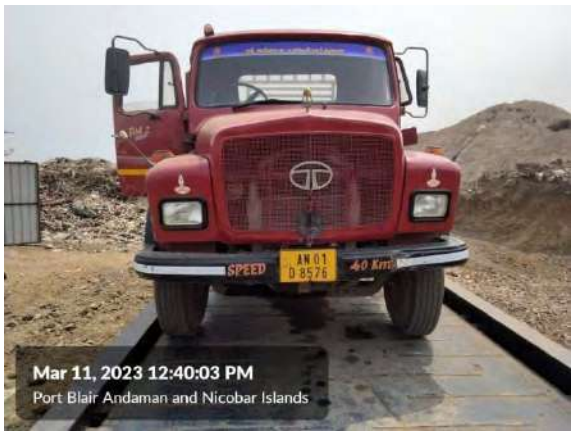






1996

Fig.5.Diversion Photos with EB Readings









EB Reading Starting



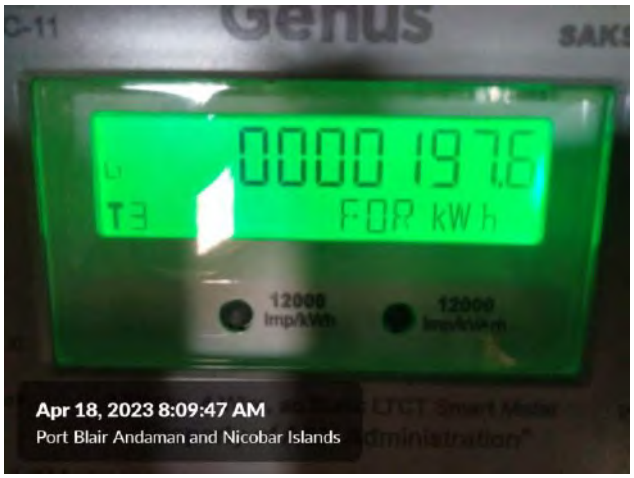
EB Reading Ending

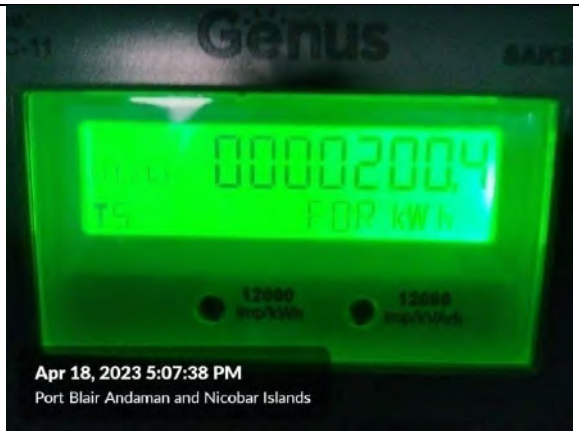


Fig.5.Diversion Photos with EB Readings









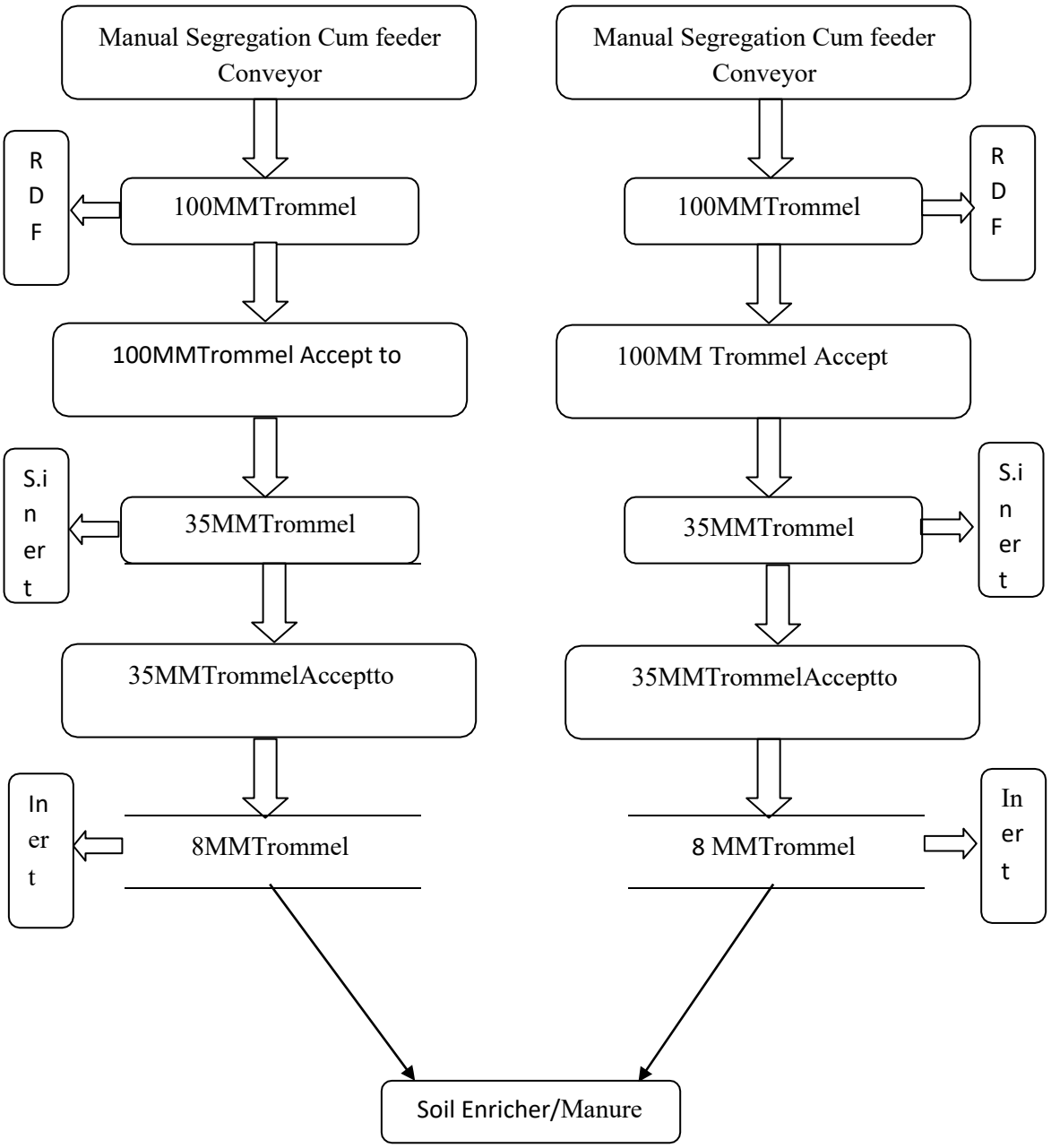
EB Reading Starting



EB Reading Ending



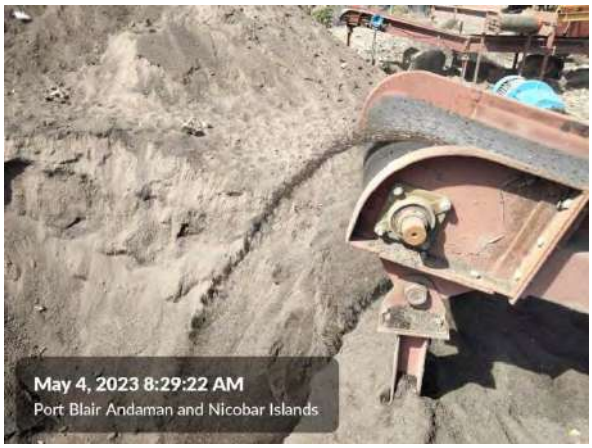
Fig.6.Process flow diagram of the Biomining Facility at Brookshabad



RecoveredFractions:-

1)	RDF	-	Plastic,WoodShips,Cloths
2)	Stony Inert	-	Above35mmStoneDebris
3)	Inert	-	35MMbelow8MMAboveStoneDebris
4)	Soil Enricher/Manure	-	Below8mmSoil

Fig.7.Processing Photos at Brookshabad BiominingFacility













2000


11 Dec 2023 10:01:30 am


13 Dec 2023 9:04:33 am


15 Dec 2023 9:07:43 am


5 Jan 2024 9:25:47 am


14 Dec 2023 9:19:33 am


16 Dec 2023 9:10:01 am

2001

Fig.8.Inspection Photos at Brookshabad Biomining Facility













2002


10 Apr 2023 3:14:19 pm
Carbyns Cove
Port Blair
Andaman and Nicobar Islands


10 Apr 2023 3:35:24 pm
NA Road
Carbyns Cove
Port Blair
Andaman and Nicobar Islands


Apr 27, 2023 2:58:59 PM
Port Blair Andaman and Nicobar Islands


Apr 27, 2023 2:48:20 PM
Port Blair Andaman and Nicobar Islands


May 17, 2023 11:57:20 AM
Port Blair Andaman and Nicobar Islands


May 17, 2023 11:52:31 AM
Carbyns Cove Port Blair Andaman and
Nicobar Islands

2003




4 Dec 2023 10:38:52 am


7 Nov 2023 10:14:04 am

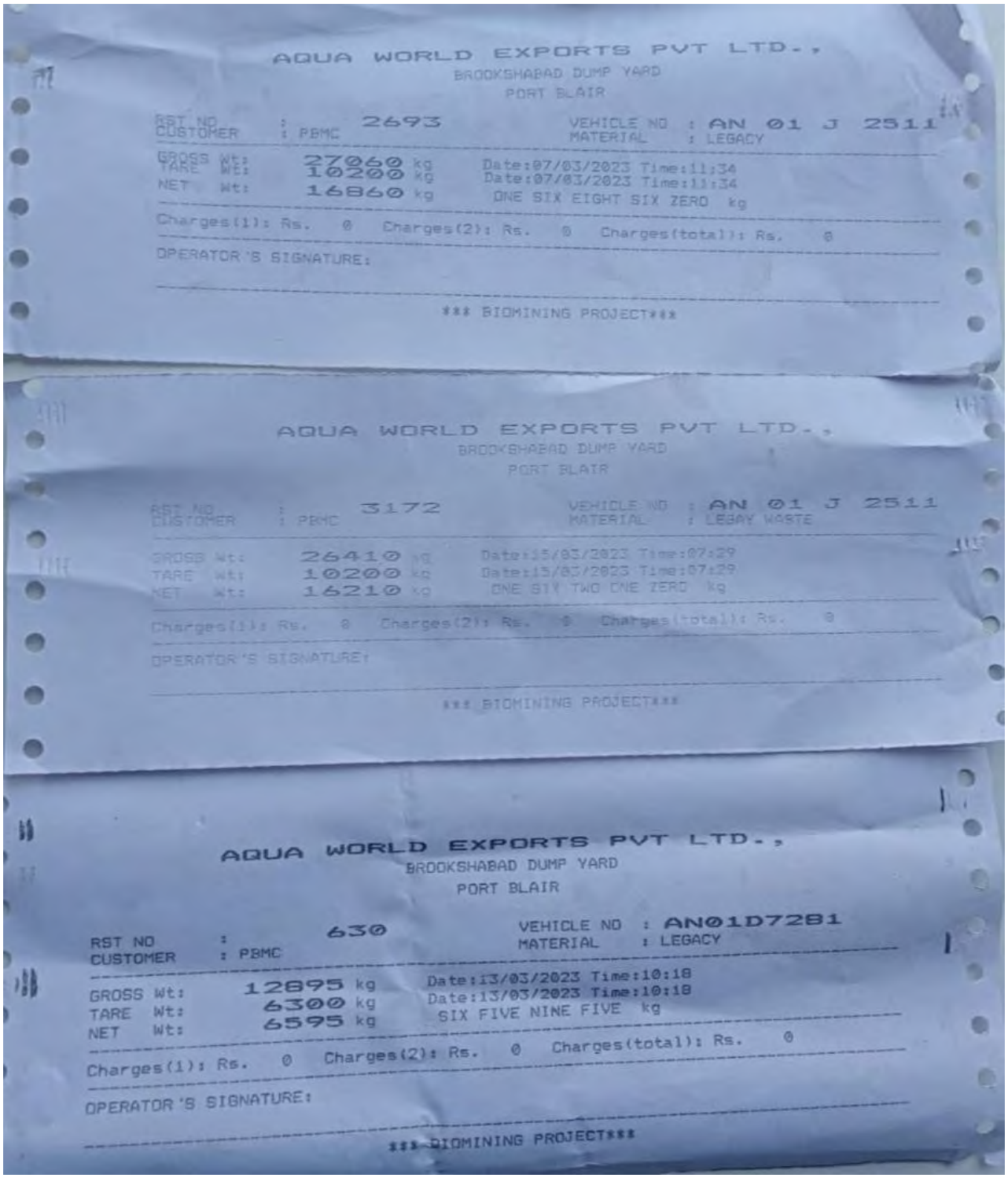

4 Dec 2023 10:39:52 am


20 Dec 2023 5:01:04 pm



2004

Fig.10.Sample of Weight Bill



2005

Fig.10.1 RDF Agreement In Name of the Lead Partner **SRI SAI RECYCLE SOLUTIONS**



भारतीय गैर न्यायिक

एक सौ रुपये Rs. 100

रु. 100 ONE HUNDRED RUPEES

सत्यमेव जयते

भारत INDIA

INDIA NON JUDICIAL

தமிழ்நாடு तमिलनाडु TAMILNADU

Sri Sai Recycle Solution Madurai

12 2 DEC 2022

CV 030068

TREASURY SOUTH DURAI

SERVICE AGREEMENT FOR CO-PROCESSING OF NON –HAZARDOUS SOLID WASTE

This Service Agreement for Co-Processing of Non Hazardous Solid Waste, (hereinafter referred to as "Agreement") is made and executed at Chennai on this 30th December of 2022

BY AND BETWEEN

SMT. JOTHIBASU MEGALADEVI (PAN:ANDPM8374K & Aadhaar No: 8286 2349 2867), Wife of Mr. Seenivasan, residing at Plot No. 4, Karthigai Street, Meenatchi Nagar, Kilakuyilkudi, Nagamalai RF, Madurai, Tamil Nadu-625 019. being sole proprietor of Trading Business, in the name and style of "SRI SAI RECYCLE SOLUTIONS" (GST : 33ANDPM8374K3ZK), having its Registered Office at 12, Megala Illam, Vilachery Main Road, Seenivasa Colony, Madurai – 625 006, hereinafter referred to as "SSRS", (which expression shall, unless repugnant to the context or contrary to the meaning thereof be deemed to mean and include its successors-in-title and permitted assigns) of the First Part;

AND

CHETTINAD CEMENT CORPORATION PRIVATE LIMITED (CIN: U93090TN1962PTC004947), a Company Incorporated under the provisions of the Companies Act-1956 (Since repealed and consolidated under the provisions of Companies Act-2013) and having its Registered Office at 4th Floor, Chettinad Towers, No.603, Anna Salai, Chennai, Tamil Nadu-600006 and Corporate office at Sigapi Achi Building, 18/3, Rukmani Lakshmipathy Road, Egmore, Chennai 600008, represented herein by its authorized signatory Mr.S.P.Meyyappan, (PAN :AAIPM5990K) hereinafter referred to as "CCCPL", (which expression shall unless it be repugnant to the context or contrary to the meaning thereof be deemed to mean and include its successors-in-title and permitted assigns)of the Second Part;

For SRI SAI RECYCLE SOLUTIONS

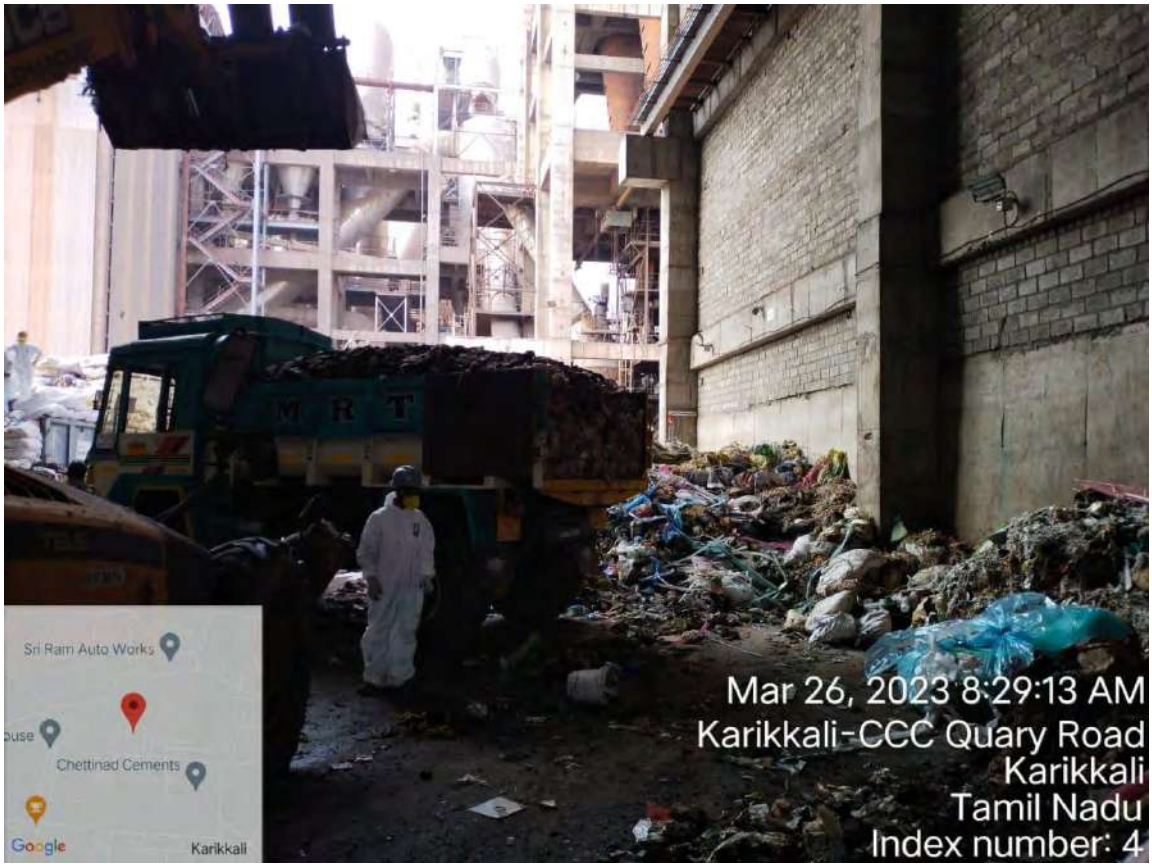
S. Megaladevi

Proprietor

For Chettinad Cement Corporation Private Limited

Authorised Signatory

2006


Sri Rami Auto Works
Chettinad Cements
Google
Karikkali
Mar 26, 2023 8:29:13 AM
Karikkali-CCC Quary Road
Karikkali
Tamil Nadu
Index number: 4


DIESEL

2007

CHETTINAD CEMENT CORPORATION PRIVATE LIMITED KARIKKALI

RECEIPT WEIGHMENT SLIP

SLIP.NO:	146500	WB.NO : 2	INV. NO :4	SHIFT :	B
VEHICLE NO:	TN55Q4797		TRANSPORTER:	SRI SAI RECYCLE SOLUTIONS	
PRODUCT :	AF MUNICIPAL SOLID WASTE RDF		CUSTOMER :	SRI SAI RECYCLE SOLUTIONS	

GROSS	DATE	TIME	TARE	DATE	TIME	PARTY	NET	DIFF
12780.000	19/04/2023	05:23:19	8080.000	19/04/2023	08:17:42	4830.000	4700.000	-130.000

NET :: 4700.000 OPERATOR :: M.MURUGAN 4/19/2023 08:19:16

CHETTINAD CEMENT CORPORATION PRIVATE LIMITED KARIKKALI

RECEIPT WEIGHMENT SLIP

SLIP.NO:	135962	WB.NO : 2	INV. NO :3	SHIFT :	B
VEHICLE NO:	TN55Q4797		TRANSPORTER:	SRI SAI RECYCLE SOLUTIONS	
PRODUCT :	AF MUNICIPAL SOLID WASTE RDF		CUSTOMER :	SRI SAI RECYCLE SOLUTIONS	

GROSS	DATE	TIME	TARE	DATE	TIME	PARTY	NET	DIFF
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NET :: 4250.000 OPERATOR :: MURUGESAN M 3/26/2023 08:42:20

2008

Port Blair Municipal Corporation -BIO MINING
DISPOSAL DETAILS - Consolidated

Date	Compost Weight In Tonns	Plastic Others Weight In Tonns	Inert Weight In Tonns
10-12-2023	0.000	20.040	233.000
11-12-2023	0.000	8.740	499.010
12-12-2023	252.420	32.370	516.000
13-12-2023	285.270	11.170	518.760
14-12-2023	254.900	0.000	497.710
15-12-2023	281.480	33.200	232.380
16-12-2023	79.270	11.160	265.850
17-12-2023	189.770	10.850	233.220
18-12-2023	79.340	21.330	265.820
19-12-2023	233.080	0.000	233.590
20-12-2023	0.000	30.790	282.490
21-12-2023	0.000	20.310	251.390
22-12-2023	0.000	10.740	264.860
23-12-2023	0.000	0.000	480.100
24-12-2023	0.000	21.950	517.360
25-12-2023	0.000	0.000	505.650
26-12-2023	0.000	0.000	483.320
27-12-2023	0.000	20.230	547.050
28-12-2023	0.000	0.000	516.550
29-12-2023	0.000	20.770	529.200
30-12-2023	0.000	0.000	546.120

Month	Compost	Inert	RDF & Others
Dec-23	1655.530	8419.430	273.650
Jan-24	3104.670	4291.170	95.550
Total	**4760.200**	**12710.600**	**369.200**

2009

31-12-2023	0.000	0.000	0.000
Sub Total	**1655.530**	**273.650**	**8419.430**
01-01-2024	202.080	0.000	362.630
02-01-2024	185.070	18.130	597.220
03-01-2024	233.380	29.440	464.580
04-01-2024	221.280	0.000	497.070
05-01-2024	227.300	19.280	678.610
06-01-2024	383.810	19.750	630.860
07-01-2024	318.940	8.950	596.400
08-01-2024	270.930	0.000	247.740
09-01-2024	304.610	0.000	216.060
10-01-2024	233.480	0.000	0.000
11-01-2024	260.200	0.000	0.000
12-01-2024	263.590	0.000	0.000
Sub Total	**3104.670**	**95.550**	**4291.170**
Over All Total	**4760.200**	**369.200**	**12710.600**

Total Disposal Of Compost	**4760.200**	**Tonn**
Total Disposal Of Plastic @Others	**369.200**	**Tonn**
Total Disposal Of Inert	**12710.600**	**Tonn**

Over All Diversion in Tons	**17840.000**

2010

ANNEXURE-IV -E

OLD DUMING POINTS FOR RECLAMATION AS ON 03.02.2021					Proof Submitted	
S.NO	BLOCK	NAME OF THE PANCHAYAT HAVING OLD DUMPSITES	RECLAMATION OF OLD LANDFILL (INITIATED/DONE)	REMARKS	BEFORE	AFTER
1	FERRARGUNJ TOTAL : 3	CHOLDARI	DONE	Approx 700Kg waste recovered and transfer to nearestv SLRM centre		
2		MANNARGART	DONE	Approx 140Kg waste recovered and transfer to nearestv SLRM centre		
3		SHOREPOINT	DONE			
4	MAYABANDER TOTAL : 1	RAMPUR	DONE	Approx 150Kg waste recovered and transfer to nearestv SLRM centre		
6	LITTLE ANDAMAN TOLAL : 3	R.K PUR	DONE			
7		NETAJINAGAR	DONE	10MT of segregated waste recovered and transfer to nearest SLRM centre		
9	DIGLIPUR TOTAL : 2	RAMNAGAR	DONE	250kg stored in segregated form in the cluster		

2011

13	RANGAT TOTAL : 5	LONG ISLAND PRIVATE LAND	DONE	2000Kg of waste recoverd and transfer to nearest SLRM centre		
16		RANGAT JANAKPUR VILLAGE	DONE	Approx 5MT waste recovered and transfer to nearestv SLRM centre		
17		KADAMTALA SHANTIPUR CORNER	DONE	approx 600kg waste recovered and transfer to nearest SLRM centre		

2012

Annexure-VA

RECYCLING AND DISPOSAL FACILITIES AT MAINLAND UTILIZED BY DRCOPERATORS OF SVPMC FOR DRY WASTE MANAGEMENT

S.No.	DetailsofOperators/ Firms	Detailsof Waste	DetailsofRecycling/ Disposal facilities	Details of SPCB Authorization/Consent with validity
1	M/s Greenworm,S Square Complex,Old Income Tax Building Shadipur Road, Port Blair,South AndamanPh.No.: 7063927822,Email id:irfan@greenworms.org	Plastics, Paper,Cardboard Tetrapack	M/s GreenWorms Eco Solutions LLP,7/537a, Near KNM MESshcool, Pukkattumugalyetheemkhana road,Edathalapo,aluva	Consent to Operate cum AuthorisationNo.:G19ERRCTON98204 dated 04-03-2020ValidUpto:01/06/2025/ issued under the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981 and the Environment (Protection) Act, 1986by Kerala State Pollution Control Board
			M/s Greenworms Waste Management Pvt Ltd, Thamarassery, Kozhikode	Consent to Operate and Authorisation vide No. PCB/KKD/DO/12028/2022 dated 26-07-2022 valid upto 31-05-2027 under the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981 and the Waste Management rules under Environment (Protection) Act, 1986 issued by Kerala State Pollution Control Board.
			M/s UltraTech Cements Ltd, AndraPradesh Cement Works,Tadipatri, Anantaouram, Andrapradesh	Registration Certificate issued by AndraPradesh Pollution Control Board vide No. PR-19-AND-01-AAACL6442L-23 dated 19-01-2023 for Recycling and Processing of Plastic waste under Extended Producer Responsibility(EPR) of Plastic Waste Management Rules 2016(as amended)

2	M/s Islandsboytech solutions, Ph.No.: 9679547729, Email id: islandboytechsolutions@gmail.com	Cardboard ,Papers	**M/s** SuryaansPaper,No.312/2C Thervoy Kandigai Village, Gummidipoondi Thiruvallur, 601202 Tamil Nadu, India	Consent Order No : 2408257344051 dated 16.02.2024 valid upto 31-03-2025 issued by Tamilnadu Pollution Control Board.under the Water the Air (Prevention & Control of Pollution) Act, 1981
3	M/s.,Shakti plastic, Ph.No.: 9933293762, Email id: roopeshchowdhary2140@gmail.com	Plastic	SHAKTIPLASTIC INDUSTRIES S.NO.158&159,VILLAGE – NANDGAON, MANOR, District-Palghar M/S Sankla Enterprises, H1-32, Riico Industrial Area Ghiloth , Neemrana, Alwar, Rajasthan -301705	Consent Order issued by Maharastra Pollution Control Board vide No.0000170873/CO/230 6001120 dated 15-06-2023 validtill 31/08/2026 Consent to Operate vide No.2023-2024/Alwar/9769issued by Rajasthan State Pollution Control Board dated 20.04.2023 valid till 20.04.2033 EPR Registration Certificate for EPR Recycling Or Processing Of Plastic Wasteissued by Rajasthan PCB vide No. PR-26-RAJ-05-AIWPS1692J-23 dated 26-05-2023
4	M/s.Paperman environmentsolution, Ph.No.:7063997709, Emailid: arunan@hindustanswm.com	Plastic	M/s.DalmiaCementFactory, Dalmiapuram, lalgudi taluk trichy621651- Tamil naduIndia	Registration certificate for recycling or processing of Plastic waste under rule 13(3) of Plastic waste management Rues,2016 dated 18.10.2022 by Tamil Nadu Pollution Control Board.
5	M/s Sankla enterprises, 9933293762, Email id: roopeshchowdhary2140@gmail.com	,Papers&Plastic	M/s.SanklaEnterprises,H1- 32, RIICO Industrial Area Ghiloth, Neemrana, Alwar, Rajasthan	EPR Registration certificate for recycling or processing of Plastic waste under rule 13(3) of Plastic waste management Rues,2016vide No. PR-26-RAJ-05-AIWPS1692J-23 dated 26.05.23

S.No.	DetailsofOperators/ Firms	Details of waste	DetailsofRecycling/ Disposal facilities	Details of SPCB Authorization/Consent with validity
6	M/s. CM SCRAP TRADERS, Ph.No.: 9933234428, cmscrap21@gmail.com	Plastic	M/s. Dew Resouce Management, TCMC Industries Pvt Ltd, Arihant Steel alne, behind ITI, Meerut, Muzaffar Nagar, UP	Consent to Operate and Authorisation vide No. 185358/UPPCB/MUZAFFARNagar(uppc(bro)/cto/both/muzaffarnagar/2023 dated 24.06.23 dated 26-07-2022 valid upto 31-05-2027 under the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981 and the Waste Management rules under Environment (Protection) Act, 1986 issued by Uttar Pradesh State Pollution Control Board

7	M/s Sardev Exports, Ph.No.: 9474292309, Email id: sardevexport@gmail.com	Glass	**Glass** M/s.J.Basheer Ahamed and co,S.F.No. 26/1,26/2,26/5, Kadaperikuppamvillage, Vanur Taluk, Villupuram District, MLP &Mixedand,M/s J.Basheer Ahamed &Co.Plotno.8,APIIC,Industrial Park,Menapur(V), Naidupet(M),SPSNEllore District-524421	Consent to Operate and Authorisation vide No.339/APPCB/20-VJA/CFO/W&A/2014 dated 08.01.2016 valid upto 30.11.2025 under the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981 and the Waste Management rules under Environment (Protection) Act, 1986 issued by Andhra PRADESH Pollution Control Board
		Cardboard	**Cardboard**: Shri Hari Venkateshwara Paper Mills Pvt Ltd, Vempakottai Taluk, Virudhunagar District	Authorisation under Hazardous and Other Waste (Management and Transboundary Movement Rules)-2016 vide No. 22HFC43004134 dated 20-04-2022 valid upto 31-03-2027 issued by Tamil Nadu Pollution Control Board

2016

2017

FILE NO : PCB/EKM/DO-1/OA-116/19
Date of issue : 04/03/2020

KERALA STATE POLLUTION CONTROL BOARD

CONSENT TO

OPERATE/AUTHORISATION/REGISTRATION

ISSUED UNDER

The Water (Prevention & Control of Pollution) Act, 1974
The Air (Prevention & Control of Pollution) Act, 1981

and

The Environment (Protection) Act, 1986

As per Application No. :12774886
Dated:14-02-2020

TO

M/s GREEN WORMS ECO SOLUTIONS LLP
GREEN WORMS ECO SOLUTIONS LLP
7/537A,NEAR KNM MES
SHCOOL,PUKKATTUMUGALYETHEEMKHANA ROAD,EDATHALA P
O,ALUVA 683561

Consent No. :G19ERRCTON98204
Valid Upto :01/06/2025

1. GENERAL

2018

1.1. This integrated consent is granted subject to the power of the Board to withdraw consent, review and make variation in or revoke all or any of the conditions as the Board deems fit.

1	**VALIDITY**	01/06/2025
2	Name and Address of the establishment	GREEN WORMS ECO SOLUTIONS LLP 7/537A,NEAR KNM MES SHCOOL,PUKKATTUMUGAL-YETHEEMKHANA ROAD,EDATHALA P O,ALUVA 683561
3	Communication	Telephone :91-8907780555 Fax :- E-mail:infothajudeen@gmail.com
4	Occupier Details	MOHAMMED JAMSHEER CHERUSHOLA HOUSE, EDIVANNA P O,NILAMBUR, MALAPPURAM
5	Local Body	EDATHALA
6	Survey Number	251/2
7	Village	ALUVA EAST
8	Taluk	ALUVA
9	District	ERNAKULAM I
10	Capital Investment(Rs in Lakhs)	Rs.94.20 LAKHS
11	Scale	Small
12	Category	GREEN
13	Annual fee(Rs) Total Fee remitted(Rs)	Rs.15000.00 Rs.15000.00
14	RAW MATERIAL	PRODUCTS
	DRY WASTE @10000 Kilogram	RECOVERED SORTED MATERIALS: PLASTIC PAPER AND SCRAP PHARMACEUTICAL WASTE E-WASTE TOTAL @10000 Kilogram
15	Total Power Required (HP)	20 HP

2. CONDITIONS AS PER
The Water(Prevention and Control of Pollution)Act, 1974

2.1 In case of generation of trade effluent from the industry, effluent treatment system consisting of treatment units having adequate capacity established as per the Integrated Consent to Establish issued shall be operational at all times during which the industry is functional. Additional facilities required, if any, to achieve the standards laid down by the Board u/s 17(1) (g) of the Water Act shall also be made along with.

2.2 Water consumption: -

2.3 Effluent generation: NA

2.4 The characteristics of effluent after treatment shall confirm to the following tolerance limits:

SI.NO.	**Characteristics**	**Unit**	**Tolerance Limit**	
			Sewage	**Trade Effluent**

2.5 Mode of disposal of treated effluent: NA

3. CONDITIONS AS PER
The Air(Prevention and Control of Pollution)Act, 1981

3.1 Adequate air pollution control measures shall be operational at all times during the functioning of the industry. Additional facilities required, if any, to achieve the standards laid down by the Board shall also be made along with.

Stack No.	Sources of Emission	Emission Rate(Nm3/Hr)	Stack Height above		Control Equipment
			Ground Level	Roof Level	

3.2 Emission characteristics shall not exceed the following:

SI.No.	Parameter	Limiting Standards (mg/Nm3)

4. CONDITIONS AS PER
The Environment (Protection) Act, 1986.

4.1 The operation of the industry shall be strictly in compliance with the provisions of the Noise Pollution (Regulation and Control) Rules 2000.

4.2 Used lead acid batteries shall be disposed of as per the Batteries (Management and Handling) Rules, 2001

4.3 Hazardous waste generated, if any, shall be handled as per the Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016.

4.3.1 Activities for which Authorisation is granted

Collection		**transport**	
Reception		**Storage**	
Treatment		**Reprocessing/Disposal**	

4.3.2 Type, quantity and mode of storage/collection/disposal of hazardous wastes shall be as follows:

2020

SI.No.	Hazardous Waste	Schedule Category	Quantity Tonne/year

Mode of	
Storage	Disposal

4.4 E-waste shall be disposed off safely as per the E-Waste (Management)Rules, 2016.

5. SPECIFIC CONDITIONS

5.2 For renewal of the consent in case of continuance of discharge/operation of the industry, application in the prescribed form shall be submitted through the web portal of the Board for Online Consent Management & Monitoring System 2 months prior to the date of expiry. Late application will be accepted only with fine.

5.3 This consent is granted subject to the power of the Board to review and make variation in or revoke any of the conditions as the Board deems fit as per the relevant Acts/Rules.

5.4 The applicant shall comply with the instructions that the Board may issue from time to time regarding prevention and control of air, water, land and sound pollution

5.5 Arrangements for collection, segregation, storage, handling and disposal of solid Waste including garbage shall be provided and maintained properly.

5.6 Energy and water conservation measures shall be adopted as far as possible.

5.7 Renewable sources of energy such as solar energy shall be utilized for lighting and heating wherever possible

5.8 There shall not be any fugitive emission from the premises.

5.9 Good housekeeping shall be maintained in and around the plant.

5.10 All operations likely to produce dust or noise shall be carried out with appropriate enclosure.

5.11 The consentee shall put up a sign board of size 6x4 ft. near the main entrance of the plant to display the name of the unit and important consent conditions

5.12 No change or alteration of the industrial plant is to be made without the prior written permission of the Board. Any change in the particulars furnished and/or in the identity of the occupier/authorised agent is to be intimated to the Board forthwith.

5.13. There shall be no fugitive emission from the premises.

5.14. Solid waste shall be disposed off scientifically.

5.15. Raw materials and products shall be handled with proper care to prevent spreading of dust.

5.16. There shall not be any trade effluent from the unit.

A M HAREES

Digitally signed by A M HAREES
Date: 2020.03.04 18:58:54 +05'30'

DATE :04/03/2020

SIGNATURE & SEAL OF ISSUING AUTHORITY
ASSISTANT ENVIRONMENTAL ENGINEER

2021

To

MOHAMMED JAMSHEER
CHERUSHOLA HOUSE,
EDIVANNA P O,NILAMBUR,
MALAPPURAM

1. This digitally signed document is legally valid as per the Information Technology Act 2000

2. For verifying this document please go to krocmms.nic.in and search using date of issue/name of the unit/Application Number in “Consent Granted Applications” link in the home page of the Board’s Online Consent Management and Monitoring System.

2022

FILE NO : PCB/KKD/DO/12028/2022
Date of issue : 26/07/2022

KERALA STATE POLLUTION CONTROL BOARD

CONSENT TO

OPERATE/AUTHORISATION/REGISTRATION

ISSUED UNDER

The Water (Prevention & Control of Pollution) Act, 1974
The Air (Prevention & Control of Pollution) Act, 1981

and

The Environment (Protection) Act, 1986

As per Application No. :17647835
Dated:20-06-2022

TO

M/s GREEN WORMS WASTE MANAGEMENT PVT LTD
10/423AC, 10/423AD PULLANHIMEDU-KOLIKKAL ROAD THAMARASSERY
KOZHIKODE

Consent No. :PCB/KKD/DO/ICO/12028/G21KOZ621448/17647835/2022
Valid Upto :31/05/2027

2023

1. GENERAL

1.1. This integrated consent is granted subject to the power of the Board to withdraw consent, review and make variation in or revoke all or any of the conditions as the Board deems fit.

1	**VALIDITY**	31/05/2027
2	Name and Address of the establishment	GREEN WORMS WASTE MANAGEMENT PVT LTD 10/423AC, 10/423AD PULLANHIMEDU-KOLIKKAL ROAD THAMARASSERY KOZHIKODE 673573
3	Communication	Telephone :0-9946661089 Fax :- E-mail:bavainternational@gmail.com
4	Occupier Details	MR.MOHAMMED JAMSHEER DIRECTOR GREEN WORMS WASTE MANAGEMENT PVT LTD PULLANHIMEDU-KOLIKKAL ROAD THAMARASSERY KOZHIKODE-673573
5	Local Body	KATTIPPARA PANCHAYAT
6	Survey Number	2/62,2/85,2/109
7	Village	KEDAVOOR
8	Taluk	THAMARASSERY
9	District	KOZHIKODE
10	Capital Investment(Rs in Lakhs)	69.91 LAKH/-
11	Scale	Small
12	Category	GREEN
13	Annual fee(Rs) Total Fee remitted(Rs)	Rs 10000/- Rs 10000/-
14	RAW MATERIAL	PRODUCTS
	Collection, transportation, segregation, storage & disposal of all kinds of Non-biodegradable municipal waste=10 Metric Tones/day	Storage and Disposal of non-bio degradable municipal waste=10 Metric Tonnes/day
15	Total Power Required (HP)	40 HP

2. CONDITIONS AS PER
The Water(Prevention and Control of Pollution)Act, 1974

2.1 In case of generation of trade effluent from the industry, effluent treatment system consisting of treatment units having adequate capacity established as per the Integrated Consent to Establish issued shall be operational at all times during which the industry is functional. Additional facilities required, if any, to achieve the standards laid down by the Board u/s 17(1) (g) of the Water Act shall also be made along with.

2.2 Water consumption: 250 LPD

2.3 Effluent generation: 200 LPD

2.4 The characteristics of effluent after treatment shall confirm to the following tolerance limits:

SI.NO.	Characteristics	Unit	Tolerance Limit	
			Sewage	Trade Effluent

2.5 Mode of disposal of treated effluent: Septic tank and soakpit

3. CONDITIONS AS PER
The Air(Prevention and Control of Pollution)Act, 1981

3.1 Adequate air pollution control measures shall be operational at all times during the functioning of the industry. Additional facilities required, if any, to achieve the standards laid down by the Board shall also be made along with.

Stack No.	Sources of Emission	Emission Rate(Nm3/Hr)	Stack Height above		Control Equipment
			Ground Level	Roof Level	

3.2 Emission characteristics shall not exceed the following:

SI.No.	Parameter	Limiting Standards (mg/Nm3)

4. CONDITIONS AS PER
The Environment (Protection) Act, 1986.

4.1 The operation of the industry shall be strictly in compliance with the provisions of the Noise Pollution (Regulation and Control) Rules 2000.

4.2 Used lead acid batteries shall be disposed of as per the Batteries (Management and Handling) Rules, 2001

4.3 Hazardous waste generated, if any, shall be handled as per the Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016.

4.3.1 Activities for which Authorisation is granted

Collection		**transport**	
Reception		**Storage**	
Treatment		**Reprocessing/Disposal**	

4.3.2 Type, quantity and mode of storage/collection/disposal of hazardous wastes shall be as follows:

SI.No.	Hazardous Waste	Schedule Category	Quantity Tonne/year

Mode of	
Storage	Disposal

4.4 E-waste shall be disposed off safely as per the E-Waste (Management)Rules, 2016.

2025

5. SPECIFIC CONDITIONS

5.1. This consent is granted subject to the power of the Board to review and make variations in all or any of the conditions
5.2. The applicant shall comply with the instructions that the Board may issue from time to time regarding prevention and control of air, water, land, and sound pollution.
5.3. The date of commissioning shall be intimated, at least three months in advance, to the District Office of the Board at Kozhikode.
5.4. Consent to Operate under the Water (Prevention and Control of Pollution) Act 1974 and then Air(Prevention and Control of Pollution) Act 1981 shall be obtained before commissioning for a period of five years.
5.5. This consent is granted on the basis of the affidavit ,self-certification, and the Site plan furnished by the applicant. On notice of non-compliance to the Board's norms, the consent issued from the Board will be revoked.
5.6.No change or alteration of the unit is to be made without the prior permission of the Board. Any change in the particulars furnished in their references or in the identity of the occupier / authorized agent is to be intimated to the Board forthwith.
5.7.Signboard showing the name of the establishment shall be displayed at the entrance of the site.
5.8.Location of the establishment shall be as shown in the drawing attached. No change or alteration to the above shall be made.
5.9.The effluent from the unit shall be disposed of through a septic tank, soak pit.
5.10. The particulate matter at the boundary of the premises shall not exceed the National Ambient Air Quality Standard specified for that area.
5.11. The sound level measured 1 m outside the boundary of the premises shall not exceed the Ambient Air Quality Standards in respect of Noise applicable to that area.
5.12. All operations likely to produce dust, odour, or noise shall be carried out within closed premises.
5.13. Raw materials and products shall be handled with proper care to prevent the spreading of dust.
5.14. The Unit, Septic Tank, Soak Pit shall maintain a minimum distance of 3m from the residential buildings and 5m from the public building.
5.15. The solid waste generated in the unit shall be disposed as per Solid waste Management Rule,2016 and as per the agreement submitted.
5.16. The plastic waste shall be handled as per plastic waste(Management & Handling) Rules 2016 and shall be disposed to registered recyclers.
5.17. Necessary statutory clearance from the concerned departments shall be obtained before operation of the unit.
5.18 CPCB Guidelines should be followed.

Sauma Hameed

Digitally signed by Sauma Hameed
Date: 2022.07.26 10:58:01 +05'30'

DATE :26/07/2022

SIGNATURE & SEAL OF ISSUING AUTHORITY
ENVIRONMENTAL ENGINEER

2026

To

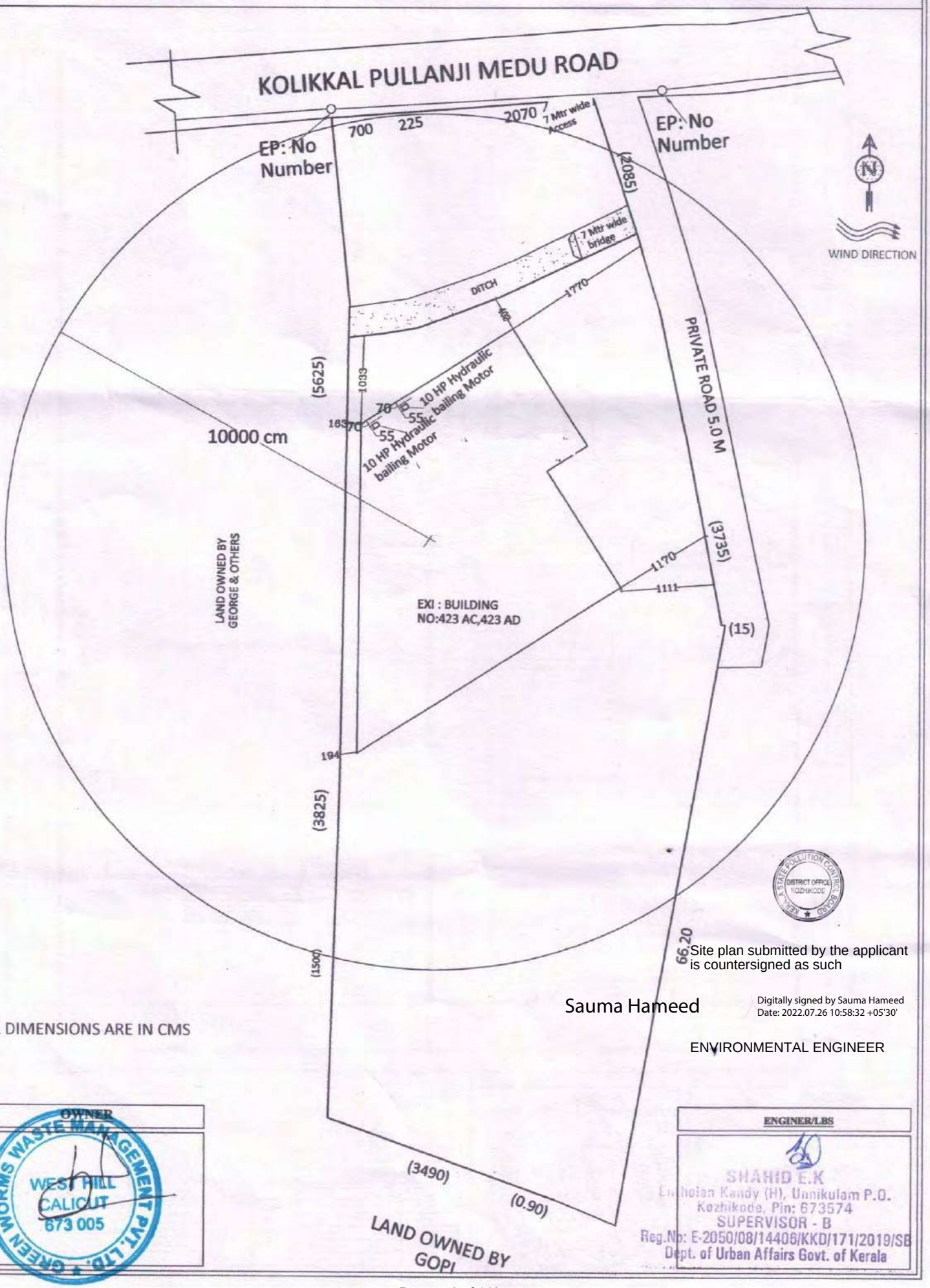
MR.MOHAMMED JAMSHEER DIRECTOR GREEN WORMS WASTE MANAGEMENT PVT LTD
PULLANHIMEDU-KOLIKKAL ROAD THAMARASSERY KOZHIKODE-673573

1. This digitally signed document is legally valid as per the Information Technology Act 2000

2. For verifying this document please go to krocmms.nic.in and search using date of issue/name of the unit/Application Number in “Consent Granted Applications” link in the home page of the Board’s Online Consent Management and Monitoring System.

2027

SITE PLAN OF THE EXISTING BUILDING NO: 423AC,423AD INRS NO:2/62,2/85, .2/109 WARD NO:10 AT KEDAVOOR VILLAGE KATTIPARA PANCHAYATH



Site plan submitted by the applicant is countersigned as such

Sauma Hameed

Digitally signed by Sauma Hameed
Date: 2022.07.26 10:58:32 +05'30'

ENVIRONMENTAL ENGINEER

ALL DIMENSIONS ARE IN CMS

OWNER

GREEN WORMS WASTE MANAGEMENT PVT. LTD. WEST HILL CALICUT 673 005

ENGINEER/LBS

SHAHID E.K
Kozhikode, Pin: 673574
SUPERVISOR - B
Reg.No: E-2050/08/14406/KKD/171/2019/SB
Dept. of Urban Affairs Govt. of Kerala

Andhra Pradesh Pollution Control Board

D. No. 33-26-14 D/2, Near Sunrise Hospital,Pushpa Hotel Centre, Chalamvari Street, Kasturibaipet, Vijayawada - 520 010, Andhra Pradesh

Regn. No.
PR-19-AND-01-AAACL6442L-23

Date:
19-01-2023 03:21 PM

REGISTRATION CERTIFICATE FOR RECYCLING OR PROCESSING OF PLASTIC WASTE

(Under Rule-13(3) of the Plastic Waste Management Rules, 2016, as amended)

To,
Ultratech Cement Limited (Unit- Andhra Pradesh Cement Works) ,
Andhra Pradesh Cement Works , Bhogasamudram, Tadipatri (M),,Anantapuramu,Andhra Pradesh-515413

1. With reference to the application dated **09-01-2023** regarding registration as a Recyclers/Co-processors/, your application has been processed and found in order. Now, therefore, **Andhra Pradesh Pollution Control Board** is pleased to grant the registration in favour of **Ultratech Cement Limited (Unit- Andhra Pradesh Cement Works)**, vide registered address **Andhra Pradesh Cement Works , Bhogasamudram, Tadipatri (M),, Anantapuramu, Andhra Pradesh -515413** for processing of plastic waste, as per details given below:

Processing Code	E1	Quantity (TPA)
Processing Capacity	Cat-I	20000.0000
	Cat-II	80000.0000
	Cat-III	2500.0000
	Cat-IV	2500.0000
Production Capacity	Product	Quantity (TPA)
	Coprocessing [E1]	105000.0000

2. This certificate of registration shall be valid for a period of **One Year** from the date of issue of the letter unless revoked, suspended or cancelled.

3. The unit shall process the plastic waste (Quantity & Type) as per the Process Flow Diagram (Section 8) and using the plant machinery as per the details given at (Section 11).

4. The quantity of plastic waste processed in the unit shall be as per details given in Clause 1.0 above. The amount of plastic packaging waste recycled processed by the PWP shall not be more than installed capacity of the enterprise

For Greenworms reference only

Signed by:Sri M.Siva Reddy
Date: 2023.01.19 15:22:41 +05:30

5. Recycling of plastic waste shall conform to the Indian Standard: IS 14534: 1998 titled "Guidelines for Recycling of Plastic" as amended form time to time.

6. Carry bag made of virgin or recycled plastic, shall not be less seventy five microns in thickness and one hundred and twenty (120) microns in thickness with effect from the 31st December, 2022.

7. The PWPs shall not engage in manufacture, stocking, distribution, selling and using of banned SUP items as listed in Amendment to PWM Rules dated August 12, 2021

8. The PWPs shall not deal with any entity not registered through on-line centralized portal developed by CPCB.

9. The unit shall maintain a record of details of procurement of plastic waste and sale of recycled products as per forma prescribed by CPCB. The total quantity of plastic waste processed by plastic waste processors and attributed to PIBOs on an annual basis shall be made available on the centralized portal developed by CPCB as also on the website of PWP.

10. Registered PWPs shall provide certificates for plastic waste processing, which shall be considered for fulfilment of EPR obligations by PIBOs. Certificates shall be issued on the centralized portal in the pro forma and as per mechanism developed by CPCB. The certificates will be for plastic packaging category-wise and shall include GST data of the enterprise.

11. Exchange of EPR credit between PWPs and PIBOs to be done as per mechanism provided by CPCB.

12. The PWPs shall file annual returns on the plastic packaging waste collected and processed towards fulfilling obligations under EPR with the CPCB/SPCB/PCC as per pro forma prescribed by Central Pollution Control Board by the April 30 of the next financial year.

13. The PWP shall pay Annual fee for processing of Returns as per Guidelines by CPCB.

14. In case, at any stage it is found that the information provided by the PWP is false, the PWP shall be debarred by SPCB, as per procedure laid down by CPCB , from operating under the EPR framework for a period of one year. The PWPs whose registration has been revoked shall not be able to register afresh for the period of revocation.

15. The PWPs are required to comply with provisions of PWM Rules (as applicable) failing which necessary action as deemed fit shall be initiated against the violator. The Environment Compensation, as applicable, shall be levied by CPCB/SPCB/PCC on the violator.

16. An application for the renewal of a Registration shall be made at 90 days prior to expire of validity, along with the necessary information & documents as per the Guidelines issued by the MoEF&CC and CPCB from time to time.

For Greenworms reference only

Signed by:Sri M.Siva Reddy
Date: 2023.01.19 15:22:41 +05:30

17. If at any stage, information provided by the unit is found to be incorrect, then the Registration granted by SPCB/PCC shall be debarred by SPCB, as per procedure laid down by CPCB, from operating under the EPR framework for a period of five years.

18. The PWP should ensure compliance with provisions of the PWM Rules, 2016, as amended. Action, as deemed fit, including revocation of registration, closure of unit, levying Environmental Compensation charges, shall be taken against violators of PWM Rules.

19. Andhra Pradesh Pollution Control Board reserves the right to take such action as deemed fit under Environment (Protection) Act, 1986 for violation of PWM Rules, 2016, as amended, if any, by the concerned PWP for the period prior to grant of registration.

20. Type of plastic and recycled content for different components of commodity to be included in the label on the commodity

Joint Chief Environmental Engineer, Unit Head - III

For Greenworms reference only

Signed by:Sri M.Siva Reddy
Date: 2023.01.19 15:22:41 +05:30

2031

TAMILNADU POLLUTION CONTROL BOARD

Category of the Industry :

RED

CONSENT ORDER NO. 2408257344051 DATED: 16/02/2024.

PROCEEDINGS NO.F.0132GMP/RL/JCEE-M/TNPCB/GMP/A/2024 DATED: 16/02/2024

SUB: Tamil Nadu Pollution Control Board - RENEWAL OF CONSENT –M/s. SURYAANS PAPERS , S.F.No. 312/2C, THERVOYKANDIGAI village, Gummidipoondi Taluk and Tiruvallur District - Renewal of Consent for the operation of the plant and discharge of emissions under Section 21 of the Air (Prevention and Control of Pollution) Act, 1981 as amended in 1987 (Central Act 14 of 1981) –Issued- Reg.

REF: 1. TNPC Board's Proc. No. T3/TNPCB/F.0132GMP/RL/GMP/W&A/2022, DATED: 02/05/2022
2. OCMMS Application No. 57344051, dated: 05/02/2024.
3. IR.No : F.0132GMP/RL/AE/GMP/2024 dated 15/02/2024

RENEWAL OF CONSENT is hereby granted under Section 21 of the Air (Prevention and Control of Pollution) Act, 1981 as amended in 1987 (Central Act 14 of 1981) (hereinafter referred to as "The Act") and the rules and orders made there under to

The Managing Partner
M/s . SURYAANS PAPERS
S.F No. 312/2C
THERVOYKANDIGAI Village
Gummidipoondi Taluk
Tiruvallur District.

Authorizing the occupier to operate the industrial plant in the Air Pollution Control Area as notified by the Government and to make discharge of emission from the stacks/chimneys.

This is subject to the provisions of the Act, the rules and the orders made there under and the terms and conditions incorporated under the Special and General conditions stipulated in the Consent Order issued earlier and subject to the special conditions annexed.

This RENEWAL OF CONSENT is valid for the period ending **March 31, 2025**

D VASUDEVAN

Digitally signed by D VASUDEVAN
Date: 2024.02.16 19:48:23 +05'30'

Joint Chief Environmental Engineer-Monitoring,
Tamil Nadu Pollution Control Board, Chennai

2032

TAMILNADU POLLUTION CONTROL BOARD

SPECIAL CONDITIONS

1. This renewal of consent is valid for operating the facility for the manufacture of products (Col. 2) at the rate (Col. 3) mentioned below. Any change in the products and its quantity has to be brought to the notice of the Board and fresh consent has to be obtained.

Sl. No.	Description	Quantity	Unit
	Product Details		
1.	Kraft Paper	6000	T/Month

2. This renewal of consent is valid for operating the facility with the below mentioned emission/noise sources along with the control measures and/or stack. Any change in the emission source/control measures/change in stack height has to be brought to the notice of the Board and fresh consent/Amendment has to be obtained.

I	Point source emission with stack :			
Stack No.	Point Emission Source	Air pollution Control measures	Stack height from Ground Level in m	Gaseous Discharge in Nm^3/hr
01	Coal, Husk and Fire wood Boiler 12.0T/Hr	Dust collectors with stack	26.00	–
02	DG Set 125 KVA	Acoustic enclosures with stack	3.30	–
II	Fugitive/Noise emission :			
Sl. No.	Fugitive or Noise Emission sources	Type of emission	Control measures	

Special Additional Conditions:

The unit shall obtain No Objection Certificate (NOC) from the Tamil Nadu Bio Diversity Board /National Bio Diversity Authority if the unit is using any Biological resources or knowledge associated thereto as per the provisions of Biological Diversity Act 2002.

The industries shall take all efforts to use and popularize "Mission LiFE" logo and mascot which is available in TNPCB & MoEFCC website. They shall also request their employees to adopt "Mission LiFE" action points and document the same and furnish half yearly report to Board.

Additional Conditions:

1. The unit shall operate and maintain the air pollution control measures efficiently and continuously so as to achieve the AAQ/Emission standards prescribed by the Board.
2. The unit shall ensure that Noise emission from the Industrial plant shall satisfy the ANL standards prescribed by the Board.
3. The unit shall continue to develop green belt within the premises so as to attenuate air and noise pollution.

D VASUDEVAN
Digitally signed by D VASUDEVAN
Date: 2024.02.16 19:48:41 +05'30'

Joint Chief Environmental Engineer-Monitoring,
Tamil Nadu Pollution Control Board,
Chennai

To
The Managing Partner,
M/s.SURYAANS PAPERS,
Suryaans Papers,

2033

TAMILNADU POLLUTION CONTROL BOARD

Pin: 601202

Copy to:

1.The Commissioner, GUMMUDIPOONDI-Panchayat Union, Gummidipoondi Taluk, Tiruvallur District .

2. Copy submitted to the Member Secretary, Tamil Nadu Pollution Control Board, Chennai for favour of kind information.

3. The District Environmental Engineer, Tamil Nadu Pollution Control Board, GUMMIDIPOONDI for favour of kind information.

4. File

2034

MAHARASHTRA POLLUTION CONTROL BOARD

Tel: 24010706/24010437
Fax: 24023516
Website: http://mpcb.gov.in
Email: robmw@mpcb.gov.in

Kalpataru Point, 2nd and 4th floor, Opp. Cine Planet Cinema, Near Sion Circle, Sion (E), Mumbai-400022

ORANGE/S.S.I (O60)
No:- Format1.0/RO(BMW)/UAN No.0000170873/CO/2306001120

Date: 15/06/2023

To,
SHAKTI PLASTIC INDUSTRIES
S. NO. 158 & 159,VILLAGE – NANDGAON, MANOR
District- Palghar

Your Service is Our Duty

Sub: Amalgamation of Consent to Operate along with existing Consent to Operate under Orange/ SSI category

Ref:
1. Existing Consent to Operate granted by MPCB vide No. RO-THANE/CONSENT/2007001629/TR-III dated 28.07.2020, which is valid upto 31.08.2024
2. Consent to Establish granted by MPCB vide No. No:-Format1.0/RO(BMW)/UAN No.0000159495/CE/2303001841 dated 24.03.2023

Your application No.MPCB-CONSENT-0000170873 Dated 14.05.2023

For: grant of Consent to Operate under Section 26 of the Water (Prevention & Control of Pollution) Act, 1974 & under Section 21 of the Air (Prevention & Control of Pollution) Act, 1981 and Authorization under Rule 6 and Rule 18(7) of the Hazardous & Other Wastes (Management & Transboundary Movement) Rules 2016 is considered and the consent is hereby granted subject to the following terms and conditions and as detailed in the schedule I, II, III & IV annexed to this order:

1. **The consent to operate is granted for a period up to 31/08/2026**
2. **The capital investment of the project is Rs.7.7056 Crs. (As per C.A Certificate submitted by industry)**
3. **Consent is valid for the manufacture of:**

Sr No	Product	Maximum Quantity	UOM
Products			
1	PLASTIC GRANULES & REPROCESS PLASTIC GRANULES (without washing activity)	7500	MT/M
2	PLASTIC GRINDING & AGGLOMERATE (without washing activity)	2500	MT/M

Sr No	Product	Maximum Quantity	UOM
3	PLASTIC GRANULES & REPROCESS PLASTIC GRANULES (with washing activity)	10000	MT/M
4	PLASTIC GRINDING & AGGLOMERATE (with washing activity)	4000	MT/M
Industry shall not manufacture banned Single Use Plastic (SUP) items as well as not sell finished products to manufacturers of banned SUP items as per Maharashtra Plastic and Thermocol (Manufacture, Usage, Sale, Transport, Handling & Storage) Notification, 2018 and amendment thereto and Plastic Waste Management Rules, 2016 and amendment thereto.			

4. **Conditions under Water (P&CP), 1974 Act for discharge of effluent:**

Sr No	Description	Permitted (in CMD)	Standards to	Disposal Path
1.	Trade effluent	3	As per Schedule-I	Recycle 100% to achieve ZLD
2.	Domestic effluent	4	As per Schedule-I	Soaked in soak pit

5. **Conditions under Air (P& CP) Act, 1981 for air emissions:**

Sr No.	Stack No.	Description of stack / source	Number of Stack	Standards to be achieved
1	1	D G	1	As per Schedule -II

6. **Non-Hazardous Wastes:**

Sr No	Type of Waste	Quantity	UoM	Treatment	Disposal
1	PRIMARY PACKAGE SCRAP	7500	MT/M	RECYCLE	RECYCLE

7. **Conditions under Hazardous & Other Wastes (M & T M) Rules 2016 for Collection, Segregation, Storage, Transportation, Treatment and Disposal of hazardous waste:**

Sr No	Category No./ Type	Quantity	UoM	Treatment	Disposal
1	35.3 Chemical sludge from waste water treatment	5	Kg/M	ETP	CHWTSDF

8. The Board reserves the right to review, amend, suspend, revoke this consent and the same shall be binding on the industry.
9. This consent should not be construed as exemption from obtaining necessary NOC/ permission from any other Government authorities.
10. This consent is issued with overriding effect on earlier Operate granted by the Board vide no. Consent No. No. RO-THANE/CONSENT/2007001629/TR-III dated 28.07.2020.
11. The applicant shall make an application for renewal of consent 60 days prior to date of expiry of the consent. (Operate/Renewal)

12. Industry shall obtain permission from Directorate of Industrial Safety & Health (DISH).
13. EPR Registration under PWM Rules 2016 is granted by the Board to the industry vide letter No. PR-MAH-07-AAFPP9556R-22 dated 18.07.2022 for earlier consented capacity and industry shall apply for amendment in EPR registration quantity as per this amalgamation within 15 days.







Signed by: N.N. Gurav
Regional Officer (BMW)
For and on behalf of,
Maharashtra Pollution Control Board
robmw@mpcb.gov.in
2023-06-15 16:30:56 IST

Received Consent fee of -

Sr.No	Amount(Rs.)	Transaction/DR.No.	Date	Transaction Type
1	30000.00	TXN2305002894	22/05/2023	Online Payment
2	3500.00	TXN2306001789	13/06/2023	Online Payment

Copy to:

1. Regional Officer, MPCB, Thane and Sub-Regional Officer, MPCB, Tarapur II
- They are directed to ensure the compliance of the consent conditions.
2. Chief Accounts Officer, MPCB,Sion, Mumbai

SCHEDULE-I

Terms & conditions for compliance of Water Pollution Control:

1. A] As per your application, you have provided Effluent Treatment Plant (ETP) of designed capacity of 3.00 CMD consisting of Primary (Collection tank, Neutralization tank, Equalization tank, Primary Clarifier/Primary Settling Tank) for the treatment of 3 CMD of trade effluent.

   B] The Applicant shall operate the effluent treatment plant (ETP) to treat the trade effluent and recycle the entire treated effluent into the process for various purposes such as for cooling, process & Scrubbing with metering system so as to achieve Zero Liquid Discharge. There shall be no discharge on land or outside factory premises.

   C] The Industry shall ensure connectivity online monitoring system to the MPCB server including separate energy meter for pollution control system.

   D] The treated effluent shall be recycled for secondary purposes to the maximum extent and remaining shall be discharged on land for gardening within premise after confirming above standards. In no case, effluent shall find its way for gardening / outside factory premises.

2. A] As per your application, you have provided Septic Tank followed by Soak pit for the treatment of 4 CMD of sewage.

   B] The Applicant shall operate the sewage treatment system to treat the sewage so as to achieve the following standards.

Sr.No	Parameters	Standards (mg/l)	
1	Suspended Solids	Not to exceed	50
2	BOD 3 days 27°C	Not to exceed	30

   C] The treated sewage shall be recycled for secondary purposes to the maximum extent and remaining shall be discharged on land for gardening within premise after confirming above standards. In no case, sewage shall find its way for gardening / outside factory premises.

3. The Board reserves its rights to review plans, specifications or other data relating to plant setup for the treatment of waterworks for the purification there of & the system for the disposal of sewage or trade effluent or in connection with the grant of any consent conditions. The Applicant shall obtain prior consent of the Board to take steps to establish the unit or establish any treatment and disposal system or an extension or addition thereto.
4. The industry shall ensure replacement of pollution control system or its parts after expiry of its expected life as defined by manufacturer so as to ensure the compliance of standards and safety of the operation thereof.
5. The Applicant shall comply with the provisions of the Water (Prevention & Control of Pollution) Act, 1974 and as amended, by installing water meters and other provisions as contained in the said act:

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Sr. No.	Purpose for water consumed	Water consumption quantity (CMD)
1.	Industrial Cooling, spraying in mine pits or boiler feed	0.50
2.	Domestic purpose	5.00
3.	Processing whereby water gets polluted & pollutants are easily biodegradable	4.00
4.	Processing whereby water gets polluted & pollutants are not easily biodegradable and are toxic	0.00
5.	Gardening	0

6. The Applicant shall provide Specific Water Pollution control system as per the conditions of EP Act, 1986 and rule made there under from time to time/ Environmental Clearance/ CREP guidelines.

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SCHEDULE-II

Terms & conditions for compliance of Air Pollution Control:

1. As per your application, you have provided the Air pollution control (APC) system and erected following stack (s) to observe the following fuel pattern:

Stack No.	Source	APC System provided/proposed	Stack Height(in mtr)	Type of Fuel	Sulphur Content(in %)	Pollutant	Standard
1	D G	Acoustic Enclosure	3.00	DIESEL 25 Lit/Day	1	SO2	0.5 Mg/Nm^3

2. The Applicant shall provide Specific Air Pollution control equipments as per the conditions of EP Act, 1986 and rule made there under from time to time/ Environmental Clearance / CREP guidelines.
3. The Applicant shall obtain necessary prior permission for providing additional control equipment with necessary specifications and operation thereof or alteration or replacement/alteration well before its life come to an end or erection of new pollution control equipment.
4. The Board reserves its rights to vary all or any of the condition in the consent, if due to any technological improvement or otherwise such variation (including the change of any control equipment, other in whole or in part is necessary).

SCHEDULE-III

Details of Bank Guarantees:

Sr. No.	Consent (C2E/ C2O /C2R)	Amt of BG Imposed	Submission Period	Purpose of BG	Compliance Period	Validity Date
NA						

BG Forfeiture History

Srno.	Consent (C2E/C2O/C2R)	Amount of BG imposed	Submission Period	Purpose of BG	Amount of BG Forfeiture	Reason of BG Forfeiture
NA						

BG Return details

Srno.	Consent (C2E/C2O/C2R)	BG imposed	Purpose of BG	Amount of BG Returned
NA				

SCHEDULE-IV

General Conditions:

1. The Energy source for lighting purpose shall preferably be LED based
2. The PP shall harvest rainwater from roof tops of the buildings and storm water drains to recharge the ground water and utilize the same for different industrial applications within the plant
3. Conditions for D.G. Set
   a) Noise from the D.G. Set should be controlled by providing an acoustic enclosure or by treating the room acoustically.
   b) Industry should provide acoustic enclosure for control of noise. The acoustic enclosure/ acoustic treatment of the room should be designed for minimum 25 dB (A) insertion loss or for meeting the ambient noise standards, whichever is on higher side. A suitable exhaust muffler with insertion loss of 25 dB (A) shall also be provided. The measurement of insertion loss will be done at different points at 0.5 meters from acoustic enclosure/room and then average.
   c) Industry should make efforts to bring down noise level due to DG set, outside industrial premises, within ambient noise requirements by proper sitting and control measures.
   d) Installation of DG Set must be strictly in compliance with recommendations of DG Set manufacturer.
   e) A proper routine and preventive maintenance procedure for DG set should be set and followed in consultation with the DG manufacturer which would help to prevent noise levels of DG set from deteriorating with use.
   f) D.G. Set shall be operated only in case of power failure.
   g) The applicant should not cause any nuisance in the surrounding area due to operation of D.G. Set.
   h) The applicant shall comply with the notification of MoEFCC, India on Environment (Protection) second Amendment Rules vide GSR 371(E) dated 17.05.2002 and its amendments regarding noise limit for generator sets run with diesel.
4. The applicant shall maintain good housekeeping.
5. The non-hazardous solid waste arising in the factory premises, sweepings, etc. be disposed of scientifically so as not to cause any nuisance / pollution. The applicant shall take necessary permissions from civic authorities for disposal of solid waste.
6. The applicant shall not change or alter the quantity, quality, the rate of discharge, temperature or the mode of the effluent/emissions or hazardous wastes or control equipments provided for without previous written permission of the Board. The industry will not carry out any activity, for which this consent has not been granted/without prior consent of the Board.
7. The Board reserves the right to review, amend, suspend, revoke this consent and the same shall be binding upon you.
8. The industry shall submit quarterly statement in respect of industries obligation towards consent and pollution control compliance's duly supported with documentary evidences (format can downloaded from MPCB official site).
9. The industry shall submit official e-mail address and any change will be duly informed to the MPCB.
10. The industry shall achieve the National Ambient Air Quality standards prescribed vide Government of India, Notification No. B-29016/20/90/PCI-L dated. 18.11.2009 as amended.
11. This consent should not be construed as exemption from obtaining necessary NOC/ permission from any other Government authorities.
12. The industry shall ensure replacement of pollution control system or its parts after expiry of its expected life as defined by manufacturer so as to ensure the compliance of standards and safety of the operation thereof.

13. Whenever due to any accident or other unforeseen act or even, such emissions occur or is apprehended to occur in excess of standards laid down, such information shall be forthwith Reported to Board, concerned Police Station, office of Directorate of Health Services, Department of Explosives, Inspectorate of Factories and Local Body. In case of failure of pollution control equipments, the production process connected to it shall be stopped.
14. The applicant shall provide an alternate electric power source sufficient to operate all pollution control facilities installed to maintain compliance with the terms and conditions of the consent. In the absence, the applicant shall stop, reduce or otherwise, control production to abide by terms and conditions of this consent.
15. The industry shall recycle/reprocess/reuse/recover Hazardous Waste as per the provision contain in the Hazardous and Other Wastes (M & TM) Rules 2016, which can be recycled /processed /reused /recovered and only waste which has to be incinerated shall go to incineration and waste which can be used for land filling and cannot be recycled/reprocessed etc. should go for that purpose, in order to reduce load on incineration and landfill site/environment.
16. An inspection book shall be opened and made available to the Board's officers during their visit to the applicant.
17. Separate drainage system shall be provided for collection of trade and sewage effluents. Terminal manholes shall be provided at the end of the collection system with arrangement for measuring the flow. No effluent shall be admitted in the pipes/sewers downstream of the terminal manholes. No effluent shall find its way other than in designed and provided collection system.
18. Neither storm water nor discharge from other premises shall be allowed to mix with the effluents from the factory.
19. The industry should not cause any nuisance in surrounding area.
20. The industry shall take adequate measures for control of noise levels from its own sources within the premises so as to maintain ambient air quality standard in respect of noise to less than 75 dB (A) during day time and 70 dB (A) during night time. Day time is reckoned in between 6 a.m. and 10 p.m. and night time is reckoned between 10 p.m. and 6 a.m.
21. You shall ensure that fugitive emissions from the activity are controlled so as to maintain clean and safe environment in and around the facility premises.
22. The applicant shall provide ports in the chimney/(s) and facilities such as ladder, platform etc. for monitoring the air emissions and the same shall be open for inspection to/and for use of the Board's Staff. The chimney(s) vents attached to various sources of emission shall be designated by numbers such as S-1, S-2, etc. and these shall be painted/ displayed to facilitate identification.
23. The Board reserves its rights to review plans, specifications or other data relating to plant setup for the treatment of waterworks for the purification thereof & the system for the disposal of sewage or trade effluent or in connection with the grant of any consent conditions. The Applicant shall obtain prior consent of the Board to take steps to establish the unit or establish any treatment and disposal system or an extension or addition thereto
24. The applicant shall install a separate meter showing the consumption of energy for operation of domestic and industrial effluent treatment plants and air pollution control system. A register showing consumption of chemicals used for treatment shall be maintained.
25. The applicant shall bring minimum 33% of the available open land under green coverage/ plantation. The applicant shall submit a yearly statement by 30th September every year on available open plot area, number of trees surviving as on 31st March of the year and number of trees planted by September end.
26. The Board reserves its rights to review plans, specifications or other data relating to plant setup for the treatment of waterworks for the purification thereof & the system for the disposal of sewage or trade effluent or in connection with the grant of any consent conditions.
27. The firm shall submit to this office, the 30th day of September every year, the Environment Statement Report for the financial year ending 31st March in the prescribed FORM-V as per the provisions of Rule 14 of the Environment (Protection) (second Amendment) Rules, 1992.

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28. You should monitor effluent quality, stack emissions and ambient air quality monthly/quarterly. You shall conduct Dioxin Furan monitoring by third party NABL Accredited agency once in every year and submit report to Sub Regional Officer.
29. The Board reserves its rights to vary all or any of the condition in the consent, if due to any technological improvement or otherwise such variation (including the change of any control equipment, other in whole or in part is necessary).
30. The applicant shall provide facility for collection of environmental samples and samples of trade and sewage effluents, air emissions and hazardous waste to the Board staff at the terminal or designated points and shall pay to the Board for the services rendered in this behalf.
31. You shall obtain necessary prior permission for providing additional control equipment with necessary specifications and operation thereof or alteration or shall ensure replacement of pollution control system or its parts after expiry of its expected life as defined by manufacturer so as to ensure the compliance of standards and safety of the operation thereof.
32. You shall strictly comply with the Water (P&CP) Act, 1974, Air (P&CP) Act, 1981 and Environmental Protection Act, 1986 and industry specific standard under EP Rules 1986 which are available on MPCB website (www.mpcb.gov.in).

This certificate is digitally & electronically signed.

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Regional Office Alwar
Rajasthan State Pollution Control Board
D-Block, Ambedkar Nagar, Alwar-301001
Phone: 0144-2372996

Registered

File No : F(Tech)/Alwar(Neemrana)/26(1)/2023-2024/77-78
Order No : 2023-2024/Alwar/9769 **Date:** Apr 20 2023 4:29PM

Unit Id : 126028

M/s SANKLA ENTERPRISES

H1-32, RIICO Industrial Area Ghiloth , Neemrana
Tehsil:Neemrana
District:Alwar

Sub: **Consent to Operate** under Section 25/26 of the Water (Prevention & Control of Pollution) Act, 1974 and under Section 21(4) of Air (Prevention & Control of Pollution) Act, 1981.

Ref: Your application for Consent to Operate dated 28/03/2023 and subsequent correspondence.

Sir,

Consent to Operate under the provisions of Section 25/26 of the Water (Prevention & Control of Pollution) Act, 1974 (hereinafter to be referred as the Water Act) and under Section 21 of the Air (Prevention & Control of Pollution) Act, 1981, (hereinafter to be referred as the Air Act) as amended to date and rules & the orders issued thereunder **is hereby granted** for your **SANKLA ENTERPRISES plant** situated at **H1-32, RIICO Industrial Area Ghiloth RIICO INDUSTRIAL AREA , Neemrana Tehsil:Neemrana District:Alwar** , Rajasthan, subject to the following conditions:-

1 That this Consent to Operate is valid for a period from **28/03/2023** to **28/02/2033** .

2 That this Consent is granted for manufacturing / producing following products / by products or carrying out the following activities or operation/processes or providing following services with capacities given below:

Particular	Type	Quantity with Unit
Other Waste Material (Iron/ Glass/ Paper etc.)	By Product	500.00 TON/ANNUM
PLASTIC CHIPS & DANA	Product	6,100.00 TON/ANNUM

3 That this Consent to Operate is for existing plant, process & capacity and separate Consent to Establish/Operate is required to be taken for any addition / modification / alteration in process or change in capacity or change in fuel.

4 That the quantity of effluent generation along with mode of disposal for the treated effluent shall be as under:

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Regional Office Alwar

Rajasthan State Pollution Control Board

D-Block, Ambedkar Nagar, Alwar-301001

Phone: 0144-2372996

Registered

File No : F(Tech)/Alwar(Neemrana)/26(1)/2023-2024/77-78

Order No : 2023-2024/Alwar/9769 **Date:** Apr 20 2023 4:29PM

Unit Id : 126028

Type of effluent	Max. effluent generation (KLD)	Recycled Qty of Effluent (KLD)	Disposed Qty of effluent (KLD)and mode of disposal
Domestic Sewage	0.450	NIL	0.450 Septic Tank and Soakpit

5 That the unit shall apply for renewal of this for Consent to Operate at least four months in advance prior to expiry date of this consent letter/commencement of production/commissioning of project else additional fee shall have to be deposited in accordance with the Rajasthan Water & Air (Prevention & Control of Pollution) Rules 2016 & Amendments.

6 That this consent is subject to any order or direction from Hon'ble Supreme Court/High Court/National Green Tribunal (NGT) or any other Court of the competent jurisdiction.

7 That the industry shall comply with the standards, with respect to National Ambient air Quality, as prescribed vide MOEF notification No. GSR 826 (E) dated 16th November, 2009.

8 That the Industry shall develop plantation as per specified norms in at least 33% of the plot area to maintain ambient air quality around the Industry.

9 That this consent "does not absolve the project proponent from the other statutory obligations prescribed under any other law or any other instrument in force. The sole and complete responsibility, to comply with the conditions laid down in all other laws for the time being in force, rests with the industry/unit/project proponent".

10 That industry shall not carryout any modification/change in process or manufacture/produce any other products/by products which require environment clearance as per the provisions of Environment Impact Assessment Notification dated 14/09/2006 issued by Ministry of Environment & Forests, Government of India.

11 That the industry shall not carryout activity of waste plastic washing in the premises of factory and shall maintain Zero Liquid Discharge Status outside the premises.

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Regional Office Alwar

Rajasthan State Pollution Control Board

D-Block, Ambedkar Nagar, Alwar-301001

Phone: 0144-2372996

Registered

File No : F(Tech)/Alwar(Neemrana)/26(1)/2023-2024/77-78

Order No : 2023-2024/Alwar/9769 **Date:** Apr 20 2023 4:29PM

Unit Id : 126028

12 **That this consent to operate is being issued for capital investment in land, building, plant & machinery as Rs.-102.90182 Lakhs. In case of any increase in capacity or addition/ modification/ alteration/ or change in product mix or process or raw material or fuel, the project proponent is required to obtain fresh consent to establish from the Board**

13 **That the industry shall comply with the provisions of the Plastic Waste Management Rules, 2016 and further amendments.**

14 **That the industry shall not use any type of waste plastic contaminated with any chemical or hazardous waste.**

15 **That the industry shall manufacture Plastic granules/danna by recycling of waste plastic.**

16 **That the industry shall not use/manufacture ozone depleting substances in the premises.**

17 **That as per CPCB directions dt. 27-11-2020, no source of air emission/pollution using fuel other than cleaner fuel i.e., PNG, LPG etc., may be allowed to establish/operate.**

18 **That the industry shall apply for registration for EPR as recycler under PWM Rules, 2016 at earliest.**

19 **That the industry shall not manufacture plastic carry bags and other products as banned vide State Govt. notification dt. 21-07-2010 and clarification vide letter dt. 13-09-2010 and further amendments.**

20 **That this consent is valid for only sorting, bailing of other waste i.e. iron/glass & paper and no other activity related to processing of this waste shall carried out without prior consent of the state board.**

21 That, notwithstanding anything provided hereinabove, the State Board shall have the power and reserves its right, as contained **under Section 27(2) of the Water Act and under Section 21(6) of the Air Act** to review anyone or all of the conditions imposed here in above and to make such variation as it deems fit for the purpose of **Air Act & Water Act**.

22 That the grant of this **Consent to Operate** is issued from the environmental angle only, and does not absolve the project proponent from the other statutory obligations prescribed under any other law or any other instrument in force. The sole and complete responsibility to comply with the conditions laid down in all other laws for the time-being in force, rests with the industry/ unit/ project proponent.

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Regional Office Alwar

Rajasthan State Pollution Control Board

D-Block, Ambedkar Nagar, Alwar-301001

Phone: 0144-2372996

Registered

File No : F(Tech)/Alwar(Neemrana)/26(1)/2023-2024/77-78

Order No : 2023-2024/Alwar/9769 **Date:** Apr 20 2023 4:29PM

Unit Id : 126028

23 That the grant of this **Consent to Operate** shall not, in any way, adversely affect or jeopardize the legal proceeding, if any, instituted in the past or that could be instituted againt you by the State Board for violation of the provisions of the Water Act and Air Act or the Rules made thereunder.

24 That the Project Proponent shall comply with provisions of the E-waste (Management) Rules, 2016 and ensure that e-waste generated by them is channelized through collection centre or dealer of authorized producer or dismantler or recycler or through designated take back service provider of the producer to authorized dismantler or recycler.

25 That the Project Proponent shall maintain record of e-waste generated by them in Form-2 and make such records available for scrutiny by the Board.

26 That the Project Proponent shall file annual returns in Form-3, to the Board on or before the 30th day of June following the financial year to which that return relates.

27 That the transportation of e-waste shall be carried out as per the manifest system whereby the transporter shall be required to carry a document (three copies) prepared by the sender, giving the details as per Form-6.

28 That the Project Proponent shall comply with provisions of the Batteries (Management and Handling) Rules, 2001 (as amended) and submit half yearly returns (as bulk consumer, importer, auctioneer, recycler as the case may be) to the State Board as provided under Rule 10 (2) (ii) of the Battery (Management and Handling) Rules, 2001 (as amended). In case the Project Proponent is not a bulk consumer even then the used batteries shall be returned to the authorized dealers or recyclers only.

29 That the record of batteries purchased and sold/ returned to registered dealers and/ or authorized recyclers shall be maintained and made available to the officers of the Board during inspections.

This **Consent to Operate** shall also be subject, besides the aforesaid specific conditions, to the general conditions given in the enclosed Annexure. The Project Proponent will comply with the provisions of the **Water Act and Air Act** and to such other conditions as may, from time to time , be specified, by the State Board under the provisions of the aforesaid Act(s). Please note that, non compliance of any of the above stated conditions would tantamount to revocation of **Consent to Operate** and Project Proponent / occupier shall be liable for legal action under the relevant provisions of the said Act(s).

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Regional Office Alwar
Rajasthan State Pollution Control Board
D-Block, Ambedkar Nagar, Alwar-301001
Phone: 0144-2372996

Registered

File No : F(Tech)/Alwar(Neemrana)/26(1)/2023-2024/77-78
Order No : 2023-2024/Alwar/9769 **Date:** Apr 20 2023 4:29PM

Unit Id : 126028

Yours sincerely,

Regional Officer[Alwar]

(A): **Copy to:-**
1 Master File.

Regional Officer[Alwar]

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Rajasthan Pollution Control Board
4, Institutional Area, Jhalana Doongri Jaipur – 302 004, Rajasthan

Regn. No.
PR-26-RAJ-05-AIWPS1692J-23

Date:
26-05-2023 10:09 AM

REGISTRATION CERTIFICATE FOR RECYCLING OR PROCESSING OF PLASTIC WASTE

(Under Rule-13(3) of the Plastic Waste Management Rules, 2016, as amended)

To,
M/s SANKLA ENTERPRISES
,
H1-32, RIICO Industrial Area
Ghiloth ,
Neemrana,Alwar,Rajasthan-
301705

1. With reference to the application dated **27-04-2023** regarding registration as a Recyclers/Co-processors/, your application has been processed and found in order. Now, therefore, **Rajasthan Pollution Control Board** is pleased to grant the registration in favour of **M/s SANKLA ENTERPRISES**, vide registered address **H1-32, RIICO Industrial Area Ghiloth , Neemrana, Alwar, Rajasthan -301705** for processing of plastic waste, as per details given below:

Processing Code	R1,R2	Quantity (TPA)
Processing Capacity	Cat-I	3000.0000
	Cat-II	3100.0000
	Cat-III	--
	Cat-IV	--
Production Capacity	Product	Quantity (TPA)
	HDPE [R1]	3000.0000
	PP [R2]	2000.0000
	LDPE [R2]	1100.0000

2. This certificate of registration shall be valid for a period of **One Year** from the date of issue of the letter unless revoked, suspended or cancelled.

3. The unit shall process the plastic waste (Quantity & Type) as per the Process Flow Diagram (Section 8) and using the plant machinery as per the details given at (Section 11).

4. The quantity of plastic waste processed in the unit shall be as per details given in Clause 1.0 above. The amount of plastic packaging waste recycled processed by the PWP shall not be more than installed capacity of the enterprise

5. Recycling of plastic waste shall conform to the Indian Standard: lS 14534: 1998 titled

Signed by:Shri Vishnu Datt Purohit
Date: 2023.05.26 10:10:51 +05:30

"Guidelines for Recycling of Plastic" as amended form time to time.

6. Carry bag made of virgin or recycled plastic, shall not be less seventy five microns in thickness and one hundred and twenty (120) microns in thickness with effect from the 31st December, 2022.

7. The PWPs shall not engage in manufacture, stocking, distribution, selling and using of banned SUP items as listed in Amendment to PWM Rules dated August 12, 2021

8. The PWPs shall not deal with any entity not registered through on-line centralized portal developed by CPCB.

9. The unit shall maintain a record of details of procurement of plastic waste and sale of recycled products as per forma prescribed by CPCB. The total quantity of plastic waste processed by plastic waste processors and attributed to PIBOs on an annual basis shall be made available on the centralized portal developed by CPCB as also on the website of PWP.

10. Registered PWPs shall provide certificates for plastic waste processing, which shall be considered for fulfilment of EPR obligations by PIBOs. Certificates shall be issued on the centralized portal in the pro forma and as per mechanism developed by CPCB. The certificates will be for plastic packaging category-wise and shall include GST data of the enterprise.

11. Exchange of EPR credit between PWPs and PIBOs to be done as per mechanism provided by CPCB.

12. The PWPs shall file annual returns on the plastic packaging waste collected and processed towards fulfilling obligations under EPR with the CPCB/SPCB/PCC as per pro forma prescribed by Central Pollution Control Board by the April 30 of the next financial year.

13. The PWP shall pay Annual fee for processing of Returns as per Guidelines by CPCB.

14. In case, at any stage it is found that the information provided by the PWP is false, the PWP shall be debarred by SPCB, as per procedure laid down by CPCB , from operating under the EPR framework for a period of one year. The PWPs whose registration has been revoked shall not be able to register afresh for the period of revocation.

15. The PWPs are required to comply with provisions of PWM Rules (as applicable) failing which necessary action as deemed fit shall be initiated against the violator. The Environment Compensation, as applicable, shall be levied by CPCB/SPCB/PCC on the violator.

16. An application for the renewal of a Registration shall be made at 90 days prior to expire of validity, along with the necessary information & documents as per the Guidelines issued by the MoEF&CC and CPCB from time to time.

17. If at any stage, information provided by the unit is found to be incorrect, then th

Signed by:Shri Vishnu Datt Purohit
Date: 2023.05.26 10:10:51 +05:30

Registration granted by SPCB/PCC shall be debarred by SPCB, as per procedure laid down by CPCB, from operating under the EPR framework for a period of five years.

18. The PWP should ensure compliance with provisions of the PWM Rules, 2016, as amended. Action, as deemed fit, including revocation of registration, closure of unit, levying Environmental Compensation charges, shall be taken against violators of PWM Rules.

19. Rajasthan Pollution Control Board reserves the right to take such action as deemed fit under Environment (Protection) Act, 1986 for violation of PWM Rules, 2016, as amended, if any, by the concerned PWP for the period prior to grant of registration.

20. Type of plastic and recycled content for different components of commodity to be included in the label on the commodity

Senior Environmental Engineer, RSPCB

Signed by:Shri Vishnu Datt Purohit
Date: 2023.05.26 10:10:51 +05:30

2052

Tamil Nadu Pollution Control Board

No. 7A, Mount Salai Guindy, Chennai - 600 032
Tamil Nadu

Regn. No.
PR-18-TAM-10-AADCA0414C-22

Date:
18-10-2022 07:27 PM

REGISTRATION CERTIFICATE FOR RECYCLING OR PROCESSING OF PLASTIC WASTE

(Under Rule-13(3) of the Plastic Waste Management Rules, 2016, as amended)

To,
Dalmia Cement (Bharat) Limited ,
Dalmia Cement (Bharat) Limited, Dalmiapuram, Tiruchirappalli, Tamil Nadu - 621651,Ariyalur,Tamil Nadu-621705

1. With reference to the application dated **02-07-2022** regarding registration as a Recyclers/Co-processors/, your application has been processed and found in order. Now, therefore, **Tamil Nadu Pollution Control Board** is pleased to grant the registration in favour of **Dalmia Cement (Bharat) Limited**, vide registered address **Dalmia Cement (Bharat) Limited, Dalmiapuram, Tiruchirappalli, Tamil Nadu - 621651, Ariyalur, Tamil Nadu -621705** for processing of plastic waste, as per details given below:

Processing Code	R1 To R6 & E1 to E4	Quantity (TPA)
Processing Capacity	Cat-I	16500.0000
	Cat-II	--
	Cat-III	165000.0000
	Cat-IV	--
Production Capacity	Product	Quantity (TPA)
	Coprocessing	1999999.9998

2. This certificate of registration shall be valid for a period of **One Year** from the date of issue of the letter unless revoked, suspended or cancelled.

3. The unit shall process the plastic waste (Quantity & Type) as per the Process Flow Diagram (Section 8) and using the plant machinery as per the details given at (Section 11).

4. The quantity of plastic waste processed in the unit shall be as per details given in Clause 1.0 above. The amount of plastic packaging waste recycled processed by the PWP shall not be more than installed capacity of the enterprise

5. Recycling of plastic waste shall conform to the Indian Standard: IS 14534: 1998 titled

Rajasthan Pollution Control Board
4, Institutional Area, Jhalana Doongri Jaipur – 302 004, Rajasthan

Regn. No.
PR-26-RAJ-05-AIWPS1692J-23

Date:
26-05-2023 10:09 AM

REGISTRATION CERTIFICATE FOR RECYCLING OR PROCESSING OF PLASTIC WASTE

(Under Rule-13(3) of the Plastic Waste Management Rules, 2016, as amended)

To,
M/s SANKLA ENTERPRISES
,
H1-32, RIICO Industrial Area
Ghiloth ,
Neemrana,Alwar,Rajasthan-
301705

1. With reference to the application dated **27-04-2023** regarding registration as a Recyclers/Co-processors/, your application has been processed and found in order. Now, therefore, **Rajasthan Pollution Control Board** is pleased to grant the registration in favour of **M/s SANKLA ENTERPRISES**, vide registered address **H1-32, RIICO Industrial Area Ghiloth , Neemrana, Alwar, Rajasthan -301705** for processing of plastic waste, as per details given below:

Processing Code	R1,R2	Quantity (TPA)
Processing Capacity	Cat-I	3000.0000
	Cat-II	3100.0000
	Cat-III	--
	Cat-IV	--
Production Capacity	Product	Quantity (TPA)
	HDPE [R1]	3000.0000
	PP [R2]	2000.0000
	LDPE [R2]	1100.0000

2. This certificate of registration shall be valid for a period of **One Year** from the date of issue of the letter unless revoked, suspended or cancelled.

3. The unit shall process the plastic waste (Quantity & Type) as per the Process Flow Diagram (Section 8) and using the plant machinery as per the details given at (Section 11).

4. The quantity of plastic waste processed in the unit shall be as per details given in Clause 1.0 above. The amount of plastic packaging waste recycled processed by the PWP shall not be more than installed capacity of the enterprise

5. Recycling of plastic waste shall conform to the Indian Standard: lS 14534: 1998 titled

Signed by:Shri Vishnu Datt Purohit
Date: 2023.05.26 10:10:51 +05:30

"Guidelines for Recycling of Plastic" as amended form time to time.

6. Carry bag made of virgin or recycled plastic, shall not be less seventy five microns in thickness and one hundred and twenty (120) microns in thickness with effect from the 31st December, 2022.

7. The PWPs shall not engage in manufacture, stocking, distribution, selling and using of banned SUP items as listed in Amendment to PWM Rules dated August 12, 2021

8. The PWPs shall not deal with any entity not registered through on-line centralized portal developed by CPCB.

9. The unit shall maintain a record of details of procurement of plastic waste and sale of recycled products as per forma prescribed by CPCB. The total quantity of plastic waste processed by plastic waste processors and attributed to PIBOs on an annual basis shall be made available on the centralized portal developed by CPCB as also on the website of PWP.

10. Registered PWPs shall provide certificates for plastic waste processing, which shall be considered for fulfilment of EPR obligations by PIBOs. Certificates shall be issued on the centralized portal in the pro forma and as per mechanism developed by CPCB. The certificates will be for plastic packaging category-wise and shall include GST data of the enterprise.

11. Exchange of EPR credit between PWPs and PIBOs to be done as per mechanism provided by CPCB.

12. The PWPs shall file annual returns on the plastic packaging waste collected and processed towards fulfilling obligations under EPR with the CPCB/SPCB/PCC as per pro forma prescribed by Central Pollution Control Board by the April 30 of the next financial year.

13. The PWP shall pay Annual fee for processing of Returns as per Guidelines by CPCB.

14. In case, at any stage it is found that the information provided by the PWP is false, the PWP shall be debarred by SPCB, as per procedure laid down by CPCB , from operating under the EPR framework for a period of one year. The PWPs whose registration has been revoked shall not be able to register afresh for the period of revocation.

15. The PWPs are required to comply with provisions of PWM Rules (as applicable) failing which necessary action as deemed fit shall be initiated against the violator. The Environment Compensation, as applicable, shall be levied by CPCB/SPCB/PCC on the violator.

16. An application for the renewal of a Registration shall be made at 90 days prior to expire of validity, along with the necessary information & documents as per the Guidelines issued by the MoEF&CC and CPCB from time to time.

17. If at any stage, information provided by the unit is found to be incorrect, then th

Signed by:Shri Vishnu Datt Purohit
Date: 2023.05.26 10:10:51 +05:30

Registration granted by SPCB/PCC shall be debarred by SPCB, as per procedure laid down by CPCB, from operating under the EPR framework for a period of five years.

18. The PWP should ensure compliance with provisions of the PWM Rules, 2016, as amended. Action, as deemed fit, including revocation of registration, closure of unit, levying Environmental Compensation charges, shall be taken against violators of PWM Rules.

19. Rajasthan Pollution Control Board reserves the right to take such action as deemed fit under Environment (Protection) Act, 1986 for violation of PWM Rules, 2016, as amended, if any, by the concerned PWP for the period prior to grant of registration.

20. Type of plastic and recycled content for different components of commodity to be included in the label on the commodity

Senior Environmental Engineer, RSPCB

Signed by:Shri Vishnu Datt Purohit
Date: 2023.05.26 10:10:51 +05:30

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Uttar Pradesh Pollution Control Board
Building. No TC-12V Vibhuti Khand, Gomti Nagar, Lucknow-226010
Phone:0522-2720828,2720831, Fax:0522-2720764, Email: info@uppcb.in, Website: www.uppcb.com

185358/UPPCB/MuzaffarNagar(UPPCBRO)/CTO/both/MUZAFFARNAGAR/2023 **Date: 24/06/2023**

To,

M/s

DEW RESOURCE MANAGEMENT

Dew Resource Management , TCMC industries pvt ltd , arihant steel lane,behind ITI ,Meerut Road ,Muzzafar nagar ,UP ,MUZAFFAR NAGAR,251003

Application Id-21403948

Consolidated Consent to Operate and Authorisation hereinafter referred to as the CCA (Consolidated Consent & authorization) (Fresh) under Section-25 of the Water (Prevention & Control of Pollution) Act, 1974 and under Section-21 of the Air (Prevention & Control of Pollution) Act, 1981

CCA is hereby granted to **DEW RESOURCE MANAGEMENT** located at **Dew Resource Management , TCMC industries pvt ltd , arihant steel lane,behind ITI ,Meerut Road ,Muzzafar nagar ,UP ,MUZAFFAR NAGAR,251003.** subject to the provisions of **the Water Act, Air Act** and the orders that may be made further and subject to following terms and conditions :-

1. This CCA DEW RESOURCE MANAGEMENT **granted for the period from 01/08/2023 to 31/07/202** and valid for manufacturing of following products.

S No	Product	Quantity	Unit
1	Processed Plastic	6000	Metric Tonnes/Month
2	Processed RDF	5000	Metric Tonnes/Month
3	Processed Biomass	2000	Metric Tonnes/Month
4	Engineered Fuel	3000	Metric Tonnes/Month
5	Processed Industrial Non Haz. Waste	1000	Metric Tonnes/Month

2. Conditions under Water(Prevention and Control of Pollution) Act -1974 as amended :-

(i) The daily quantity of effluent discharge (KLD) :-

Kind of Effluent	Quantity(KLD)	Treatment facility	Discharge point
Domestic	1.0	Septic Tank	Local Drain

(ii) Trade Effluent Treatment and Disposal :-The applicant shall operate Effluent Treatment Plant consisting of primary/secondary and tertiary treatment as is required with reference to influent quantity and quality.

In case of stoppage of functioning of ETP, production has to be stopped immediately and this Board has to be intimated by fax/phone/email with a report in this regard to be dispatched immediately.

(iii) The treated effluent shall be recycled to the maximum extent and should be reused within the premises for gardening etc. Quality of the treated effluent shall meet to the following general and specific standards as prescribed under Environment (Protection) Rules, 1986 and applicable to the unit from time-to-time :-

ANKIT SINGH
Digitally signed by ANKIT SINGH
Date: 2023.06.24 16:14:51 +05'30'

Pollution certificate - valid upto 30th Nov - 2025

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ANDHRA PRADESH POLLUTION CONTROL BOARD
ZONAL OFFICE :: VIJAYAWADA
Plot No.41, Sri Kanakadurga Officers' Colony, Gurunanak Road, Vijayawada – 8.

e-mail: zovjajcee@pcb.ap.gov.in

Ph : 0866-2546218
Fax: 0866-2546217

ORANGE CATEGORY

CONSENT & AUTHORIZATION ORDER

BY REGISTERED POST WITH ACKNOWLEDGEMENT DUE

Consent Order No:N-239/APPCB/ZO-VJA/CFO/W&A/2014- 2194 **Date:** 08 **-01-2016**

CONSENT is hereby granted for Operation under section 25/26 of the Water (Prevention & Control of Pollution) Act, 1974 and under section 21 of Air (Prevention & Control of Pollution) Act 1981 and amendments thereof and Authorisation under Rule 5 of the Hazardous Wastes (Management, Handling & Transboundary, Movement) Rules, 2008 & Amendments thereof and the rules and orders made there under (hereinafter referred to as 'the Acts', 'the Rules') to:

M/s. J. Basheer Ahamed & Co.,
Plot No.8, APIIC, Industrial Park,
Menakur (V), Naidupet (M),
SPS Nellore District-524 421.

(Hereinafter referred to as 'the Applicant') authorizing to operate the industrial plant to discharge the effluents from the outlets and the quantity of emissions per hour from the chimneys as detailed below:

(i) Outlets for discharge of effluents:

Outlet No.	Outlet Description	Max Daily Discharge KLD	Point of Disposal
1	Trade effluents	45.0	Shall be recycled
2	Domestic effluents	1.5	Septic tank followed by soak pit

ii) Emissions from chimneys:

Chimney No.	Description of Chimney	Quantity of Emissions at peak flow (m^3/hr)
1	125 KVA D.G. Set	----

iii) HAZARDOUS WASTE AUTHORISATION (FORM – II) [See Rule 5 (4)]:

M/s. J. Basheer Ahamed & Co., is hereby granted an authorization to operate a facility for collection, reception, storage, treatment, transport and disposal of Hazardous Wastes namely:

- **HAZARDOUS WASTES WITH RECYCLING OPTION:**

Sl. No	Name of Hazardous Waste	Stream	Quantity	Method of disposal
1.	Used oil	5.1 of Schedule-I	100 Lts./Annum	Disposal to A.P.P.C.B. authorized reprocessing agencies

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This consent order is valid for the following products along with quantities indicated only:

S.No.	Product	Quantity
1	Washed Broken Glass	100 Tons/day

This order is subject to the provisions of 'the Acts' and the Rules' and orders made thereunder and further subject to the terms and conditions incorporated in the schedule A, B & C enclosed to this order.

This combined order of consent & Hazardous Waste Authorization shall be valid for a period ending with the **30th NOVEMBER,2025**

JOINT CHIEF ENVIRONMENTAL ENGINEER

To
M/s. J. Basheer Ahamed & Co.,
Plot No.8, APIIC, Industrial Park,
Menakur (V), Naidupet (M),
SPS Nellore District-524 421.

Copy to the Environmental Engineer, Regional Office, NELLORE for information and necessary action.

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Category of the Industry :

ORANGE

CONSENT ORDER NO. 2208245889470 DATED: 29/07/2022.

PROCEEDINGS NO.F.0982VPM/OS/DEE/TNPCB/VPM/A/2022 DATED: 29/07/2022

SUB: Tamil Nadu Pollution Control Board - RENEWAL OF CONSENT –M/s. J.BASHEER AHAMED AND CO , S.F.No. 26/1,26/2,26/5, KADAPERIKUPPAM village, Vanur Taluk and Villupuram District - Renewal of Consent for the operation of the plant and discharge of emissions under Section 21 of the Air (Prevention and Control of Pollution) Act, 1981 as amended in 1987 (Central Act 14 of 1981) –Issued- Reg.

REF: 1.CTO Proc. No.F.0982VPM/OS/DEE/TNPCB/VPM/W&A/2019 dated 28/1/2019
2.Unit's application No. 45889470 submitted for Renewal of CTO in OCMMS on 31/5/2022
3.IR No : F.0982VPM/OS/AE/VPM/2022 dated 29/7/2022

RENEWAL OF CONSENT is hereby granted under Section 21 of the Air (Prevention and Control of Pollution) Act, 1981 as amended in 1987 (Central Act 14 of 1981) (hereinafter referred to as “The Act”) and the rules and orders made there under to

The Partner
M/s.J.BASHEER AHAMED AND CO,
S.F.No. 26/1,26/2,26/5,
KADAPERIKUPPAM village,
Vanur Taluk,
Villupuram District.

Authorizing the occupier to operate the industrial plant in the Air Pollution Control Area as notified by the Government and to make discharge of emission from the stacks/chimneys.

This is subject to the provisions of the Act, the rules and the orders made there under and the terms and conditions incorporated under the Special and General conditions stipulated in the Consent Order issued earlier and subject to the special conditions annexed.

This RENEWAL OF CONSENT is valid for the period ending March 31, 2028

PANDU KAMARAJ Digitally signed by PANDU KAMARAJ Date: 2022.07.29 20:00:43 +05'30'

District Environmental Engineer,
Tamil Nadu Pollution Control Board,
VILLUPURAM

SPECIAL CONDITIONS

1. This renewal of consent is valid for operating the facility for the manufacture of products (Col. 2) at the rate (Col. 3) mentioned below. Any change in the products and its quantity has to be brought to the notice of the Board and fresh consent has to be obtained.

Sl. No.	Description	Quantity	Unit
	Product Details		
1.	Washed Broken Glass	69.5	Ton/Day

2. This renewal of consent is valid for operating the facility with the below mentioned emission/noise sources along with the control measures and/or stack. Any change in the emission source/control measures/change in stack height has to be brought to the notice of the Board and fresh consent/Amendment has to be obtained.

I	**Point source emission with stack :**			
Stack No.	**Point Emission Source**	**Air pollution Control measures**	**Stack height from Ground Level in m**	**Gaseous Discharge in Nm3/hr**
1	D.G.Set OF 500 KVA	Acoustic enclosures with stack	3.5	
II	**Fugitive/Noise emission :**			
Sl. No.	**Fugitive or Noise Emission sources**	**Type of emission**	**Control measures**	
1.	D.G.Set of 500KVA	Noise	Acoustic Enclosure	
2.	Cullet Broken Section	Fugitive	Enclosure	

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Special Additional Conditions:

i. The unit shall install the approved retrofit emission control device/equipment with at least 70% Particulate matter reduction efficiency on all DG sets with capacity of 125 KVA and above or otherwise the unit shall be shift to gas based generators within the time frame prescribed in the notification No. TNPCB/Labs/DD(L)02151/2019 dated 10.06.2020 issued by TNPCB.

ii. The unit shall obtain No Objection Certificate (NOC) from the Tamil Nadu Bio Diversity Board /National Bio Diversity Authority if the unit is using any Biological resources or knowledge associated thereto as per the provisions of Biological Diversity Act 2002.

Additional Conditions:

1.The unit shall operate and maintain the Air Pollution Control measures efficiently and continuously so as to satisfy the Ambient Air Quality standards prescribed by the Board.
2.The unit shall adhere to the Ambient Noise Level standards prescribed by the Board.
3.The unit's operation shall not evoke any public complaints.
4.The unit shall plant adequate tree saplings inside the green belt area.
5.In case of revision of consent fee by the Government, the unit shall remit the difference in amount within one month from the date of notification. Failing to remit the consent fee, this consent order will be withdrawn without any notice and further action will be initiated against the unit as per law.

PANDU KAMARAJ Digitally signed by PANDU KAMARAJ Date: 2022.07.29 20:01:21 +05'30'

District Environmental Engineer,
Tamil Nadu Pollution Control Board,
VILLUPURAM

To
The Partner,
M/s.J.BASHEER AHAMED AND CO,
J.BASHEER AHAMED AND CO,
56 D, MOGALPURA STREET,
TIRUVANNAMALAI.,
Pin: 606601

Copy to:

1.The Commissioner, VANUR-Panchayat Union, Vanur Taluk, Villupuram District .

2. Copy submitted to the Member Secretary, Tamil Nadu Pollution Control Board, Chennai for favour of kind information.

3. Copy submitted to the JCEE-Monitoring, Tamil Nadu Pollution Control Board, Vellore for favour of kind information.

4. File

AUTHORISATION No. 22HFC43004134 dated 20/04/2022

Proceeding No. T3/TNPCB/F.0040VDR/HWA/RL/VDR/2022 dated 20/04/2022

Sub: Tamil Nadu Pollution Control Board – Hazardous Waste Authorization-Fresh- M/s. SRI HARI VENKATESWARA PAPER MILLS (P)LTD, S.F.No. 296, 297, 299, 300/1,2,3, 305, 308/2, 315, 316/1, 317, 382/1, 383, 1502/1, KEELANMARAINADU Village, VEMPAKOTTAI Taluk, Virudhunagar District - Authorization under Rule 6 (2) of the Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016 enacted under Environment (Protection) Act, 1986 – Issued- Reg.

Ref: 1. Unit's application No. 43004134, dated 24-01-2022 / 19-03-2022
2. HWA-IR.No.0040VDR/HWA/RL/DEE/VDR/2022 dated 05/04/2022

FORM 2

[See rule 6 (2)]

FORM FOR GRANT OR RENEWAL OF AUTHORISATION TO THE OCCUPIERS, RECYCLERS, REPROCESSORS, REUSERS, USER AND OPERATORS OF DISPOSAL FACILITIES

1. Number of authorization: 22HFC43004134 and dated : 20/04/2022

2. The Managing Director of M/s. SRI HARI VENKATESWARA PAPER MILLS (P)LTD is hereby granted an Authorisation based on the enclosed signed Inspection report for Generation and handling of hazardous or other wastes or both on the premises situated at S.F.No. 296, 297, 299, 300/1,2,3, 305, 308/2, 315, 316/1, 317, 382/1, 383, 1502/1, KEELANMARAINADU Village, VEMPAKOTTAI Taluk, Virudhunagar District.

Sl No	Schedule / Name of the Processes	Name of Hazardous Waste (with category No)	Quantity	Activities for which Authorization is issued
1	Schedule I /5. Industrial operations using mineral or synthetic oil as lubricant in hydraulic systems or other applications	5.1-Used or spent oil	1.20 T/Annum	Generation, Collection, Storage, Transportation and send to TNPCB Authorized Recyclers for Recovery and Reuse.
2	Schedule I /33. Handling of hazardous chemicals and wastes	33.1-Empty barrels/containers/liners contaminated with hazardous chemicals /wastes	1.20 T/Annum	Generation, Collection, Storage, Transportation and send to TNPCB Authorized Recyclers for Recovery and Reuse.
3	Schedule I /35. Purification and treatment of exhaust air/gases, water and waste water from the processes in this schedule and common industrial effluent treatment plants (CETP's)	35.3-Chemical sludge from waste water treatment	180.00 T/Annum	Generation, Collection, Storage, transportation and send to authorized sundry board paper industries for Reuse.
4	Schedule III /Part-D- B3-Wastes containing principally organic constituents, which may contain metals and inorganic materials	B3020-Paper, paperboard and paper product wastes, provided they are not mixed with hazardous wastes-Waste and scrap of paper or paperboard of unbleached paper or paperboard or of corrugated paper or paperboard	36900.00 T/Annum	Reception, Storage and Utilization (captive consumption)

3. This authorization shall be valid for a period upto 31/03/2027.

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The Authorization is issued subject to the following general and special conditions annexed.

RATNAM VIJAYABASKARAN Digitally signed by RATNAM VIJAYABASKARAN Date: 2022.04.20 16:54:04 +05'30'

For Member Secretary
Tamil Nadu Pollution Control Board
Chennai

A. GENERAL CONDITIONS OF AUTHORIZATION

1. The authorised person shall comply with the provisions of the Environment (Protection) Act, 1986 and the rules made there under.
2. The authorization or its renewal shall be produced for inspection at the request of an officer authorized by Tamil Nadu Pollution Control Board.
3. The person authorized shall not rent, lend, sell, transfer or otherwise transport the hazardous and other wastes except what is permitted through this Authorisation.
4. Any unauthorized change in personnel, equipment or working conditions as mentioned in the application by the person authorized shall constitute a breach of his authorization.
5. The person authorised shall implement Emergency Response procedure (ERP) for which this authorisation is being granted considering all site specific possible scenarios such as spillages, leakages, fire ,etc and their possible impacts and also carry out mock drill in this regard at regular interval of time.
6. The person authorised shall comply with the provisions outlined in the CPCB guidelines on "Implementing Liabilities for Environmental damages due to Handling and Disposal of Hazardous Wastes and Penalty".
7. It is the duty of the authorized person to take prior permission of Tamil Nadu Pollution Control Board to close down the facility.
8. The imported Hazardous and other wastes shall be fully insured for transit as well as the accidental occurrences and its clean-up operation.

9 The record of consumption and fate of the imported hazardous and other wastes shall be maintained.

10. The Hazardous and other wastes which gets generated during recycling or reuse or recovery or pre-processing or utilisation of imported hazardous or other wastes shall be treated and disposed of as per specific conditions of Authorisation.

11 The importer or Exporter shall bear the cost of import or export or mitigation of damages if any.

12 An application for the renewal of an authorization shall be made as laid down under these Rules.

13 Any other conditions for compliance as per the Guidelines issued by the MoEF and CC or CPCB from time to time.

14 Annual returns shall be filed by June 30th for the period ending 31st March of the previous financial year.

B. SPECIFIC CONDITIONS - HW Generator

1. The occupier/generator shall be responsible for safe and environmentally sound management of hazardous and other wastes.
2. The occupier shall follow the following steps for the management of hazardous and other wastes. (a) prevention (b) minimization (c) reuse (d) recycling (e) recovery, utilisation including co-processing and (f) safe disposal
3. The occupier shall take all the steps while managing hazardous and other wastes - (a) To contain contaminants and prevent accidents and limit their consequences on human beings and the environment; and (b) To provide persons working in the site with appropriate training, equipment and the information necessary to ensure their safety.
4. The occupier shall store the hazardous and other wastes for a period not exceeding ninety days and shall maintain a record of sale, transfer, storage, recycling, recovery, pre-processing, co-processing and utilisation of such wastes and make these records available for inspection:
5. The hazardous and other wastes shall be stored temporally in an isolated area earmarked for the purpose within the occupier's premises (it shall not be accessible to rain water) till scientific disposal. The storage area shall be fenced properly and a sign of danger shall be placed at the storage site.

6. The containers holding the hazardous and other wastes shall be kept in good condition and made of materials which can withstand the physical and environmental conditions during storage and transportation. Only properly cleaned containers shall be used for storage of hazardous and other wastes.
7. The occupier handling hazardous or other wastes shall maintain records of such operations of generation, handling, storage and disposal as per Form 3.
8. The hazardous and other wastes generated in the establishment of the occupier shall be sent or sold to an authorised actual user or shall be disposed of in an authorised disposal facility.
9. The occupier handling hazardous or other wastes shall ensure that the hazardous and other wastes are packaged in a manner suitable for safe handling, storage and transport as per the guidelines issued by the Central Pollution Control Board from time to time
10. The labelling of package of hazardous or other wastes shall be done as per Form 8. The label shall be of non-washable material, weather proof and easily visible.
11. The hazardous and other wastes shall be transported from the occupier's establishment to an authorised actual user or to an authorised disposal facility in accordance with the provisions of these rules.
12. The transport of the hazardous and other wastes shall be in accordance with the provisions of these rules and the rules made by the Central Government under the Motor Vehicles Act, 1988 and the guidelines issued by the Central Pollution Control Board from time to time in this regard..
13. The occupier shall provide the transporter with the relevant information in Form 9, regarding the hazardous nature of the wastes and measures to be taken in case of an emergency and shall label the hazardous and other wastes containers as per Form 8
14. The authorisation for transport shall be obtained either by the sender or the receiver on whose behalf the transport is being arranged.
15. The transporter/sender of the hazardous and other wastes shall prepare and maintain manifest in Form 10.
16. The occupier or the operator or the transporter shall immediately intimate TNPCB through telephone, e-mail about the accident and subsequently send a report in Form 11, where an accident occurs at the facility of the occupier handling hazardous or other wastes and operator of the disposal facility or during transportation
17. The occupier who intends to get its hazardous and other wastes treated and disposed of by the operator of a treatment, storage and disposal facility shall give to the operator of that facility, such specific information as may be needed for safe storage and disposal.
18. The occupier shall be liable for all damages caused to the environment due to improper handling and management of the hazardous and other wastes.
19. The occupier handling hazardous and other wastes shall submit annual returns containing the details specified in Form 4 to TNPCB on or before the 30th day of June of every year for the preceding period April to March.
20. Any increase in quantity of handling of hazardous and other wastes, any change in category of hazardous and other wastes and any change in method of handling operations shall be brought to the notice of the TNPCB and fresh authorization shall be obtained.

D. SPECIFIC CONDITIONS - Actual Users (Recyclers/Pre-processors/Co-processors)

1. The actual user shall be responsible for safe and environmentally sound management of hazardous and other wastes
2. The actual user shall procure and process the hazardous and other wastes for reuse, recycle, pre-process, utlise including co-processing for beneficial purposes only.
3. The utilisation of hazardous and other wastes as a resource or after pre-processing either for co-processing or for any other use, including within the premises of the generator (if it is not part of process), shall be carried out only after obtaining authorisation from TNPCB in respect of waste on the basis of standard operating procedures or guidelines provided by the Central Pollution Control Board.
4. The authorised actual user of hazardous and other wastes shall maintain records of hazardous and other wastes purchased in a passbook issued by the State Pollution Control Board along with the authorisation
5. Handing over of the hazardous and other wastes to the authorised actual user shall be only after making the entry into the passbook of the actual user
6. The actual user handling hazardous and other wastes shall file an annual return in Form 4 to TNPCB on or before the 30th day of June following the financial year to which that return relates.

7. The actual user or the transporter shall immediately intimate TNPCB through telephone, e-mail about the accident and subsequently send a report in Form 11, where an accident occurs at the facility of the occupier handling hazardous or other wastes and operator of the disposal facility or during transportation
8. The actual user, importer or exporter shall be liable for all damages caused to the environment or third party due to improper handling and management of the hazardous and other wastes.
9. The actual user shall not be permitted to import hazardous and other wastes from any country to India for disposal.
10. The actual user shall not be permitted to import hazardous and other wastes specified in Schedule VI of the rules.
11. The actual user shall import hazardous and other wastes from any country only for recycling, recovery, reuse and utilisation including co-processing.
12. The actual user shall import the hazardous waste as in Part A of Schedule III after obtaining prior informed consent of the exporting country and the permission of the Ministry of Environment, Forest and Climate Change
13. The actual user shall maintain records of the hazardous and other waste imported by him in Form 3 and the record so maintained shall be made available for inspection.

ADDITIONAL SPECIFIC CONDITIONS

1. The unit shall dispose hazardous waste category (5.1) Used/Spent Oil and (33.1)Empty barrels/containers/ liners contaminated with hazardous chemicals /wastes to authorised recyclers having valid authorization under H&OW(M & TM) Rules, 2016 of the Board.
2. The Hazardous wastes shall be stored in a compatible container on an impervious platform in closed shed which shall be provided with requisite fire protection system, personal protective equipment and safety system.
3. No hazardous waste, municipal solid waste or bio-medical waste or any other type of contaminates shall be allowed to be imported along with the paper wastes.
4. The unit shall submit the annual return for the import of waste paper in Form- 4 to SPCB on or before 30th day of June following the financial year.
5. The unit shall maintain the records of the Hazardous and Other Wastes imported in Form-3 and the record shall be made available for inspection as per Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016.
6. The unit shall import required quantity of waste paper to manufacture the consented quantity of product.
7. The person authorized shall comply with all the conditions stipulated in the authorization and other conditions of the Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016.
8. The unit shall maintain Form -3 and submit Form -4 prescribed under the Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016 for the Hazardous wastes 5.1,33.1& 35.3
9. The Hazardous wastes shall be disposed only with manifest that shall be maintained in Form-10 of the Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016.
10. The unit shall comply with the provisions under schedule III, Part D of Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016 for import of waste paper B3020.
11. The unit shall dispose the ETP sludge to sundry Board manufacturing units which have valid consent of the Board.
12. The manifest shall be endorsed by the despatcher, transporter and receiver of hazardous wastes. The endorsed copy of the manifest shall be furnished to TNPCB as and when such disposal is made.
13. The unit shall ensure that all provisions of Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016 as amended are complied with while handling hazardous waste.
14. The authorization is subject to the terms and conditions as may be specified in the Rules for the time being in force under the Environment (Protection) Act, 1986.
15. The unit shall not store the Hazardous waste generated outside the premises of the unit.
16. The unit shall maintain the display Board provided as per the Supreme Court Monitoring Committee guidelines with specifying the quantity of hazardous waste accumulated and disposed in the storage area.
17. The unit shall maintain the records of hazardous and other wastes purchased in passbook issued by the TNPCB along with authorisation.

2066

18. The authorization is issued with the condition that the unit should have valid consent order under the water and air acts and also valid agreement made with the Hazardous waste disposal facility.

19. The unit shall make agreement with registered utiliser of barrels, containers contaminated with hazardous chemicals/wastes and furnish the same to Board within a month and ensure that the HW 33.1 shall be sent to registered utiliser /recycling unit of empty barrels

RATNAM
VIJAYABASKARAN

Digitally signed by RATNAM
VIJAYABASKARAN
Date: 2022.04.20 16:54:41 +05'30'

For Member Secretary
Tamil Nadu Pollution Control Board
Chennai

To

The Managing Director
SRI HARI VENKATESWARA PAPER MILLS (P)LTD
S.F. No.:300,KEELANMARAINADU VILLAGE,A.LAKSHIMIYAPURAM POST,SIVAKASI (TK),
VIRUDHUNAGAR (Dt).
Pin:626127

Copy to:

1. The JCEE-Monitoring, Tamil Nadu Pollution Control Board, TIRUNELVELI.
2. The District Environmental Engineer, Tamil Nadu Pollution Control Board, VIRUDHUNAGAR.

2067

PASSBOOK FOR MAINTAINING RECORDS OF HAZARDOUS AND OTHER WASTES PURCHASED BY THE ACTUAL USERS
(ISSUED ALONGWITH AUTHORISATION)

Name and address of the Industry-Actual users	SRI HARI VENKATESWARA PAPER MILLS (P)LTD S.F. No.:300,KEELANMARAINADU VILLAGE,A.LAKSHIMIYAPURAM POST,SIVAKASI (TK), VIRUDHUNAGAR (Dt).
OCMMS File No	0040VDR/HWA
Mobile No	9842723281
E-mail Id	sharpaquasystems@gmail.com
Passbook Registration No	PB/22HFC43004134
Date of issue	20/04/2022
Validity period	20/04/2022 To 31/03/2027

Type and quantity of the Hazardous & Other Wastes permitted for procurement and recycling:

SI No	Hazardous & Other Wastes Type	Quantity with unit	Source
1	Schedule III-Part-D- B3- Wastes containing principally organic constituents, which may contain metals and inorganic materials-B3020-Paper, paperboard and paper product wastes, provided they are not mixed with hazardous wastes-Waste and scrap of paper or paperboard of unbleached paper or paperboard or of corrugated paper or paperboard	27000 T/Annum	Imported
2	Schedule III-Part-D- B3- Wastes containing principally organic constituents, which may contain metals and inorganic materials-B3020-Paper, paperboard and paper product wastes, provided they are not mixed with hazardous wastes-Waste and scrap of paper or paperboard of unbleached paper or paperboard or of corrugated paper or paperboard	9900 T/Annum	Domestic

RATNAM VIJAYABASKARAN Digitally signed by RATNAM VIJAYABASKARAN
Date: 2022.04.20 16:55:31 +05'30'

For Member Secretary
Tamil Nadu Pollution Control Board
Chennai

PASSBOOK FOR MAINTAINING RECORDS OF HAZARDOUS AND OTHER WASTES PURCHASED BY THE ACTUAL USERS

Sl No	Date	Name and Type of the Waste	Total Quantity received (MT)	Received from (in case of import, details of bill entry)	Date of arrival at the unit's premises with seal and signature of designated officer of the unit

2069

PASSBOOK FOR MAINTAINING RECORDS OF HAZARDOUS AND OTHER WASTES PURCHASED BY THE ACTUAL USERS

Sl No	Date	Name and Type of the Waste	Total Quantity received (MT)	Received from (in case of import, details of bill entry)	Date of arrival at the unit's premises with seal and signature of designated officer of the unit

PASSBOOK FOR MAINTAINING RECORDS OF HAZARDOUS AND OTHER WASTES PURCHASED BY THE ACTUAL USERS

Sl No	Date	Name and Type of the Waste	Total Quantity received (MT)	Received from (in case of import, details of bill entry)	Date of arrival at the unit's premises with seal and signature of designated officer of the unit

2071

PASSBOOK FOR MAINTAINING RECORDS OF HAZARDOUS AND OTHER WASTES PURCHASED BY THE ACTUAL USERS

Sl No	Date	Name and Type of the Waste	Total Quantity received (MT)	Received from (in case of import, details of bill entry)	Date of arrival at the unit's premises with seal and signature of designated officer of the unit

2072

RECYCLING AND DISPOSAL FACILITIES AT MAINLAND UTILIZED BY DRCOPERATORS OF RURAL DEPARTMENT FOR DRY WASTE MANAGEMENT

S. No.	DetailsofOperators/ Firms	Detailsof Waste	DetailsofRecycling/ Disposal facilities	Details of SPCB Authorization/Consent with validity
1	M/s Greenworm,S Square Complex,Old Income Tax Building Shadipur Road, Port Blair,South AndamanPh.No.: 7063927822,Email id:irfan@greenworms.org	Plastics, Paper,Cardboard Tetrapack	M/sGreenWormsEcoSolutionsLLP,7/537a,NearKNMMESshcool,Pukkattumugalyetheemkhanaroad,Edathalapo,aluva	Consent to Operate cum AuthorisationNo.:G19ERRCTON98204 dated 04-03-2020ValidUpto:01/06/2025/ issued under the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981 and the Environment (Protection) Act, 1986by Kerala State Pollution Control Board
			M/s Greenworms Waste Management Pvt Ltd, Thamarassery, Kozhikode	Consent to Operate and Authorisation vide No. PCB/KKD/DO/12028/2022 dated 26-07-2022 valid upto 31-05-2027 under the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981 and the Waste Management rules under Environment (Protection) Act, 1986 issued by Kerala State Pollution Control Board.
			M/s UltraTech Cements Ltd, AndraPradesh Cement Works,Tadipatri, Anantaouram, Andrapradesh	Registration Certificate issued by AndraPradesh Pollution Control Board vide No. PR-19-AND-01-AAACL6442L-23 dated 19-01-2023 for Recycling and Processing of Plastic waste under Extended Producer Responsibility(EPR) of Plastic Waste Management Rules 2016(as amended)

S.No.	DetailsofOperators/ Firms	Details of waste	DetailsofRecycling/ Disposal facilities	Details of SPCB Authorization/Consent with validity
2	M/s. CM SCRAP TRADERS, Ph.No.: 9933234428, cmscrap21@gmail.com	Plastic	M/s. Dew Resouce Management, TCMC Industries Pvt Ltd, Arihant Steel alne, behind ITI, Meerut, Muzaffar Nagar, UP	Consent to Operate and Authorisation vide No. 185358/UPPCB/MUZAFFAR Nagar(uppc(bro)/cto/both/muzaffarnagar/2023 dated 24.06.23 dated 26-07-2022 valid upto 31-05-2027 under the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981 and the Waste Management rules under Environment (Protection) Act, 1986 issued by UttAR PRADESH State Pollution Control Board

अटल द्वीप समुद्र विज्ञान एवं केंद्र
ATAL CENTRE FOR OCEAN SCIENCE AND TECHNOLOGY FOR ISLANDS
राष्ट्रीय समुद्र प्रौद्योगिकी संस्थान
NATIONAL INSTITUTE OF OCEAN TECHNOLOGY
(पृथ्वी विज्ञान मंत्रालय, भारत सरकार)
(MINISTRY OF EARTH SCIENCES, GOVERNMENT OF INDIA)
डॉलीगंज, पोर्टब्लेयर-७४४ १०३, अंडमान तथा निकोबार द्वीप समूह.
DOLLYGUNJ (PO), PORT BLAIR – 744103. ANDAMAN AND NICOBAR ISLANDS
Phone: +91 (0) 3192 225095, 225083, 225789; Fax: +91 (0) 3192 225089

संख्या: Ref: ACOSTI/OSTI/GEN/2023-24/018 तिथि/Date: 26.06.2024

सेवा में / To
The Joint Secretary
Office of the Muncipal Council
Port Blair

महोदय / Sir

विषय/Sub: Submission of test results of DO and BOD samples submitted by the PBMC - reg.

संदर्भ/Ref: Your letterNo. 97/EE-III/SWM/MC/2024-25/38, dt: 16.05.2024.

With regard to the above, please find enclosed the DO and BOD test results for the samples submitted by your esteemed office.

This is for your kind information and necessary action please.

धन्यवाद / Thanking you
भवदीय / Yours faithfully

डॉ. दिलीप कुमार झा
Dr. Dilip Kumar Jha
प्रभारी अधिकारी
Officer-In-Charge

2075

National Institute of Ocean Technology-ACOSTI, Port Blair

WATER QUALITY TEST REPORT

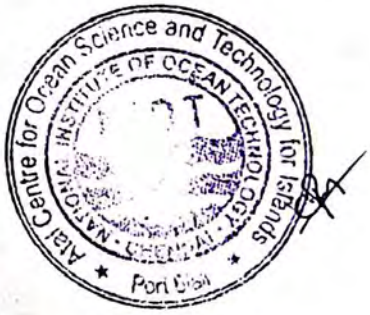
Name of Client and Address:	Superintending Engineer, Municipal Council Port Blair, Andaman & Nicobar Islands

SAMPLE DETAILS			
Sample Type	Sewage Water	**Sample Code**	T1-1
Sample Location	Port Blair	**Sample collected on**	17.05.2024 @ 4.40 pm
Sample conditions at Receipt	Fit for analysis	**Sample Received & Test Commenced on**	17.05.2024
Sample Quantity & Packing	DO, BOD bottles	**Test Completed on**	22.05.2024
Information Provided by Client: Name of the Source: Haddo Jetty Road, Gate No. 3			

TEST RESULTS

Sl.No.	PARAMETERS	TEST METHOD	UNIT	RESULTS
1	DO	IS3025(P38)89Re.99	mg/L	2.50
2	BOD_5	IS 3025 (P44)1993Re.03Edition2.1	mg/L	19.40

Note: Sample is submitted by client and the results apply the sample as received.



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2076

National Institute of Ocean Technology-ACOSTI, Port Blair

WATER QUALITY TEST REPORT

Name of Client and Address:	Superintending Engineer, Municipal Council Port Blair, Andaman & Nicobar Islands

SAMPLE DETAILS			
Sample Type	Sewage Water	**Sample Code**	T1-2
Sample Location	Port Blair	**Sample collected on**	17.05.2024 @ 5.16 pm
Sample conditions at Receipt	Fit for analysis	**Sample Received & Test Commenced on**	17.05.2024
Sample Quantity & Packing	DO, BOD bottles	**Test Completed on**	22.05.2024
Information Provided by Client: Name of the Source: Sea Shore Road, Haddo			

TEST RESULTS

Sl.No.	PARAMETERS	TEST METHOD	UNIT	RESULTS
1	DO	IS3025(P38)89Re.99	mg/L	1.04
2	BOD_5	IS 3025 (P44)1993Re.03Edition2.1	mg/L	9.24

Note: Sample is submitted by client and the results apply the sample as received.

National Centre for Ocean Science and Technology for Islands
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Port Blair

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2077

National Institute of Ocean Technology-ACOSTI, Port Blair

WATER QUALITY TEST REPORT

Name of Client and Address:	Superintending Engineer, Municipal Council Port Blair, Andaman & Nicobar Islands

SAMPLE DETAILS

Sample Type	Sewage Water	**Sample Code**	T1-3&5
Sample Location	Port Blair	**Sample collected on**	20.05.2024 @ 9.25 am
Sample conditions at Receipt	Fit for analysis	**Sample Received & Test Commenced on**	20.05.2024
Sample Quantity & Packing	DO, BOD bottles	**Test Completed on**	26.05.2024
Information Provided by Client: LIC Building Area & Drain leading from Main Office front side to (via Auditorium front side, Gandhi market back side, Syr front side gate			

TEST RESULTS

Sl.No.	PARAMETERS	TEST METHOD	UNIT	RESULTS
1	DO	IS3025(P38)89Re.99	mg/L	1.13
2	BOD_5	IS 3025 (P44)1993Re.03Edition2.1	mg/L	10.10

Note: Sample is submitted by client and the results apply the sample as received.

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2078

National Institute of Ocean Technology-ACOSTI, Port Blair

WATER QUALITY TEST REPORT

Name of Client and Address:	Superintending Engineer, Municipal Council Port Blair, Andaman & Nicobar Islands

SAMPLE DETAILS			
Sample Type	Sewage Water	**Sample Code**	T1-4
Sample Location	Port Blair	**Sample collected on**	18.05.2024 @ 9.45 am
Sample conditions at Receipt	Fit for analysis	**Sample Received & Test Commenced on**	18.05.2024
Sample Quantity & Packing	DO, BOD bottles	**Test Completed on**	23.05.2024
Information Provided by Client: Name of the Source: Drain leading from STS bus stand to ferry jetty (via Market, ACC Hotel)			

TEST RESULTS

Sl.No.	PARAMETERS	TEST METHOD	UNIT	RESULTS
1	DO	IS3025(P38)89Re.99	mg/L	0.87
2	BOD_5	IS 3025 (P44)1993Re.03Edition2.1	mg/L	6.60

Note: Sample is submitted by client and the results apply the sample as received.

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2079

National Institute of Ocean Technology-ACOSTI, Port Blair

WATER QUALITY TEST REPORT

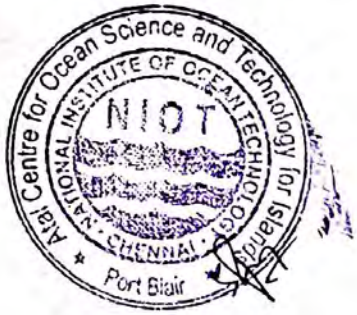
Name of Client and Address:	Superintending Engineer, Municipal Council Port Blair, Andaman & Nicobar Islands

SAMPLE DETAILS			
Sample Type	Sewage Water	**Sample Code**	T1-6
Sample Location	Port Blair	**Sample collected on**	18.05.2024 @ 3.30 pm
Sample conditions at Receipt	Fit for analysis	**Sample Received & Test Commenced on**	18.05.2024
Sample Quantity & Packing	DO, BOD bottles	**Test Completed on**	23.05.2024
Information Provided by Client: Name of the Source: Drain leading Mohanpura qutrs back side to (via Mohanpura school inside and surrounding area)			

TEST RESULTS

Sl.No.	PARAMETERS	TEST METHOD	UNIT	RESULTS
1	DO	IS3025(P38)89Re.99	mg/L	1.54
2	BOD_5	IS 3025 (P44)1993Re.03Edition2.1	mg/L	8.30

Note: Sample is submitted by client and the results apply the sample as received.



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2080

National Institute of Ocean Technology-ACOSTI, Port Blair

WATER QUALITY TEST REPORT

Name of Client and Address:	Superintending Engineer, Municipal Council Port Blair, Andaman & Nicobar Islands

SAMPLE DETAILS

Sample Type	Sewage Water	**Sample Code**	T1-7
Sample Location	Port Blair	**Sample collected on**	18.05.2024 @ 10.29 am
Sample conditions at Receipt	Fit for analysis	**Sample Received & Test Commenced on**	18.05.2024
Sample Quantity & Packing	DO, BOD bottles	**Test Completed on**	23.05.2024
Information Provided by Client: Name of the Source: Drain leading from Andaman Harbour works office to (via STS workshop) back side drain to marine			

TEST RESULTS

Sl.No.	PARAMETERS	TEST METHOD	UNIT	RESULTS
1	DO	IS3025(P38)89Re.99	mg/L	2.20
2	BOD_5	IS 3025 (P44)1993Re.03Edition2.1	mg/L	17.78

Note: Sample is submitted by client and the results apply the sample as received.



2081

National Institute of Ocean Technology-ACOSTI, Port Blair

WATER QUALITY TEST REPORT

Name of Client and Address:	Superintending Engineer, Municipal Council Port Blair, Andaman & Nicobar Islands

SAMPLE DETAILS			
Sample Type	Sewage Water	**Sample Code**	T1-8
Sample Location	Port Blair	**Sample collected on**	18.05.2024 @ 11.05 am
Sample conditions at Receipt	Fit for analysis	**Sample Received & Test Commenced on**	18.05.2024
Sample Quantity & Packing	DO, BOD bottles	**Test Completed on**	23.05.2024
Information Provided by Client: Name of the Source: Dignabad near Amina house			

TEST RESULTS

Sl.No.	PARAMETERS	TEST METHOD	UNIT	RESULTS
1	DO	IS3025(P38)89Re.99	mg/L	1.61
2	BOD_5	IS 3025 (P44)1993Re.03Edition2.1	mg/L	11.23
Note: Sample is submitted by client and the results apply the sample as received.				



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2082

National Institute of Ocean Technology-ACOSTI, Port Blair

WATER QUALITY TEST REPORT

Name of Client and Address:	Superintending Engineer, Municipal Council Port Blair, Andaman & Nicobar Islands

SAMPLE DETAILS			
Sample Type	Sewage Water	**Sample Code**	T1-10
Sample Location	Port Blair	**Sample collected on**	18.05.2024 @ 12.10 pm
Sample conditions at Receipt	Fit for analysis	**Sample Received & Test Commenced on**	18.05.2024
Sample Quantity & Packing	DO, BOD bottles	**Test Completed on**	23.05.2024
Information Provided by Client: Name of the Source: Councillor & NGO Colony			

TEST RESULTS

Sl.No.	PARAMETERS	TEST METHOD	UNIT	RESULTS
1	DO	IS3025(P38)89Re.99	mg/L	2.30
2	BOD_5	IS 3025 (P44)1993Re.03Edition2.1	mg/L	18.54

Note: Sample is submitted by client and the results apply the sample as received.

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2083

National Institute of Ocean Technology-ACOSTI, Port Blair

WATER QUALITY TEST REPORT

Name of Client and Address:	Superintending Engineer, Municipal Council Port Blair, Andaman & Nicobar Islands

SAMPLE DETAILS			
Sample Type	Sewage Water	**Sample Code**	T1-9,11&12
Sample Location	Port Blair	**Sample collected on**	20.05.2024 @ 11.02 am
Sample conditions at Receipt	Fit for analysis	**Sample Received & Test Commenced on**	20.05.2024
Sample Quantity & Packing	DO, BOD bottles	**Test Completed on**	26.05.2024
Information Provided by Client: Name of the Source: NGO Colony near Khatain kalayna Mandapam, Junglighat+ Junglighat Ayush Hospital back side + Junglighat Quarters			

TEST RESULTS

Sl.No.	PARAMETERS	TEST METHOD	UNIT	RESULTS
1	DO	IS3025(P38)89Re.99	mg/L	1.67
2	BOD_5	IS 3025 (P44)1993Re.03Edition2.1	mg/L	12.60

Note: Sample is submitted by client and the results apply the sample as received.

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2084

National Institute of Ocean Technology-ACOSTI, Port Blair

WATER QUALITY TEST REPORT

Name of Client and Address:	Superintending Engineer, Municipal Council Port Blair, Andaman & Nicobar Islands

SAMPLE DETAILS			
Sample Type	Sewage Water	**Sample Code**	T1-13
Sample Location	Port Blair	**Sample collected on**	18.05.2024 @ 11.40 am
Sample conditions at Receipt	Fit for analysis	**Sample Received & Test Commenced on**	18.05.2024
Sample Quantity & Packing	DO, BOD bottles	**Test Completed on**	23.05.2024
Information Provided by Client: Name of the Source: Prem Nagar Burning Ghat drain			

TEST RESULTS

Sl.No.	PARAMETERS	TEST METHOD	UNIT	RESULTS
1	DO	IS3025(P38)89Re.99	mg/L	0.75
2	BOD_5	IS 3025 (P44)1993Re.03Edition2.1	mg/L	7.47

Note: Sample is submitted by client and the results apply the sample as received.

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2085

National Institute of Ocean Technology-ACOSTI, Port Blair

WATER QUALITY TEST REPORT

Name of Client and Address:	Superintending Engineer, Municipal Council Port Blair, Andaman & Nicobar Islands

SAMPLE DETAILS			
Sample Type	Sewage Water	**Sample Code**	T2-3
Sample Location	Port Blair	**Sample collected on**	18.05.2024 @ 11.45 am
Sample conditions at Receipt	Fit for analysis	**Sample Received & Test Commenced on**	18.05.2024
Sample Quantity & Packing	DO, BOD bottles	**Test Completed on**	23.05.2024
Information Provided by Client: Name of the Source: Kali Mandir opp to Main Road			

TEST RESULTS

Sl.No.	PARAMETERS	TEST METHOD	UNIT	RESULTS
1	DO	IS3025(P38)89Re.99	mg/L	2.30
2	BOD_5	IS 3025 (P44)1993Re.03Edition2.1	mg/L	16.17

Note: Sample is submitted by client and the results apply the sample as received.

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2086

National Institute of Ocean Technology-ACOSTI, Port Blair

WATER QUALITY TEST REPORT

Name of Client and Address:	Superintending Engineer, Municipal Council Port Blair, Andaman & Nicobar Islands

SAMPLE DETAILS			
Sample Type	Sewage Water	**Sample Code**	T2-8
Sample Location	Port Blair	**Sample collected on**	18.05.2024 @ 09.10 am
Sample conditions at Receipt	Fit for analysis	**Sample Received & Test Commenced on**	18.05.2024
Sample Quantity & Packing	DO, BOD bottles	**Test Completed on**	23.05.2024
Information Provided by Client: Name of the Source: Hollow Block company (via Karan Trading via Prothrapur Juction to Palm Groove Resort)			

TEST RESULTS

Sl.No.	PARAMETERS	TEST METHOD	UNIT	RESULTS
1	DO	IS3025(P38)89Re.99	mg/L	2.40
2	BOD_5	IS 3025 (P44)1993Re.03Edition2.1	mg/L	21.01

Note: Sample is submitted by client and the results apply the sample as received.

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2087

National Institute of Ocean Technology-ACOSTI, Port Blair

WATER QUALITY TEST REPORT

Name of Client and Address:	Superintending Engineer, Municipal Council Port Blair, Andaman & Nicobar Islands

SAMPLE DETAILS			
Sample Type	Sewage Water	**Sample Code**	T2-9
Sample Location	Port Blair	**Sample collected on**	18.05.2024 @ 10.00 am
Sample conditions at Receipt	Fit for analysis	**Sample Received & Test Commenced on**	18.05.2024
Sample Quantity & Packing	DO, BOD bottles	**Test Completed on**	23.05.2024
Information Provided by Client: Name of the Source: Jail Complex to Vivekananda Colony Prothrapur			

TEST RESULTS

Sl.No.	PARAMETERS	TEST METHOD	UNIT	RESULTS
1	DO	IS3025(P38)89Re.99	mg/L	1.60
2	BOD_5	IS 3025 (P44)1993Re.03Edition2.1	mg/L	10.30

Note: Sample is submitted by client and the results apply the sample as received.

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Port Blair

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2088

National Institute of Ocean Technology-ACOSTI, Port Blair

WATER QUALITY TEST REPORT

Name of Client and Address:	Superintending Engineer, Municipal Council Port Blair, Andaman & Nicobar Islands

SAMPLE DETAILS			
Sample Type	Sewage Water	**Sample Code**	T2-11
Sample Location	Port Blair	**Sample collected on**	17.05.2024 @ 5.15 pm
Sample conditions at Receipt	Fit for analysis	**Sample Received & Test Commenced on**	17.05.2024
Sample Quantity & Packing	DO, BOD bottles	**Test Completed on**	22.05.2024
Information Provided by Client: Coorporative Colony to Mahindra Show Room Bathubasti			

TEST RESULTS

Sl.No.	PARAMETERS	TEST METHOD	UNIT	RESULTS
1	DO	IS3025(P38)89Re.99	mg/L	2.32
2	BOD_5	IS 3025 (P44)1993Re.03Edition2.1	mg/L	18.20

Note: Sample is submitted by client and the results apply the sample as received.



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2089

National Institute of Ocean Technology-ACOSTI, Port Blair

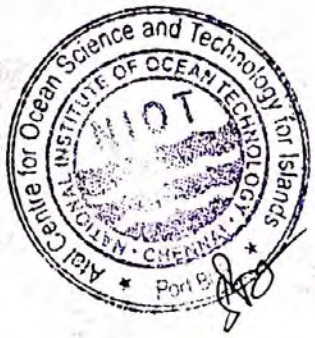
WATER QUALITY TEST REPORT

Name of Client and Address:	Superintending Engineer, Municipal Council Port Blair, Andaman & Nicobar Islands

SAMPLE DETAILS			
Sample Type	Sewage Water	**Sample Code**	T2-13
Sample Location	Port Blair	**Sample collected on**	18.05.2024 @ 11.15 am
Sample conditions at Receipt	Fit for analysis	**Sample Received & Test Commenced on**	18.05.2024
Sample Quantity & Packing	DO, BOD bottles	**Test Completed on**	23.05.2024
Information Provided by Client: Name of the Source: Garacharma School Behind Susan Roses			

TEST RESULTS

Sl.No.	PARAMETERS	TEST METHOD	UNIT	RESULTS
1	DO	IS3025(P38)89Re.99	mg/L	1.53
2	BOD_5	IS 3025 (P44)1993Re.03Edition2.1	mg/L	10.20
Note: Sample is submitted by client and the results apply the sample as received.				



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2090

National Institute of Ocean Technology-ACOSTI, Port Blair

WATER QUALITY TEST REPORT

Name of Client and Address:	Superintending Engineer, Municipal Council Port Blair, Andaman & Nicobar Islands

SAMPLE DETAILS			
Sample Type	Sewage Water	**Sample Code**	T3-1
Sample Location	Port Blair	**Sample collected on**	17.05.2024 @ 5.10 pm
Sample conditions at Receipt	Fit for analysis	**Sample Received & Test Commenced on**	17.05.2024
Sample Quantity & Packing	DO, BOD bottles	**Test Completed on**	22.05.2024
Information Provided by Client: Carbin Cove drain towards Corbyn's Cove junction			

TEST RESULTS

Sl.No.	PARAMETERS	TEST METHOD	UNIT	RESULTS
1	DO	IS3025(P38)89Re.99	mg/L	2.30
2	BOD_5	IS 3025 (P44)1993Re.03Edition2.1	mg/L	17.60
Note: Sample is submitted by client and the results apply the sample as received.				

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2091

National Institute of Ocean Technology-ACOSTI, Port Blair

WATER QUALITY TEST REPORT

Name of Client and Address:	Superintending Engineer, Municipal Council Port Blair, Andaman & Nicobar Islands

SAMPLE DETAILS			
Sample Type	Sewage Water	**Sample Code**	T3-4
Sample Location	Port Blair	**Sample collected on**	18.05.2024 @ 10.50 am
Sample conditions at Receipt	Fit for analysis	**Sample Received & Test Commenced on**	18.05.2024
Sample Quantity & Packing	DO, BOD bottles	**Test Completed on**	23.05.2024
Information Provided by Client: Name of the Source: DAG Colony to KV-1 School			

TEST RESULTS

Sl.No.	PARAMETERS	TEST METHOD	UNIT	RESULTS
1	DO	IS3025(P38)89Re.99	mg/L	2.10
2	BOD_5	IS 3025 (P44)1993Re.03Edition2.1	mg/L	13.60

Note: Sample is submitted by client and the results apply the sample as received.



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2092

National Institute of Ocean Technology-ACOSTI, Port Blair

WATER QUALITY TEST REPORT

Name of Client and Address:	Superintending Engineer, Municipal Council Port Blair, Andaman & Nicobar Islands

SAMPLE DETAILS			
Sample Type	Sewage Water	**Sample Code**	T3-5
Sample Location	Port Blair	**Sample collected on**	18.05.2024 @ 9.55 am
Sample conditions at Receipt	Fit for analysis	**Sample Received & Test Commenced on**	18.05.2024
Sample Quantity & Packing	DO, BOD bottles	**Test Completed on**	23.05.2024
Information Provided by Client: Name of the Source: Dairyfarm fisherman colony Drain 1			

TEST RESULTS

Sl.No.	PARAMETERS	TEST METHOD	UNIT	RESULTS
1	DO	IS3025(P38)89Re.99	mg/L	1.66
2	BOD_5	IS 3025 (P44)1993Re.03Edition2.1	mg/L	9.80

Note: Sample is submitted by client and the results apply the sample as received.



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2093

National Institute of Ocean Technology-ACOSTI, Port Blair

WATER QUALITY TEST REPORT

Name of Client and Address:	Superintending Engineer, Municipal Council Port Blair, Andaman & Nicobar Islands

SAMPLE DETAILS			
Sample Type	Sewage Water	**Sample Code**	T3-6
Sample Location	Port Blair	**Sample collected on**	17.05.2024 @ 6.20 pm
Sample conditions at Receipt	Fit for analysis	**Sample Received & Test Commenced on**	17.05.2024
Sample Quantity & Packing	DO, BOD bottles	**Test Completed on**	22.05.2024
Information Provided by Client: Name of the Source: Machi line to Rama Krishnan Mission drain			

TEST RESULTS

Sl.No.	PARAMETERS	TEST METHOD	UNIT	RESULTS
1	DO	IS3025(P38)89Re.99	mg/L	2.60
2	BOD_5	IS 3025 (P44)1993Re.03Edition2.1	mg/L	30.71

Note: Sample is submitted by client and the results apply the sample as received.

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2094

National Institute of Ocean Technology-ACOSTI, Port Blair

WATER QUALITY TEST REPORT

Name of Client and Address:	Superintending Engineer, Municipal Council Port Blair, Andaman & Nicobar Islands

SAMPLE DETAILS			
Sample Type	Sewage Water	**Sample Code**	T3-8
Sample Location	Port Blair	**Sample collected on**	17.05.2024 @ 5.45 pm
Sample conditions at Receipt	Fit for analysis	**Sample Received & Test Commenced on**	17.05.2024
Sample Quantity & Packing	DO, BOD bottles	**Test Completed on**	22.05.2024
Information Provided by Client: Name of the Source: Mazar Pahad area (Mazar Drain)			

TEST RESULTS

Sl.No.	PARAMETERS	TEST METHOD	UNIT	RESULTS
1	DO	IS3025(P38)89Re.99	mg/L	1.50
2	BOD_5	IS 3025 (P44)1993Re.03Edition2.1	mg/L	13.10

Note: Sample is submitted by client and the results apply the sample as received.

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2095

National Institute of Ocean Technology-ACOSTI, Port Blair

WATER QUALITY TEST REPORT

Name of Client and Address:	Superintending Engineer, Municipal Council Port Blair, Andaman & Nicobar Islands

SAMPLE DETAILS			
Sample Type	Sewage Water	**Sample Code**	T3-2&9
Sample Location	Port Blair	**Sample collected on**	18.05.2024 @ 9.30 am
Sample conditions at Receipt	Fit for analysis	**Sample Received & Test Commenced on**	18.05.2024
Sample Quantity & Packing	DO, BOD bottles	**Test Completed on**	23.05.2024
Information Provided by Client: Name of the Source: Junglighat airport Vijay Bagh & Adhikari House to Ganesh Temple			

TEST RESULTS

Sl.No.	PARAMETERS	TEST METHOD	UNIT	RESULTS
1	DO	IS3025(P38)89Re.99	mg/L	1.10
2	BOD_5	IS 3025 (P44)1993Re.03Edition2.1	mg/L	9.20

Note: Sample is submitted by client and the results apply the sample as received.

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2096

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WATER QUALITY TEST REPORT

Name of Client and Address:	Superintending Engineer, Municipal Council Port Blair, Andaman & Nicobar Islands

SAMPLE DETAILS

Sample Type	Sewage Water	**Sample Code**	T3-11
Sample Location	Port Blair	**Sample collected on**	18.05.2024 @ 11.50 am
Sample conditions at Receipt	Fit for analysis	**Sample Received & Test Commenced on**	18.05.2024
Sample Quantity & Packing	DO, BOD bottles	**Test Completed on**	23.05.2024
Information Provided by Client: Name of the Source: Hemraj Bhadur Colony to Uma Bakery			

TEST RESULTS

Sl.No.	PARAMETERS	TEST METHOD	UNIT	RESULTS
1	DO	IS3025(P38)89Re.99	mg/L	1.41
2	BOD_5	IS 3025 (P44)1993Re.03Edition2.1	mg/L	11.50

Note: Sample is submitted by client and the results apply the sample as received.

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WATER QUALITY TEST REPORT

Name of Client and Address:	Superintending Engineer, Municipal Council Port Blair, Andaman & Nicobar Islands

SAMPLE DETAILS

Sample Type	Sewage Water	**Sample Code**	T3-10,12,13&14
Sample Location	Port Blair	**Sample collected on**	18.05.2024 @ 12.25 pm
Sample conditions at Receipt	Fit for analysis	**Sample Received & Test Commenced on**	18.05.2024
Sample Quantity & Packing	DO, BOD bottles	**Test Completed on**	23.05.2024

Information Provided by Client: Name of the Source: DBRAIT Junction to via Telugu Basti to NK Repair & Telugu basthi to Halder colony & Sahara Hotel to Polytechnic gate & Loknath Colony to Polytechnic gate

TEST RESULTS

Sl.No.	PARAMETERS	TEST METHOD	UNIT	RESULTS
1	DO	IS3025(P38)89Re.99	mg/L	1.31
2	BOD_5	IS 3025 (P44)1993Re.03Edition2.1	mg/L	14.55

Note: Sample is submitted by client and the results apply the sample as received.

National Centre for Ocean Science and Technology for Islands

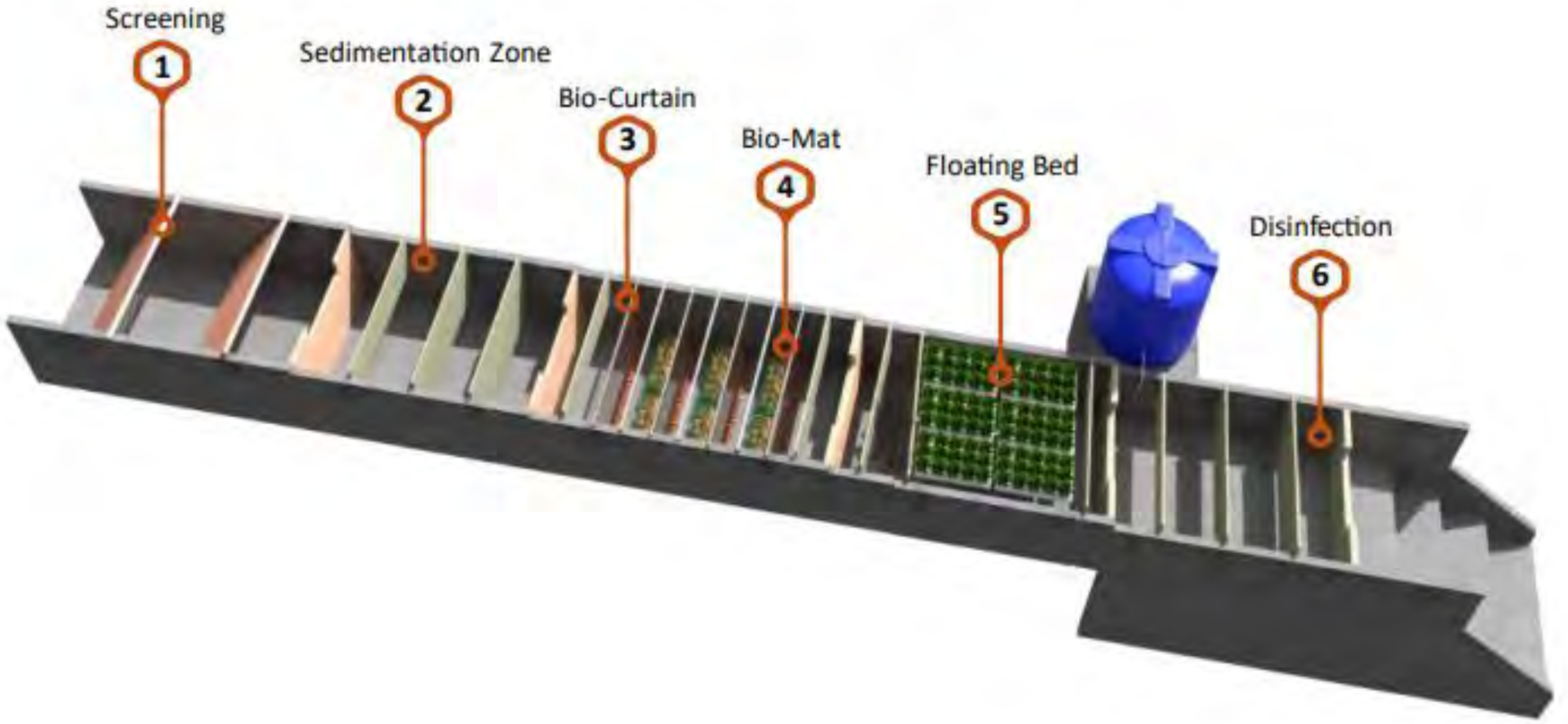
23

N- TREAT BASED IN-SITU NALLA TREATMENT FOR RK MISSION DRAIN

IN SRI VIJAYA PURAM MUNICIPAL COUNCIL (SVPMC)

2099

Figure 4-1 : Pictorial Representation of unit operations in N-Treat



2100

Figure 4-2 : Coarse and fine screens in the N-Treat



Figure 4-3 : Sedimentation zone in the N-Treat

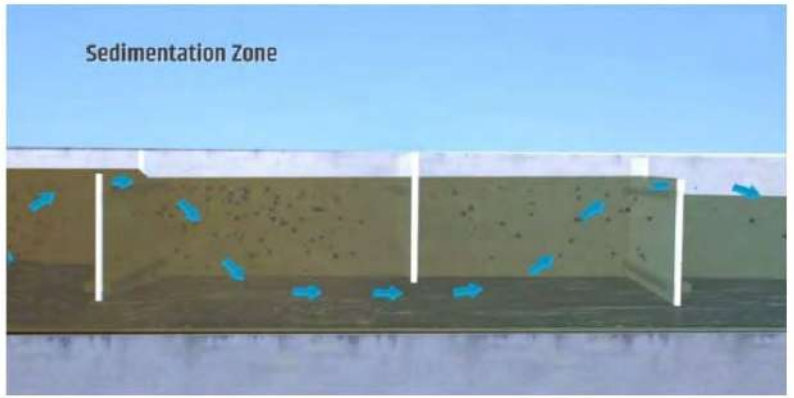


Figure 4-4 : Bio-Curtain installed in the N-Treat

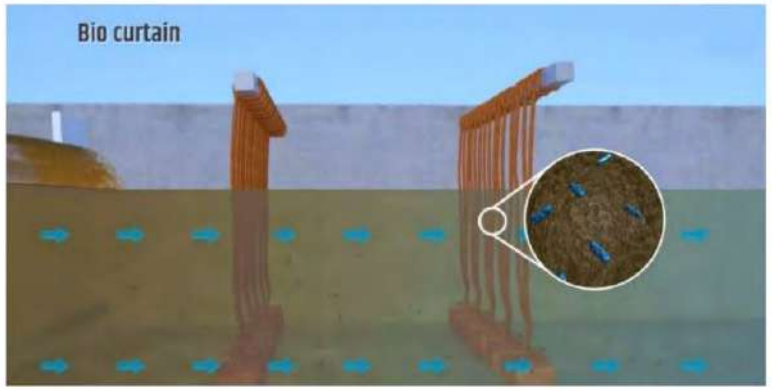


Figure 4-5 : Bio-Mat installed in the N-Treat

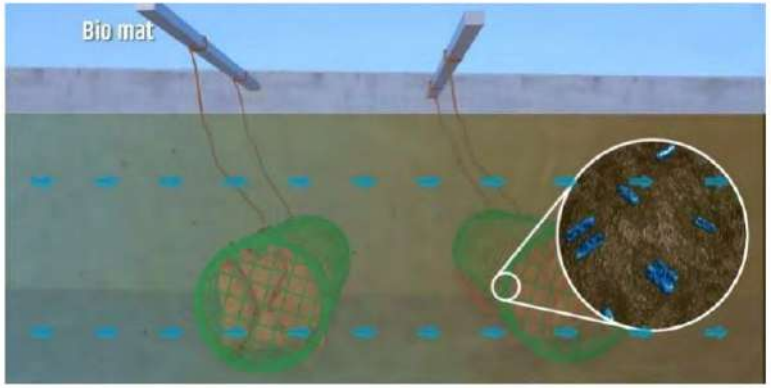


Figure 4-6 : Floating beds installed in the N-Treat

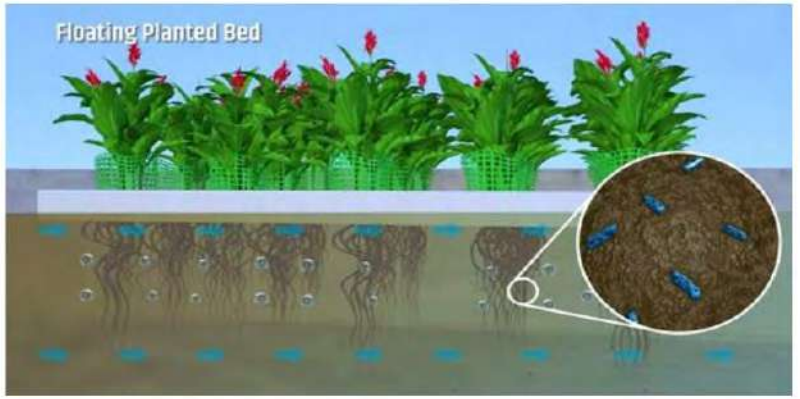


Figure 4-7 : Disinfection unit installed in the N-Treat



2101

Figure 1-2 : Ward map of PBMC area and location of RK Mission drain

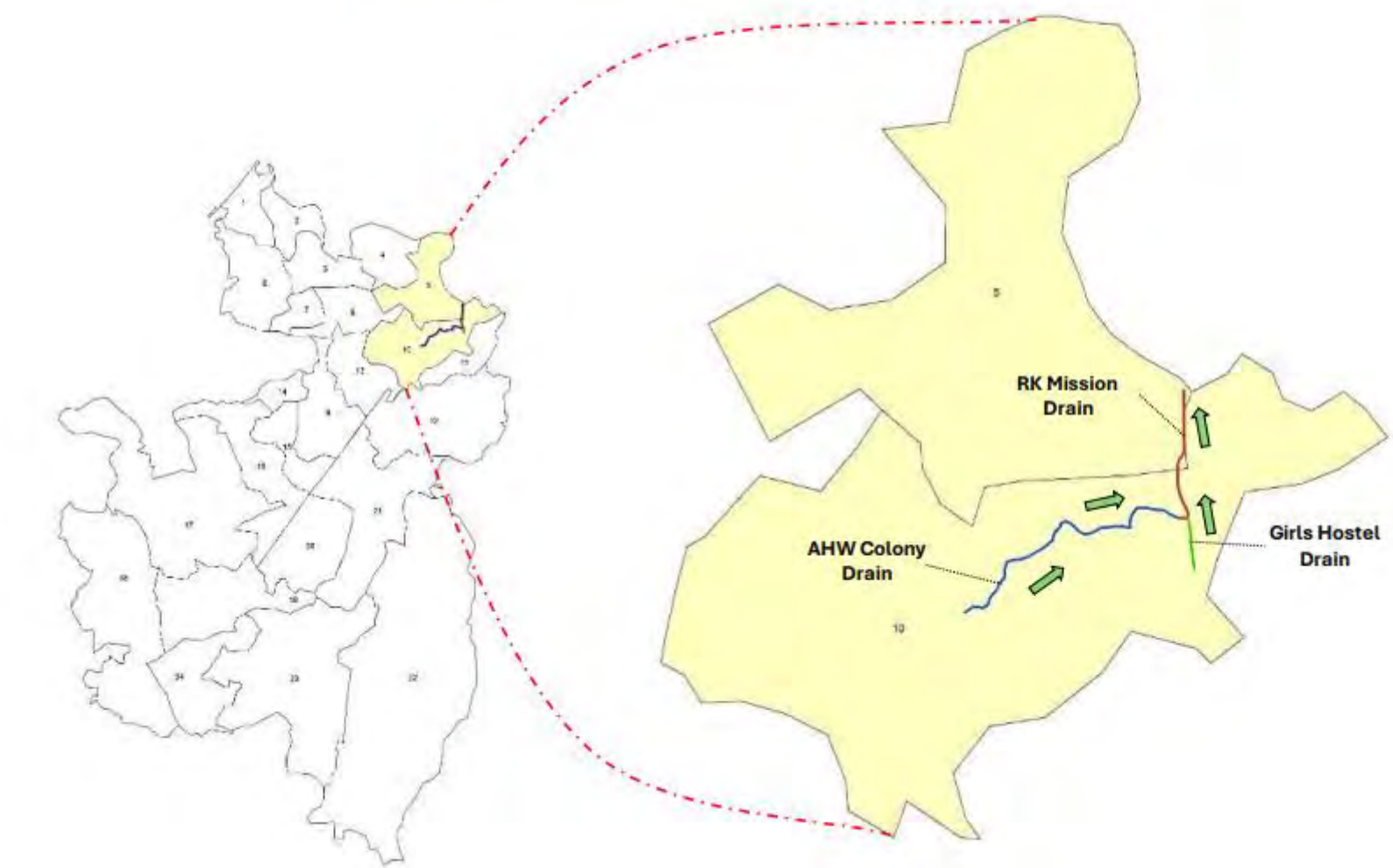
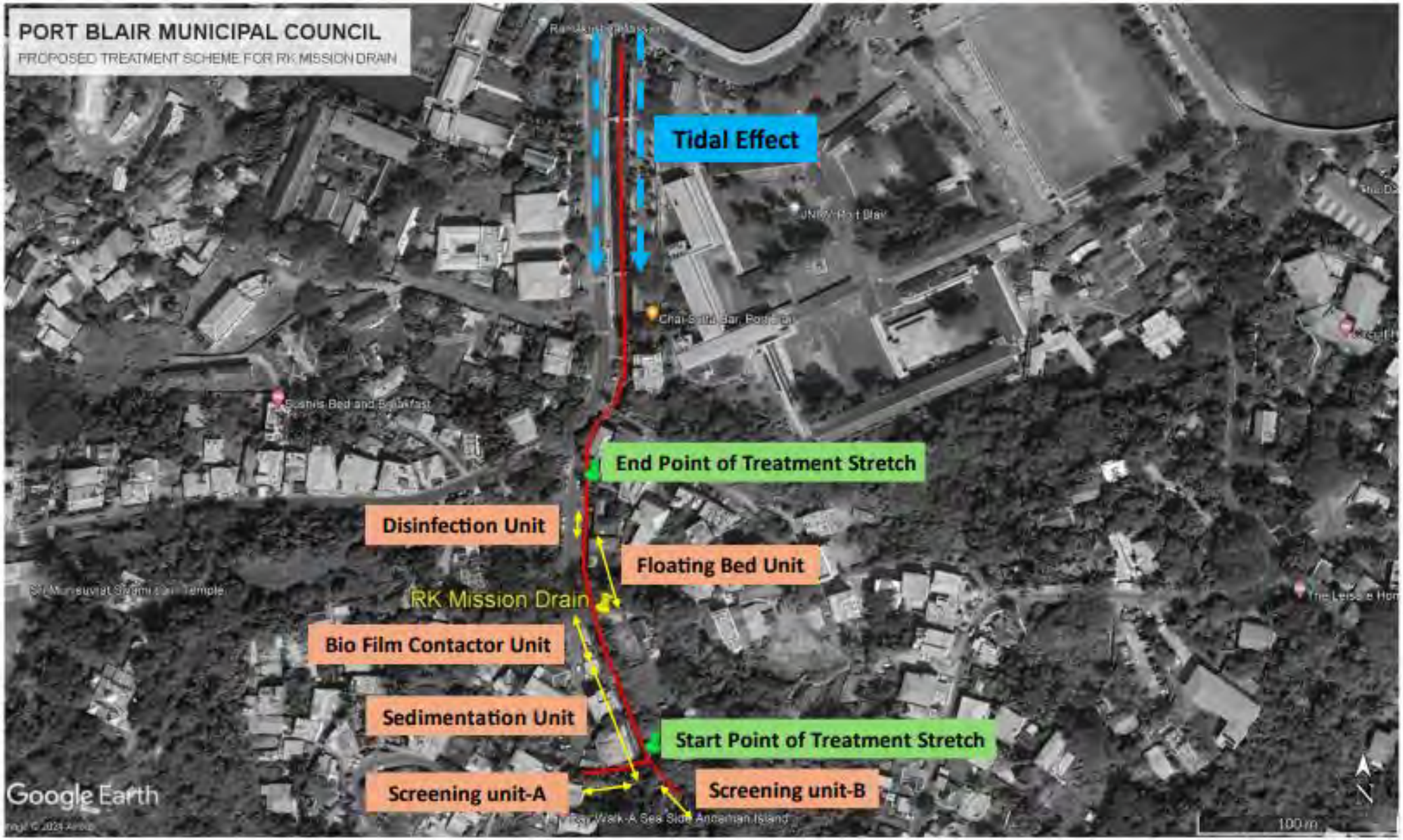


Figure 5-1 : Proposed Treatment Scheme and location of treatment units at RK Mission drain

2102



नगरपालिकापरिषदकाकार्यालय
OFFICE OF THE MUNICIPAL COUNCIL
पोर्टब्लेयर
PORT BLAIR

Dated: 21-06-2024

Work Order

To,

The Registrar,
Indian Institute of Technology Bombay,
Powai, Mumbai-400076.

Kind Attention: Dr. AK Dikshit, Environmental Science and Engineering Department, IIT Bombay

Subject:Work order for Preparation of Detailed Project Report (DPR) for Installation of In-situ Nallah Treatment and explore the possibility of installing Integrated Wetland Technology (IWT) Based STP at Port Blair Municipal Council, Port Blair

Reference:
-Technical discussion held on 15/05/2024 through VC in presence of Chief Secretary at Secretariat A& N Administration, by Shri.Indra Kant Jha, Technical head of EMERGY Enviro, (SINE-IIT Bombay company).
-Technical Proposal submitted by IIT Bombay in association with EMERGY Enviro, (SINE-IIT Bombay company) vide dated 28th May 2024

Competent authority has approved the issuance of a work order for **pre-investment activities (including site survey, structural design, and Detailed Project Report [DPR]) related to the construction of sewage treatment facilities (In-situ) at various drains within the jurisdiction of the Port Blair Municipal Council.** This project falls under MOHUA/CPWD guidelines and adheres to CPWD financial norms, authorized by SHPSC (AMRUT 2.0), A&OE component.

Sl No.	Scope of Work	Unit	Amount
1	Assessment of Nallah, Pollutants, Technology applications for all the three attributes (floating matter, silt and organic), Conceptual Design, Bill of Quantities and providing of Technical support for bid document preparation and submission of detailed project report	1 Job	98.25 Lac +18% GST

Term of payment:

Payment will be made in favour of “Registrar, IIT Bombay a/c Consultancy & Research Fund” along with Work Order issued by PBMC/ Proforma Invoice raised by IRCC, IIT Bombay as per following details:

• 50 % Payment along with the work order and after submission of work plan
• 25% Payment after field visit and submission of assessment report
• 25 % Payment after submission of DPR, BOQ, Final report

Project duration:

Total duration of the project will be 90 working days. If required, period may be extended by mutual consent in writing.

Terms and Conditions:

• The Representative (Technical coordinator) (study area specific) from PBMC always be available for guidance and coordination with different stakeholder and shall also provide or arrange all the required assistance during site visit, sampling, and data collection at the site. Representative shall be deputed to accompany our team(s) working at various sites

• PBMC will provide letter /permission /assistance to conduct any site survey and related activities as per the requirement of this project

• PBMC will provide all required arrangements for local travel, stay and hospitality to the experts as well as team members during the visits

• Maps or any diagram data of sewer, storm water Nallah etc available with PBMC must be shared

• Any other information available with PBMC and useful for the project shall be shared

• Labor shall be arranged for all the field work to assist the technical team

Signed by Avinash Kumar Singh
Date: 22-06-2024 13:28:52
Reason: Approved

Superintending Engineer
Municipal Council

Copy to:

1. PA to Secretary PBMC, for Kind information.
2. Account officer PBMC, for kind information.
3. EE (Water Works) PBMC, for kind information.
4. AE-II (Water Works) through EE (Water Works) PBMC, for kind information and necessary action.
5. Office Copy.

Superintending Engineer
Municipal Council

PORT BLAIR MUNICIPAL COUNCIL

2106

AUGUST 2024

852

N- TREAT BASED IN-SITU NALLA TREATMENT FOR RK MISSION DRAIN IN PORT BLAIR MUNICIPAL COUNCIL (PBMC)

Volume-I

General Report and Design Details

Under the Guidance of

Professor A. K. Dikshit

Environmental Science & Engineering Department

IIT Bombay, Powai, Mumbai - 400076

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LIST OF ABBREVIATIONS

Abbreviation	Full form
PBMC	Port Blair Municipal Council
IIT	Indian Institute of Technology
CPCB	Central Pollution Control Board
DPR	Detailed Project Report
MSL	Mean Sea Level
RK Mission	Ramakrishna Mission
STP	Sewage Treatment Plant
SWD	Side Water Depth
BOD	Biochemical Oxygen Demand
TSS	Total Suspended Solids
COD	Chemical Oxygen Demand
TN	Total Nitrogen
TP	Total Phosphorus
HRT	Hydraulic Retention Time
AVG	Average
PCC	Plain Cement Concrete
RCC	Reinforced Cement Concrete
FRP	Fibre Reinforced Plastic
MS	Mild Steel
MOC	Material of Construction
QTY	Quantity
PVC	Polyvinyl Chloride

LIST OF UNITS

Unit	Full form
%	Percentage
m	meter
mm	millimeter
°C	Degree Celsius
m^2	Square meter
m/s	Meters per second
m^3/s	Cubic meters per second
m^3/h	Cubic meters per hour
kLD	Kilo liter per day
MLD	Million liter per day
h	Hours
mg/L	Milligram per liter
PPM	Parts per million
kg	Kilogram
kg/L	Kilogram per liter

Executive Summary

Wastewater management in Port Blair, the capital of Andaman and Nicobar Islands is a pressing concern due to the inadequate treatment infrastructure. The direct discharge of untreated wastewater into sea have led to a significant marine pollution. This pollution impacts the water quality, harms marine life and poses health risk to both the residents and visitors. Hence, implementing effective wastewater treatment system is essential for preserving the coastal ecosystem, protecting public health, and maintaining the city's appeal as a tourist destination amidst ongoing population growth and urbanization. Furthermore, selection of sustainable wastewater treatment technology in the city becomes crucial considering the unique challenges such as tidal effect, limited space availability, topography, encroachment, and ground water table.

Port Blair Municipal Council (PBMC) has engaged IIT Bombay to address the wastewater treatment issues of the city. However, upon the latter's engagement in extensive site surveys, it was understood that in rapidly growing and topographically challenging area like Port Blair, implementation of advanced wastewater treatment system like N-Treat based in-situ nalla treatment is pivotal. N-treat effectively treats wastewater in the nalla itself, thereby ceasing any requirement of additional space. As per the directions given by hon. PBMC officials, the technology shall be implemented first at RK Mission drain, which is a major wastewater drain of the city, located near Marina Park. This detailed project report is prepared for RK Mission drain in Port Blair.

For the design of the N-Treat, the IIT Bombay team executed multiple on-site activities. The preliminary site visit was conducted for selecting appropriate stretch of drain, also comprehending volumetric assessment and recording of the topographical data. This was followed by carrying out a detailed topographical survey in which elevation profile of the drain and its surrounding area were marked. Additionally, the nearby features and lateral outfalls into the drain were marked. Based upon this data, the conceptual design of the proposed treatment unit was prepared. Special attention was given on addressing on-site challenges like tidal effect, encroachment, lateral inflows and marginal bed slope of drain. The design was followed by preparation of Detailed Project Report (DPR), inclusive of estimate and drawing for the project.

The defined capacity of the treatment technology is 1.06 MLD. The overall treatment is defined for a stretch of 170 m length, 5 m width (average) and a SWD of 1 m. The overall estimate for the capital work required for installation of N-Treat based in-situ nalla treatment work is Rs. 88,10,322 (excluding GST, contingencies, etc.). It is worth noting that Rs. 37,59,295 (42.66% of total) is the estimate for scope 1 which is inclusive of channelization and diversion works. Moreover, Rs. 50,51,027 (57.33% of total) is the estimate for scope 2 which is inclusive of treatment units. For operation and maintenance activities, the estimate is Rs. 15,67,636 per annum which is inclusive of labour deployment, chemical provision, decommissioning and recommissioning works.

1. Introduction

1.1. Background

Safe water supply and sanitation facilities are the two most important utilities that a community requires for healthy living. While safe drinking water is a top priority, but good sanitation is equally important. This includes affordable on-site sanitation, sewerage, and sewage treatment. These needs must be met and prioritized. If this wastewater is not properly collected, transported, treated, and safely disposed of, it can lead to the pollution of valuable water resources and contribute to environmental degradation. There is an increasing need for effective wastewater management as there are higher pollution levels due to the increasing population, industrial and commercial development.

According to the Central Pollution Control Board (CPCB), only 30% of sewage generated in coastal cities is treated, leading to severe coastal contamination. Coastal cities like Chennai and Mumbai often discharge large amounts of partially treated or untreated sewage into the sea, and Port Blair is no different. Port Blair, which is a capital of Andaman and Nicobar Islands, faces significant challenges in its wastewater management. Currently, the city lacks the necessary infrastructure (sewage treatment facilities) to handle its liquid waste effectively. This issue mirrors a broader problem observed in coastal cities across India.

Addressing these wastewater management issues is critical to preserving the coastal ecosystem and marine habitat. Periodic cleaning of the drains and treatment of wastewater before discharge into the sea are essential steps to mitigate contamination and conserve the aquatic environment (Foundation, 2019).

1.2. Necessity of Sustainable Wastewater Treatment

Port Blair, the capital of the Andaman and Nicobar Islands, faces unique wastewater management challenges due to rapid population growth and urbanization. As per the analysis, microplastics like nylon, acrylic and ionomer surlyn were found out in the Port Blair Bay (Goswami, 2020). In the Port Blair region, Phoenix Bay, Junglighat Bay, and Minne Bay are among the most polluted areas. Immediate action by the Andaman administration is crucial to address human activities causing this pollution and to raise public awareness about the importance of protecting these coastal waters (Shankar, 2021). Efficient wastewater management is crucial to preserve the islands' rich biodiversity and prevent waterborne diseases that could threaten the health of residents and visitors.

Port Blair's popularity as a tourist destination makes effective wastewater management essential to maintain its appeal and protect public health. As the city grows, modern infrastructure, including treatment plants and sewage systems, is crucial. The region's heavy monsoon rains further emphasize the need for resilient systems to prevent flooding and system failures.

In the Port Blair area, several challenges complicate the installation of Sewage Treatment Plants (STPs). The topographical challenges, encroachment, limited space availability for setting up a pumping station and/or STP, ground water table and water ponding due to tidal effect in coastal areas are some of the challenges faced for the installation of STP. In such rapidly growing areas, where infrastructure development often lags, implementing advanced wastewater treatment system like N-Treat based in-

situ nalla treatment is essential. N-Treat effectively treats wastewater, thereby reducing health risks and protecting the environment.

The present study deals with wastewater treatment facility provision for RK Mission drain in Port Blair. The drain carries wastewater generated from different wards of the city and discharges the same into ocean near the RK Mission in Marina Park area. It is one of the major drains discharging wastewater of the city into the sea. According to the preliminary survey and discussions with PBMC officials, the space available near Radha Krishna Park for installing the STP was found to be insufficient for the required capacity. Hence, N-Treat based in-situ nalla treatment is recommended. Port Blair Municipal Council (PBMC) has engaged IIT Bombay to design N-treat based treatment system for RK Mission drain in council area. This project will help to curb the pollution level of wastewater in the major drains of aforesaid area, thereby helping to achieve the reduction in the organic load discharged to the marine habitat.

1.3. Objective and Scope of Work

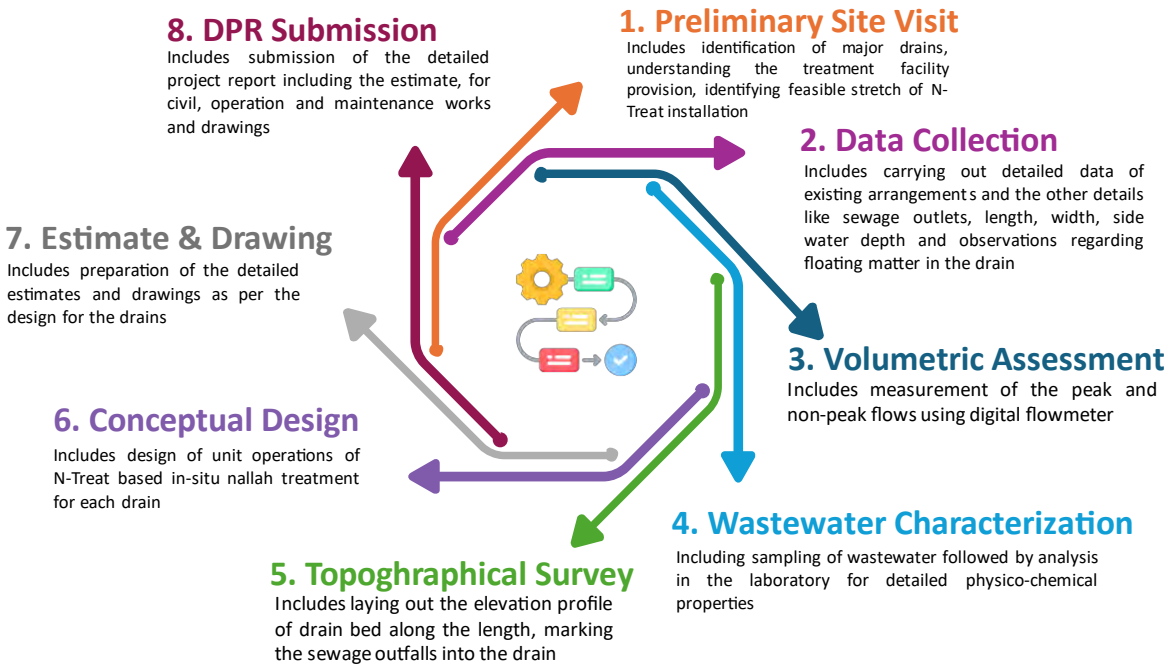
The main objective of this work is to design N-treat based in-situ nalla treatment technology for RK Mission drain in PBMC. The specific scope of work under this project is as follows:

1. Identifying the possible stretch of the drain for installation of N-treat based in-situ nalla treatment
2. Carrying out detailed data collection of the drain through a detailed topographical survey, quantitative assessment (flow measurement and solid waste loading)
3. Preparation of Detailed Project Report (DPR), which includes Conceptual design, drawings and estimates of Capex and Opex for installation of N-treat technology

1.4. Methodology

The methodology adopted for the execution of project works comprises of eight major sub-activities from the earliest activity of preliminary site visit to the final activity of DPR submission. All the activities involved during this process is represented as follows in Figure 1-1:

Figure 1-1 : Methodology for the execution of project until the DPR submission



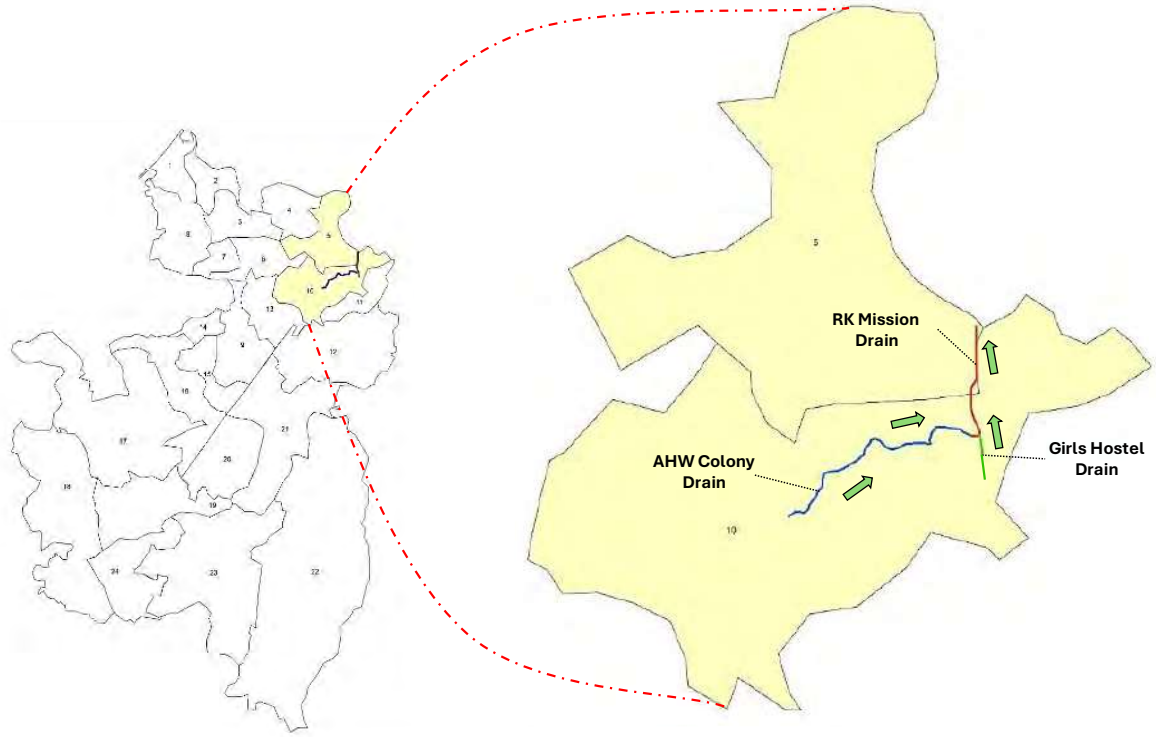
Note: The submission of DPR is followed by technical sanction, administrative sanction, tendering, on-site execution of the works, final commissioning and handover.

1.5. Project Area

Port Blair is the capital of Andaman and Nicobar Islands in India. Port Blair Municipal Council (PBMC), the local governing body of Port Blair, is divided into 24 administrative wards. These wards manage local governance and oversee various projects including roadworks, drainage, sanitation and infrastructure work, etc. A critical component of the city's infrastructure is drainage system, which is essential for managing wastewater, rainwater and preventing flooding during the monsoon season. This system typically includes open channels or gutters that carries wastewater and discharges into the sea.

This project primarily includes the drainage system in ward no. 5 and 10, specifically RK Mission drain, which is situated near Marina Park and is one of the major drains in Port Blair. It carries wastewater flowing from the drain passing through AHW Colony and the drain adjacent to girls hostel. The ward map of PBMC area and location of RK Mission drain is represented in Figure 1-2, as follows:

Figure 1-2 : Ward map of PBMC area and location of RK Mission drain



1.5.1. Topography

Port Blair has a unique topography influenced by its location on the hilly terrain of South Andaman Island. It is characterized by hilly terrain with elevations ranging from mean sea level (MSL) up to approximately 451 meters, with an average elevation of around 27 meters. The city has an extensive coastline with several bays and inlets, contributing to its picturesque landscape. The underlying geology mainly consists of sedimentary and volcanic rocks, with coral formations present along the coastal areas. The area is part of a tectonically active region, which can influence local geology and soil stability.

1.5.2. Climatic Condition

Port Blair experiences a tropical monsoon climate, characterized by warm temperatures, high humidity, and significant rainfall throughout the year. The average annual temperature in Port Blair is relatively consistent, ranging between 23°C and 30°C. While temperatures are generally warm year-round, they tend to be slightly cooler during the winter months (December to February) and warmer during the summer months (March to May). The temperature in summer varies in the range from 24 °C to 30 °C, whereas in winter it varies in the range from 15 °C to 34 °C.

The city experiences high humidity levels throughout the year, often exceeding 80%. The humidity can make the weather feel warmer and more oppressive, especially during the monsoon season. Being in a tropical region, it is occasionally affected by cyclones and tropical storms, particularly during the monsoon seasons. These can bring heavy rains, strong winds, and storm surges.

1.5.3. Rainfall

The city's rainfall pattern is influenced by the southwest and northeast monsoons. The key details regarding rainfall in Port Blair are as follows:

Annual Rainfall

The city receives substantial annual rainfall, typically ranging from 3000 to 3500 mm, the annual amount of rainfall being varying from year-to-year.

Monsoon Seasons

- Southwest Monsoon (June to September): This is the primary rainy season, during which Port Blair receives the bulk of its annual rainfall. The southwest monsoon winds bring heavy rains, often leading to a lush and verdant environment.
- Northeast Monsoon (October to December): While less intense than the southwest monsoon, the northeast monsoon also contributes significantly to the total rainfall. These rains are usually less heavy but can still be substantial.

Dry Season

The period from January to March is relatively dry, with significantly lower rainfall. However, due to the tropical climate, the area still experiences some precipitation even during this time.

1.6. Consultant

Consultancy work for survey, preparation of conceptual plans and estimates for N-Treat based in-situ nalla treatment scheme for Port Blair Municipal Council has been entrusted to IIT Bombay.

The consultancy service for the said work includes carrying out preliminary site survey and detailed topographical survey, carrying out flow assessment and floating matter assessment, defining wastewater characteristics, collection of data, detailed engineering design for N-Treat based in-situ Nalla treatment, an environment friendly and sustainable technology. Based on the investigations, the present report deals with and elaborates the detailed design and estimate carried out and other data structuring of the scheme as a whole.

1.7. Report Structure

For ease of understanding, the overall detailed project report (DPR) is divided into three volumes. The details of each volume are as follows:

Volume I: General Report and Design Details

Chapter 1 includes background, necessity of the project, scope of the work, methodology adopted, project area, topography, rainfall, climatic condition of the study area, details of the consultant and report structure.

Chapter 2 includes the details of the site visits conducted and the observations noted down during the field visit.

Chapter 3 includes details of the wastewater quantification.

Chapter 4 includes the details of the N-Treat technology.

Chapter 5 includes the proposed detailed treatment scheme prepared for the drain.

Chapter 6 includes the detailed design of different unit operations proposed.

Chapter 7 includes annexure regarding the technology certification from IIT Bombay and the pictorial details of implemented similar projects.

Volume II: Detailed Estimates

This volume includes the details of the estimates of civil works, detailed estimate of operation and maintenance associated rates and quotations.

Volume III: Detailed Drawings

This volume includes the detailed drawings for the proposed treatment scheme.

2. Site Visit and Investigation

To tackle ocean pollution caused by untreated sewage discharge, the IIT Bombay team was engaged in multiple discussions with officials from the Port Blair Municipal Council (PBMC). Following these discussions, two extensive site visits for the collection of data and mapping of the site features were conducted. In the preliminary site visit, the feasible stretches of various Nallas in the council area for installation of N-Treat was identified. Moreover, the flow measurement using a digital flowmeter and wastewater sampling for characterisation from each identified nallas was carried out.

A second site visit was carried out to comprehend the slope profile of the drain and to gain a comprehensive view of the surrounding physical structures by performing a detailed topographical survey. Moreover, solid waste loading assessment was conducted for the drain.

Out of all identified drains, PBMC would like to first focus on the treatment of RK Mission drain as this drain is located near Marina Park. Marina Park is a significant tourist attraction on the island, featuring lush green lawns, a picturesque harbour, and a stunning coastline. The park's main goal is to safeguard the city and coastal areas while educating visitors about the local marine ecosystem. Thus, it becomes critical for PBMC to maintain the aesthetics of the surrounding area. Observations and findings from the aforesaid site visits are discussed in this section.

2.1. Site Visit Details and Observations- RK Mission drain

The RK Mission drain is constructed to channel rainwater towards the ocean near the RK Mission and to prevent waterlogging in the surrounding areas. However, as observed on-site, wastewater from households is being discharged into the RK Mission drain. It was also observed that the drain passing through AHW colony and the drain adjacent to girl's hostel merges into the RK mission drain, which ultimately is discharged into sea causing marine pollution.

During the site visit, it was observed that the drain is channelized and constructed with cement concrete bed. The walls and bed of the drain for majority of the stretch were observed to be in a deteriorated condition and needed a repair work. The approximate length of the RK Mission drain is 360 m. The width of the drain varies between 3 and 5 m at the initial stretch and as the drain progresses towards the final stretch, the width gradually increases, varying between 5 and 10 m.

There are houses on one side of the drain, which discharge wastewater directly into the drain and road towards the other side of the drain. Although the drain is open, multiple platforms were provided across the drain to get access into the houses. At a point in the downstream, a portion of a house was seen encroaching into the drain. The drain is situated near the coastal area due to which tidal movements significantly affect the water flow and water levels in the final stretch of the drain. The encroachment, lateral outfalls, minor bed slope and tidal effect at the downstream portion were the major issues which required attention during the design of the treatment unit.

The summary of the physical details of the drain based on the observations during the site visit are mentioned in Table 2-1, as follows:

Table 2-1 : Site details for RK Mission Drain

S. No.	Point	Observation
1	Start point of drain	11°39'47.8"N, 92°45'02.3"E
2	End point of drain	11°39'59.4"N, 92°45'02.0"E
3	Length	360.0 m
4	Width	3.0 to 10.0 m (varying)
5	Bed level of nalla with respect to adjacent ground	1.0 to 1.2 m (varying)
6	Drain channelization	Yes
7	Bed strata	Cement concrete
8	Encroachment along drain	Yes
9	Nearby houses / residential colony	Yes
10	Open drain / closed drain	Open (Multiple access slabs are provided across the drain and encroachment at a downstream location was observed)
11	Impact of drain on adjacent houses	Minor impact (In rainy season during high precipitation, sometimes storm water flows out of the drain, thereby entering into the nearby vicinity)
12	Lateral outfalls entering into the drain	Yes
13	Possible constraints during construction	Multiple access slabs provided over the drain could pose problems to enter physically into the drain during the construction and fabrication works
14	Wastewater observation	High amount of floating matter was observed
15	Tidal influence	Tidal influence was observed at the final stretch of the drain, near the discharge point
16	Additional details	The existing walls and bed of drain were observed to be damaged for majority of stretch

Figure 2-1 : (A) Start point of the drain (B) Lateral outfalls in the drain (C) Encroachment over the drain (D) Wastewater sampling done for characterisation (E) Topographical survey of drain (F) Assessment of floating matter in the drain

(A)



(B)



(C)



(D)



(E)



(F)



3. Wastewater Quantification in Drain

Wastewater quantification is a thorough process that entails evaluating the volume of wastewater passing through a system. Precise flow measurement is key to design N-Treat based in-situ nalla treatment with the right capacity to manage the anticipated flow. Wastewater quantification for RK Mission drain comprised of volumetric assessment, conducted for the drain at multiple defined sections across different peak and non-peak time zones, using a digital flowmeter. The flow rate at a particular section was calculated based upon the average velocity recorded and the measured cross-sectional area of that section. It should be noted that the flow measurement was done for both peak and non-peak hours and the weighted average of both the readings is considered as the design flow.

The results of flow assessment for the RK Mission drain are as follows:

Table 3-1 : Velocity and flow calculation of RK Mission drain during peak hours

Section No.	Width (m)	Depth (m)	Area (m^2)	Average Velocity (m/s)	Flow of Section (m^3/s)	Total Flow (m^3/s)	Total Flow (m^3/h)
1	3.50	0.05	0.18	0.12	0.02	0.02	80.64
2	3.50	0.05	0.18	0.14	0.03		
3	2.00	0.10	0.20	0.11	0.02		
4	2.00	0.10	0.20	0.11	0.02		

The Table 3-1 represents the flow measurements carried out across four different sections of the drain, detailing width, depth, cross-sectional area, and average velocity of each section. These parameters are used to determine the flow rate for each section. As calculated in Table 3-1, the wastewater flow of RK Mission drain during peak hours is **80.64 m^3/h.**

Table 3-2 : Velocity and flow calculation of RK Mission drain during lean hours

Section No.	Width (m)	Depth (m)	Area (m^2)	Average Velocity (m/s)	Flow of Section (m^3/s)	Total Flow (m^3/s)	Total Flow (m^3/h)
1	1.00	0.10	0.10	0.11	0.01	0.01	41.07
2	1.00	0.10	0.10	0.11	0.01		
3	1.00	0.10	0.10	0.12	0.01		

As calculated in Table 3-2, the wastewater flow of RK Mission drain during lean hours is **41.07 m^3/h .**

Table 3-3 : Design flow calculation for RK Mission drain

S. No.	Peak Flow (m^3/h)	Peak Time (h)	Lean Flow (m^3/h)	Lean Time (h)	Average Flow (m^3/h)	Design Flow (MLD)
1	80.64	7	41.07	12	1057.32	1.06

The average flow of the RK Mission drain is determined by analysing the flow rates over different periods in a day. Specifically, the calculation considers a peak flow duration of seven hours, a lean flow duration of twelve hours. By considering these varying flow rates, the average daily flow for the drain is calculated to be 1.06 MLD. Hence, the proposed capacity for installation of N-Treat based in-situ Nalla treatment for RK Mission drain is **1.06 MLD**.

4. Details of N - Treat Technology

N-Treat technology, developed at IIT Bombay, is a simple, feasible, eco-friendly, and cost-effective solution designed for the treatment of wastewater disposed through open nallas. By treating the wastewater within the nalla itself, this in-situ treatment system eliminates the need for additional space, which is particularly beneficial in congested urban areas. This decentralized N-Treat technology provides an effective solution to the limitations of the conventional treatment systems.

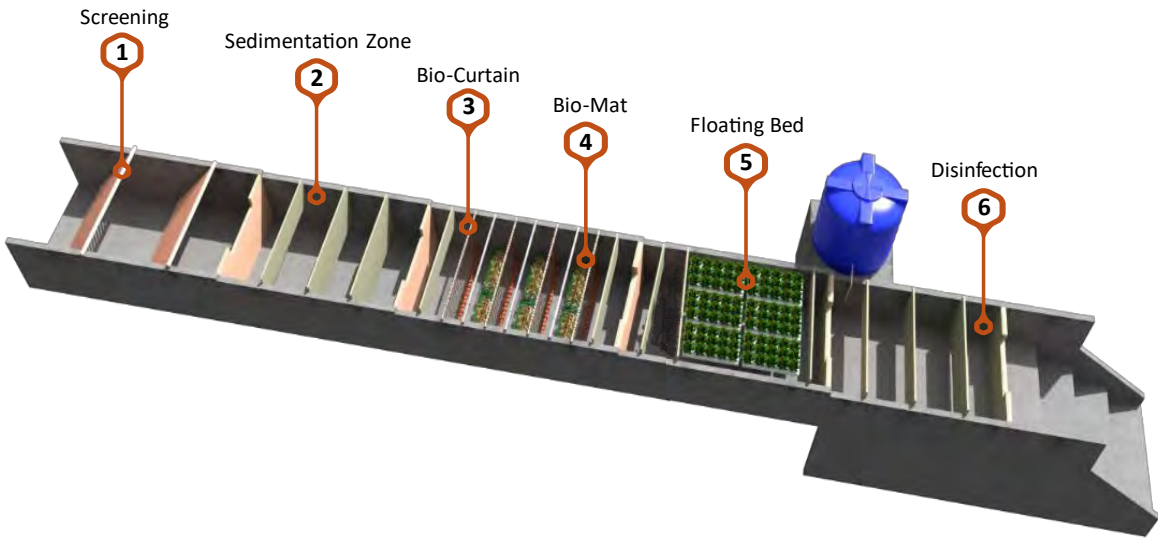
N-Treat technology uses a combination of physical and biological processes to treat wastewater flowing in the nallas. The unit operations can be deployed directly inside the nalla at defined stretches, to improve the water quality, thereby reducing the pollution load on the nearby water bodies. This technology requires negligible energy, has minimal maintenance requirements, and enhances the overall aesthetics of the area.

By integrating these features, N-Treat addresses the key challenges faced by conventional treatment systems and offers a sustainable approach to wastewater management in densely populated cities.

4.1. Components of N-Treat based In-situ Nalla Treatment

The N – Treat based in-situ nalla treatment consists of preliminary treatment units - coarse and fine screens to remove floating matter. Post this, the primary treatment involves a sedimentation zone wherein suspended solids settle down. The primary treatment is followed by a secondary treatment, consisting a series of biological treatment units to reduce the organic pollutants from the wastewater. Finally, before discharge, tertiary treatment includes dosing with sodium hypochlorite to eliminate residual pathogens. The components of the N – Treat based in-situ nalla treatment are shown in Figure 4-1.

Figure 4-1 : Pictorial Representation of unit operations in N-Treat



4.1.1. Screening

Screening is the first unit operation, which prevents the entry of floating particles into the treatment chain, at the onset of the treatment chain itself. Multiple screens are installed at an angle of 45 degrees with horizontal to avoid clogging and any physical damage to downstream treatment units and to ensure the proper functioning of the installed assembly.

Two types of screens shall be installed in series in the screening zone:

A. **Coarse Screens**: Larger floating matter, such as plastic bags, plastic bottles, debris etc. are removed using coarse screens, which have an opening of 40 mm.
B. **Fine screens**: Particles that bypass the coarse screen, are removed in a fine screen which have an opening of 10 mm. The fine screen prevents frequent clogging and cleaning of downstream unit zones.

The pictorial representation of coarse and fine screens is shown in Figure 4-2.

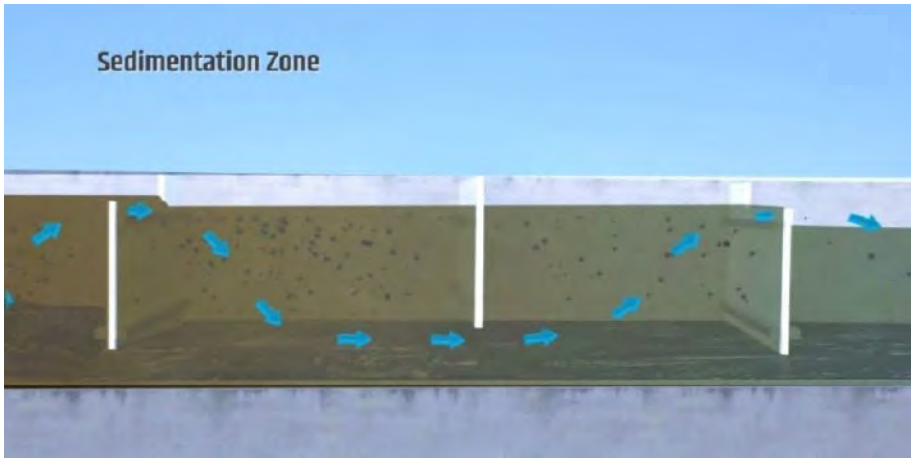
Figure 4-2 : Coarse and fine screens in the N-Treat



4.1.2. Sedimentation Zone

The process of deposition of the suspended particles from wastewater is referred to sedimentation. Suspended solids in the wastewater are allowed to settle in this zone. Multiple top baffles are deployed in the sedimentation zone to provide additional retention time for suspended solids to settle at the base of sedimentation zone, as it also helps the oil and scum to rise to the surface of wastewater while the remaining wastewater flows out continuously under the baffles. The oil and scum that is collected on the surface of wastewater is later skimmed and disposed of with waste. Also, the solids settled in the sedimentation zone are periodically removed so that it does not reduce the volume of the unit. The pictorial representation of sedimentation zone is shown in Figure 4-3.

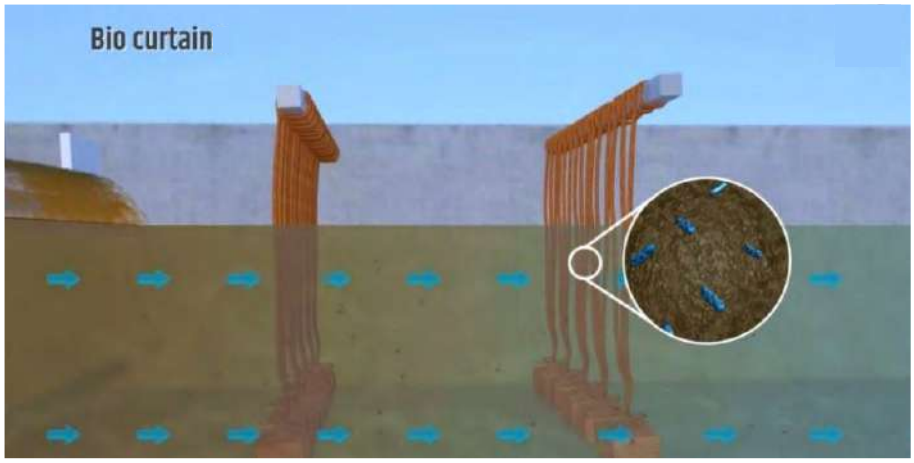
Figure 4-3 : Sedimentation zone in the N-Treat



4.1.3. Bio-Curtain

Bio-curtain is a curtain-like structure, wherein with the help of a hanger pipe, multiple chains of coconut coir are suspended into the nalla in a direction perpendicular to the flow of wastewater. These bio-curtains act as a filter media as well as provide a surface area for the growth of biofilm, which helps in reduction and decomposition of organic matter. Multiple segments of bio-curtains are provided to reduce the organic load from the wastewater. The pictorial representation of bio-curtain is shown in Figure 4-4.

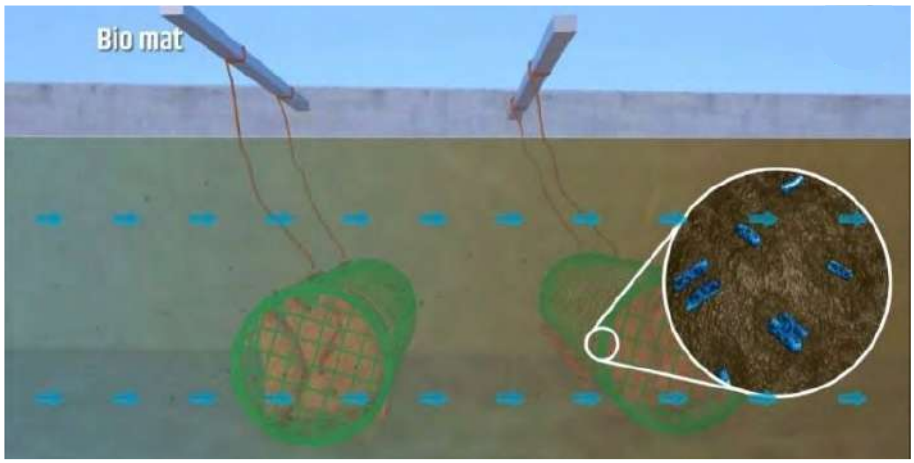
Figure 4-4 : Bio-Curtain installed in the N-Treat



4.1.4. Bio-Mat

Bio-mat is a cylindrical frame made of plastic mesh, wherein coconut coirs are stuffed in the frame. These frames are suspended into the nalla perpendicular to the flow. Coconut coir provides higher surface area for biofilm growth, thereby helping in the degradation of organic pollutants in water would take place helping in further reduction of BOD. The pictorial representation of bio-mat is shown in Figure 4-5.

Figure 4-5 : Bio-Mat installed in the N-Treat

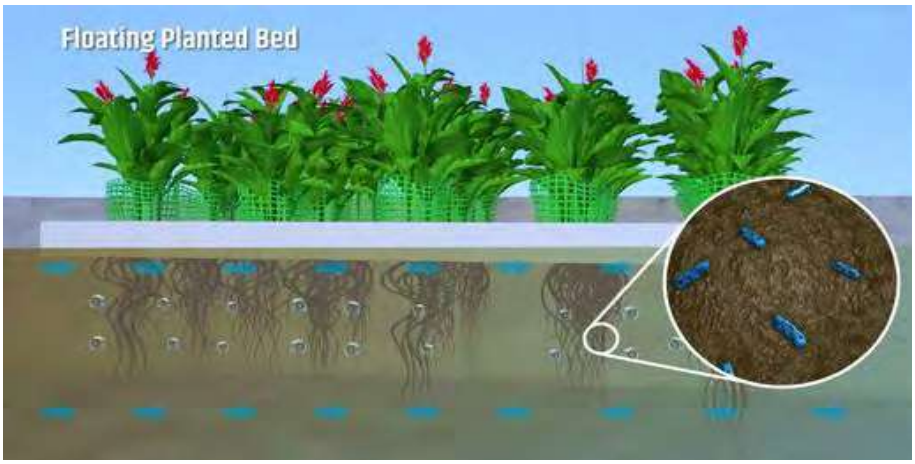


4.1.5. Floating Bed

Floating beds are systems where wetland plants grow on rafts that float on the surface of wastewater. The roots of plants hang freely in the wastewater, providing a large surface area for passive filtration by trapping suspended solids and promoting microbial growth. These plants uptake nutrients directly

from the wastewater, helping to reduce both organic and inorganic pollutants. The pictorial representation of floating beds is shown in Figure 4-6.

Figure 4-6 : Floating beds installed in the N-Treat



4.1.6. Disinfection

Disinfection helps in the removal of pathogenic microorganisms by damaging the cell wall, which results in cell lysis and death of microorganisms. Chlorine dosing in the treated wastewater removes around 98 to 99.99% of bacteria. Sodium hypochlorite is used as a disinfectant and a dosing tank is installed after the penultimate gate to provide proper mixing of the chemical and provide sufficient retention time after dosing for effective mixing. After disinfection, treated water is discharged into nearby water bodies. The pictorial representation of disinfection unit is shown in Figure 4-7.

Figure 4-7 : Disinfection unit installed in the N-Treat



4.2. Features of N-Treat Technology

N-Treat treats the wastewater inside the Nalla in the natural and environmentally friendly manner. The features of the N-Treat technology are as follows:

- Low capital cost
- Low operation and maintenance cost
- No electricity consumption
- No need of extra land for treatment

- Gravity flow (i.e., no pumping)
- No odour
- Beautiful aesthetics
- Helps in Riverfront development

***Note:** It is recommended that the N-Treat system shall be decommissioned at least 15 days prior to the start of monsoon period. The same is recommended so that the installed units do not obstruct the flow of the storm water in the monsoon period. The decommissioned system shall be recommissioned post-monsoon period.*

4.3. Treatment Efficiency of N-Treat Technology

The N-Treat system involves deployment of physical, biological and tertiary treatment units for the wastewater treatment. The physical operations in preliminary and primary treatment remove the floating and suspended particles from the wastewater. The biological treatment removes the organic matter and the tertiary treatment removes the harmful pathogens from the wastewater. This assembly yields a reduction in organic as well as inorganic pollutants. The treatment efficiency of N-Treat technology is shown in Table 4-1.

Table 4-1 : Treatment Efficiency of N –Treat technology

S. No.	Parameters	Units	Typical Inlet Concentration	Outlet Concentration*
1	BOD	mg/L	70-150	75-85% removal
2	COD	mg/L	100-200	70-80% removal
3	TSS	mg/L	100-150	85-95% removal
4	pH	-	6.5-8.5	6.5-8.5
5	TN	mg/L	20-50	<7.5
6	TP	mg/L	5	<1

**Treatment efficiency is subject to multiple factors like inlet wastewater characteristics, land availability on site, lateral wastewater intrusions, unidentified site challenges etc.*

5. Proposed Treatment Scheme

The proposed treatment scheme for RK Mission drain is designed based on the assessment of wastewater quantification, the available space at the Nalla and the physical observations done during the visits. The design aims to optimize the reduction of pollutants, ensure operational efficiency, and accommodate the physical constraints of the site while contributing positively to the surrounding environment.

5.1. Proposed Treatment Scheme for RK Mission drain

The wastewater flowing in Nalla is proposed to be treated within the Nalla itself by installing a combination of treatment units. These units can effectively reduce contaminants such as organic matter, nutrients, and pathogens, thereby improving the overall quality of the stream. As discussed in Section 3, the capacity of the proposed treatment plant is 1.06 MLD. Furthermore, as mentioned in Section 2.1, the final stretch of the RK Mission drain is affected by tidal flow. Multiple larger lateral inflows at the bed of the drain were observed into the downstream portion, which could pose problems in ponding. Moreover, a major encroachment was observed into the drain. Hence, the stretch of the N-Treat based in-situ nalla treatment system is proposed at the upstream location, wherein the stretch is not influenced by tidal effect and the access to carry out the works is clear.

By taking into consideration the design flow and available dimensions of drain, a stretch of 170 m in length, 5 m in width and 1 m as side water depth (SWD) is proposed for installation of treatment units. For effective ponding of wastewater, the existing drain shall be repaired as per the requirement.

The comprehensive design details of proposed treatment scheme are mentioned in Table 5-1:

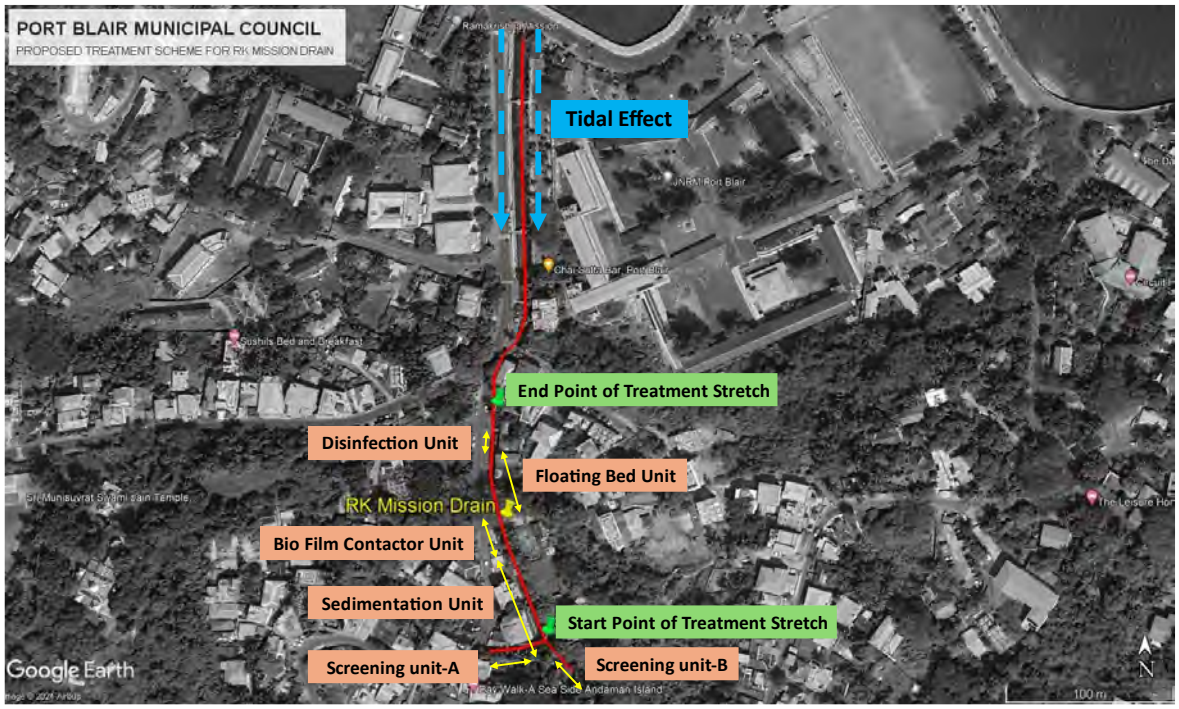
Table 5-1 : Details of N-Treat based in-situ nalla treatment at RK Mission drain

S. No.	Point	Observation
1	Capacity of N-Treat	1.06 MLD
2	Flow (Average)	0.01 m^3/s
3	Flow (Peak)	0.02 m^3/s
4	Length of Treatment Stretch	170.00 m
5	Width of Drain	5.00 m
6	SWD of Drain	1.00 m

The proposed unit operations are screening, sedimentation unit, bio-curtain, bio-mat, floating beds and disinfection.

As drain near AHW colony and drain adjacent to girl's hostel are merging to form RK Mission drain, two screens (40 mm and 10 mm opening size) in each of these drains are proposed considering the accessibility for removal of screened floating matter. Subsequently, all the treatment units are proposed to be installed in RK Mission drain. Following the screening units, the sedimentation zone along with floating beds are proposed for primary treatment of wastewater. For secondary treatment, the bio-curtains, bio-mats and floating bed units are proposed. The disinfection unit (Sodium hypochlorite dosing) is proposed for tertiary treatment. The proposed treatment units for RK Mission drain along with their locations are represented in Figure 5-1.

Figure 5-1 : Proposed Treatment Scheme and location of treatment units at RK Mission drain



6. Design Details

6.1. Design Details for RK Mission Drain

6.1.1. Design Data Sheet

INSTALLATION OF N-TREAT BASED IN-SITU NALLA TREATMENT

RK MISSION DRAIN

DESIGN SHEET

Design capacity of plant	1.06	MLD
Length of channel	170.00	m
Width of channel	5.00	m
SWD (initial stage)	1.00	m
Free board	0.30	m

BASIC DESIGN DETAIL: LENGTH OF DIFFERENT ZONES

S. No.	Particular	Length (m)	Width (m)	SWD* (m)	HRT- AVG (HR)
1	Screening unit- A	10.00	2.50	1.00	0.57
2	Screening unit - B	10.00	5.00	1.00	1.13
4	Settling zone-1 & Floraft	30.00	4.58	1.00	3.11
5	Settling zone-2 & Floraft	30.00	5.50	1.10	4.11
6	Settling zone-3 & Floraft	30.00	5.10	1.00	3.46
7	Bio-curtain	10.00	4.70	0.90	0.96
8	Bio-mat	10.00	5.00	0.80	0.91
9	Floating bed	30.00	5.25	0.80	2.85
10	Disinfection	10.00	4.90	0.70	0.78
	Total	**170.00**			**17.88**

6.1.2. Design Details – Channelization Work

Design Detail - Channelization Work			
S. No.	**Particular**	**Value**	**Unit**
1	**Dimension of Proposed Treatment**		
	Length of N-Treat	170.00	m
	Width of N-Treat	5.00	m
	SWD (Max)	1.00	m
	Free Board	0.30	m
	Total Height of N-Treat (excluding base work)	1.30	m
2	**MOC Details**		
	Footing and Channel Repair Works	RCC	As per IS 456: 2000, Under Severe Environmental Exposure Conditions
	PCC Work	M-20	
	RCC Work	M-30	
3	Thickness of Wall	200	mm
4	Depth of Wall	1.30	m
5	**Details of Gate Section**		
	Total Nos. of Gate Section	11	Nos.
	No. of Gates at Each Section (FRP gate)	2	Nos.
	No. of FRP Gates	22	Nos.
	Width of Gate	2.05	m
6	**Details of Baffle Wall**		
	Total Nos. of Baffle Wall sections	30	Nos.
	No. of Baffles at Each Section	2	Nos.
	Total No. of baffles	60	Nos.
	Width of Baffle	2.05	m
7	**Intermediate Supporting Column**		
	Numbers of Intermediate Supporting Column		
	Screening Unit (40 mm)	6	Nos.
	Screening Unit (10 mm)	6	Nos.
	Gates Sections	33	Nos.
	Baffle Sections	90	Nos.
	Total No. of Intermediate Supporting Columns	**135**	**Nos.**

S. No.	Particular	Value	Unit
	Height of Column	1.30	m
	Width of Column	0.30	m
	Thickness of Column	0.30	m
	Column Footing Details		
	Width of Footing	600	mm
	Length of Footing	600	mm
	Thickness of Stone Pitching (40 mm)	75	mm
	Thickness of Murum Bedding	75	mm
	Thickness of PCC	150	mm
	Thickness of Column Footing	600	mm
8	**Base Beam Details**		
	Number of Base Beams	22	Nos.
	Length of Base Beam	2.05	m
	Width of Base Beam	0.30	m
	Height of Base Beam	0.20	m

6.1.3. Design Details – Diversion Work

DESIGN DETAILS - DIVERSION WORK			
S. No.	**Particular**	**Value**	**Unit**
1	**Details of Coffer Dam**		
	Top Width	0.50	m
	Bottom Width	3.50	m
	Average Width	2.00	m
	Side Slope	1.5: 1	-
	Height	1.00	m
2	**Material Details**		
	Earth Material	-	-
	Moorum	75	mm
	Stone aggregate 20 mm nominal size	75	mm
	Stone aggregate 40 mm nominal size	75	mm
3	**RCC Pipe Details**		
	RCC Pipe Class	NP-3	-
	Diameter	300.00	mm
	Length	100.00	m

6.1.4. Design Details – Dosing Tank

DESIGN DETAILS - DOSING TANK			
S. No.	**Particular**	**Value**	**Unit**
1	MOC of Tank	Brick Work	
2	**Design Flow**	**1060**	**kLD**
3	**Dosing Requirement**		
	PPM Dosing	2.50	PPM
	Total Dosing Required	2.65	Kg
	Concentration of Stock Solution	10	%
		100000	mg/L
		0.1	Kg/L
	Total Stock Solution Required	26.5	Liters
	Ration of Stock Solution: Mixing Water	20	-
	Total Volume of Dosing Mixture	530	Liters
	Frequency of Refilling	1	Per Day
	Volume of Dosing Tank	**530**	**Liters**
	(SAY)	**530**	**Liters**
5	Wall Thickness	230	mm
6	**Dimension of Tank**		
	Length	**1.00**	**m**
	Width	**1.00**	**m**
	SWD	0.53	m
	Free Board	0.30	m
	Total Depth	**0.90**	**m**
7	**Base Work Details**		
	Thickness of Murum Bedding	75	mm
	Thickness of PCC	75	mm
	Thickness of Base Slab	200	mm
	Base Slab Projection	300	mm
8	Thickness of Top Slab	100	mm

6.1.5. Design Details – Coarse Screen (40 mm)

DESIGN DETAILS – COARSE SCREEN (40 MM)			
S. No.	**Particular**	**Value**	**Unit**
1	MOC	MS	-
2	Spacing of Bars	40	mm
3	Angle of Inclination	45	Degree
4	Bar Size	12	mm
5	Free Board	0.30	m
6	Width of Channel - A (T3-7)	5.00	m
7	Width of Channel - B (T3-3)	2.50	m
8	**Width of Each Screen**	**2.50**	**m**
9	Number of Screen Required for Channel - A (T3-7)	2.00	Nos.
10	Number of Screen Required for Channel - B (T3-3)	1.00	Nos.
11	**Total Number of Screens**	**3.00**	**Nos.**
12	SWD (Max)	1.00	m
13	Total Depth of Screen	1.30	m
14	Inclined Length of Bar	1.84	m
15	No of Vertical Bars	50	Nos.

6.1.6. Design Details – Fine Screen (10 mm)

DESIGN DETAILS - FINE SCREEN (10 MM)			
S. No.	**Particular**	**Value**	**Unit**
1	MOC	MS	-
2	Spacing of Bars	10	mm
3	Angle of Inclination	45	Degree
4	Bar Size	12	mm
5	Free Board	0.30	m
6	Width of Channel - A (T3-7)	5.00	m
7	Width of Channel - B (T3-3)	2.50	m
8	**Width of Each Screen**	**2.50**	**m**
9	Number of Screen Required for Channel - A (T3-7)	2.00	Nos.
10	Number of Screen Required for Channel - B (T3-3)	1.00	Nos.
11	**Total Number of Screens**	**3.00**	**Nos.**
12	SWD (Max)	1.00	m
13	Total Depth of Screen	1.30	m
14	Inclined Length of Bar	1.84	m
15	No of Vertical Bars	115	Nos.

6.1.7. Design Details – Gates

DESIGN DETAILS - GATES			
S. No.	**Particular**	**Value**	**Unit**
1	MOC of Frame of Gate	MS	-
2	MOC of Gate Sheet	FRP	-
3	**Total Number of Gate Sections**	**11**	**Nos.**
4	**Number of Gates at Each Section**	**2**	**Nos.**
	Depth of Gate	Qty.	
	0.80 m	7	Nos.
	0.60 m	3	Nos.
	0.50 m	1	Nos.
	Average Depth for Estimation	**0.72**	**m**
5	**Total Number of FRP Gates**	**22**	**Nos.**
6	**Dimension of Gate**		
	Width of Each Gate	2.05	m
	Depth of Each Gate	0.72	m
7	**Framework for Gate**		
	MOC	MS Pipe	
	Pipe Section	30 x 30 x 3	
	Nos. of Vertical Support	2	Nos.
	Length of Vertical support	0.66	m
	Nos. of Horizontal Support	1	Nos.
	Length of Horizontal Support	1.93	m
8	**Supporting Work in Channel**		
	MS Channel Section	100 x 50 x 5	-
	Side Support	0.72	m
	Bottom Support	2.05	m

6.1.8. Design Details – Baffle Walls

DESIGN DETAIL – BAFFLE WALLS			
S. No.	**Particular**	**Value**	**Unit**
1	MOC for Baffle Sheet	FRP Sheet	-
2	MOC for Frame of Baffle	MS	-
3	**Total Number of Baffle Sections**	**30**	**Nos.**
4	**Number of Baffles at Each Section**	**2**	**Nos.**
	Depth of Baffle	Qty.	
	0.20	5.00	Nos.
	0.40	4.00	Nos.
	0.45	5.00	Nos.
	0.50	9.00	Nos.
	0.55	5.00	Nos.
	0.60	2.00	Nos.
	Average Depth for Estimation	**0.44**	**m**
5	**Total Nos. of Baffles**	**60**	**Nos.**
6	**Dimension of Baffle**		
	Width	2.05	m
	Average Depth	0.44	m
7	**Framework for Baffle**		
	MOC	MS Pipe	
	Pipe Section	30 x 30 x 3	
	Nos. of Vertical Support	2	Nos.
	Length of Vertical support	0.38	m
	Nos. of Horizontal Support	1	Nos.
	Length of Horizontal Support	1.93	m
8	**Supporting Work in Channel**		
	MS Channel Section	100 x 50 x 5	-
	Side Support	0.44	m
	Bottom Support	2.05	m

6.1.9. Design Details – Bio Curtain Unit

DESIGN DETAILS - BIO CURTAIN UNIT			
S. No.	**Particular**	**Value**	**Unit**
1	**MOC**		
	Bio Curtain	Coconut Coir	-
	Top Hanger	MS	-
	Bottom Support	Brick	-
2	**Total Nos. of Bio Curtain**		
	Effective Length of Bio Curtain Zone	7.00	m
	Spacing Between 2 Bio Curtain Units	0.60	m
	No of Bio Curtain Units	13.00	Nos.
3	**Drain Detailing**		
	SWD	0.90	m
	Free Board	0.30	m
	Height of Wall	1.30	m
4	**Bio Curtain Detailing**		
	Width of Channel	5.00	m
	Nos. of Groups in Each Curtain	18.00	Nos.
	Nos. of Rope In Each Groups	6.00	Nos.
	Length of Each Rope	1.80	m

6.1.10. Design Details – Bio Mat Unit

DESIGN DETAILS - BIO MAT UNIT			
S. No.	**Particular**	**Value**	**Unit**
1	**MOC**		
	Bio-Mat Frame	PVC	-
	Bio-Mat Filling	Coconut Coir	-
	Top Hanger	MS	-
	Bottom Support	Brick	-
2	**Total Nos. of Bio-Mat**		
	Effective Length of Bio-Mat Zone	7.00	m
	Spacing Between 2 Bio-Mat Units	0.60	m
	No of Bio Mat Units	13	Nos.
3	**Drain Detailing**		
	Width of Channel	5.00	m
	SWD	0.80	m
	Free Board	0.30	m
4	**Bio-Mat Detailing**		
	Standard Width of PVC Garden Nylon Net	1.00	m
	Length of Bio Mat	1.00	m
	Perimeter of Plastic Mesh	1.00	m
	Diameter of Circular Ends	0.32	m
	Nos. of Bio-Mat at Each Section	2	Nos.

6.1.11. Design Details – Floraft Unit

DESIGN DETAILS - FLORAFT UNIT			
S. No.	**Particular**	**Value**	**Unit**
1	**MOC**		
	Beds	PVC Nylon Mesh/ Heatlon Sheet	-
	Wetland Plants	Canna Indica	-
2	**Total Quantity of Floraft Unit**		
	Length of Floraft Zone	30.00	m
	Length of Settling Zone (1,2 & 3)	90.00	m
	Total Length of Floraft	120.00	m
	Width of Floraft	4.70	m
3	**Details of Floating Beds**		
	Thickness of Sheet	100	mm
	Nos. of Plant/Sqm	4	Nos.
	Standard Width of PVC Garden Nylon Net	1.00	m
	Height of Plastic Mesh	450.00	mm
	Perimeter of Plastic Mesh	600.00	mm
	Length of Bottom Surface	200.00	mm

6.1.12. Design Details Sludge Drying Bed

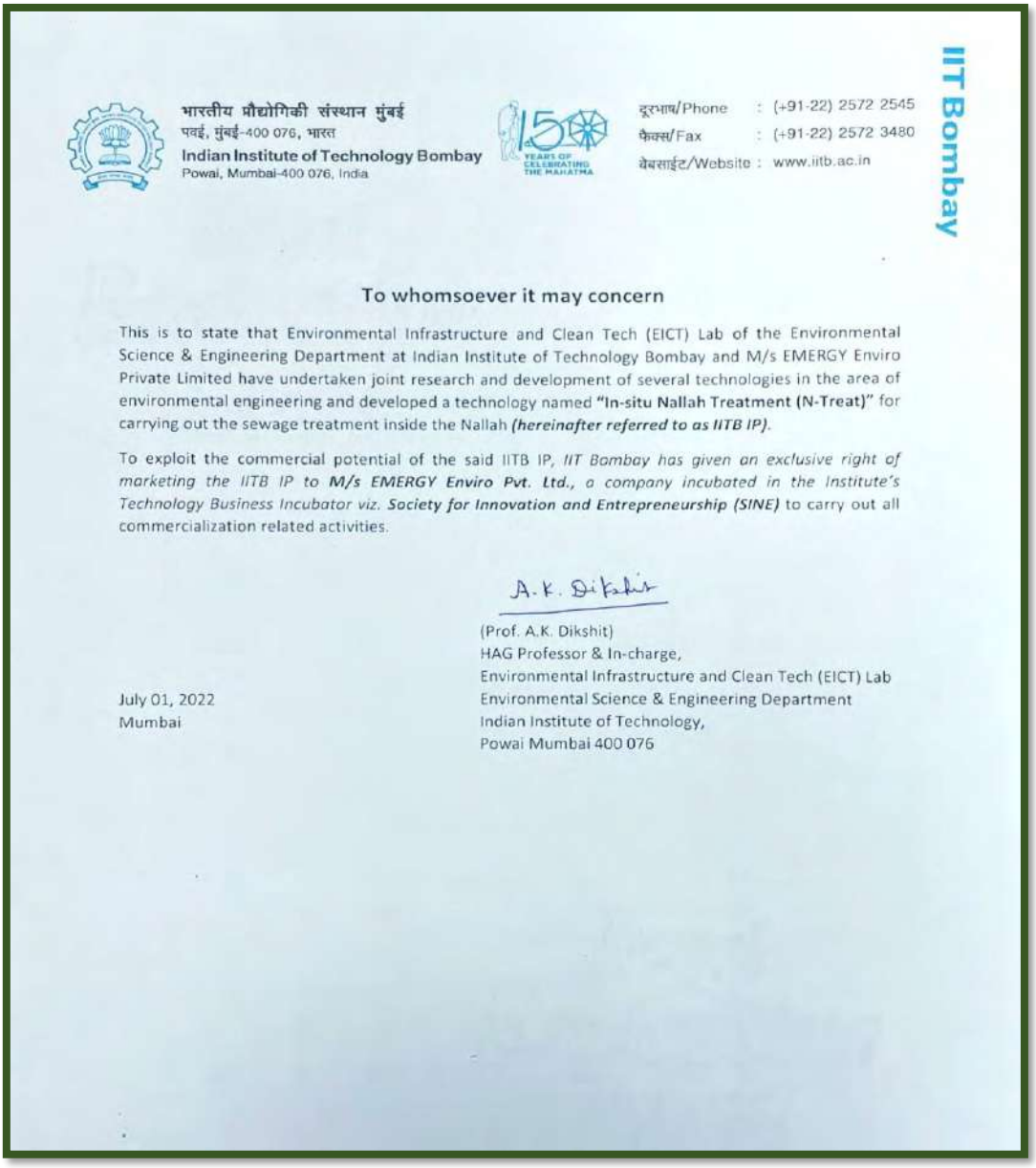
S. No.	Particular	Value	Unit
[1]	[2]	[3]	[4]
A	**Sludge Volume Calculation**		
	I: RK Mission Drain		
1	Design Capacity of Nalla	1060	kLD
2	Total suspended solids in raw sewage	125	mg/L
3	TSS Removal in primary treatment	60	%
4	Quantity of sludge generated (Considering removal of Sludge 4 times a year)	5366.25	Kg/ cleaning
	Quantity of sludge to be removed in a day	**1788.75**	**Kg/ day of cleaning**
5	Consistency of Sludge (% of Solid)	10	%
		100	Kg/m^3
6	Volume of Settled Sludge	17.89	m^3/cleaning
7	% of VSS	50.00	%
8	Reduced Volume of Sludge	8.94	m3/cleaning
B	**Area Requirement for Sludge Drying Bed**		
	Number of trolleys considered	2	Nos
	Number of trips per trolley	2	Nos
	Cycle of desludging	20	Days
1	Volume of sludge generated	1.12	m^3/cleaning
2	Depth of sludge application	0.4	m
3	Total plan area for sludge drying	2.79	m^2
4	**Width of Bed**	**1.50**	**m**
5	Required Length of Bed	1.86	m
6	**Provided Length of Bed**	**2.50**	**m**
C	**Design of Filter Media**		
1	**Sand bed (Top Layer)**		
	Depth	0.30	m
	Effective size	0.75	mm
	Coefficient of uniformity of sand	4.00	
2	**Gravel bed (Bottom Layer)**		
	Depth	0.30	m
	Size of gravel (Top 30 mm Layer)	3 to 6	mm
3	**Underdrains**		
	Distance between gravel layer bottom and top of underdrain	0.15	m
	Diameter	0.11	m
	MOC	PVC	
	Length of Manifold	1.50	m

S. No.	Particular	Value	Unit
[1]	[2]	[3]	[4]
	Spacing between Manifold	0.75	m
	No of Manifold Required	3	Nos.
	Spacing between Laterals	0.5	m
	No of Lateral (On both side) / Manifold	4	Nos.
	Length of Lateral	1.00	m
	Total No of Lateral	16.00	Nos.
	Total Length of pipe	20.50	m
4	**Free Board**	0.45	m
5	**Total Depth**	1.45	m
E	**Length of drainage pipe from bed to Nalla**	**100**	**m**

Note: The calculations are done considering that the sludge pumped from the primary settling unit is discharged to drying bed, without thickening of sludge.

7. Annexure

7.1. Annexure I: Letter from IIT Bombay



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IIT Bombay

To whomsoever it may concern

This is to state that Environmental Infrastructure and Clean Tech (EICT) Lab of the Environmental Science & Engineering Department at Indian Institute of Technology Bombay and M/s EMERGY Enviro Private Limited have undertaken joint research and development of several technologies in the area of environmental engineering and developed a technology named **"In-situ Nallah Treatment (N-Treat)"** for carrying out the sewage treatment inside the Nallah ***(hereinafter referred to as IITB IP)***.

To exploit the commercial potential of the said IITB IP, *IIT Bombay has given an exclusive right of marketing the IITB IP to* ***M/s EMERGY Enviro Pvt. Ltd.****, a company incubated in the Institute's Technology Business Incubator viz.* ***Society for Innovation and Entrepreneurship (SINE)*** to carry out all commercialization related activities.

A. K. Dikshit

(Prof. A.K. Dikshit)
HAG Professor & In-charge,
Environmental Infrastructure and Clean Tech (EICT) Lab
Environmental Science & Engineering Department
Indian Institute of Technology,
Powai Mumbai 400 076

July 01, 2022
Mumbai

7.2. Annexure II: Pictures of Implemented Shillong N- Treat Project

Figure 7-1 : Installed N-Treat Project at Shillong, Meghalaya





Figure 7-2: Installed N-Treat Project at Shillong, Meghalaya





Figure 7-3: Installed N-Treat Project at Shillong, Meghalaya



Figure 7-4: Installed N-Treat Project at Shillong, Meghalaya



HYDROCHEMISTRY
GROUNDWATER QUALITY SCENARIO IN ANDAMAN & NICOBAR ISLANDS (2022-23)

Groundwater serves as the primary drinking water source for both urban and rural populations in India, and its significance extends beyond drinking purposes to irrigation and industrial applications. The increasing demand for groundwater is bolstered by advanced pumping techniques, promoting community reliance on this resource in modern times. However, the suitability of groundwater for specific uses heavily depends on its quality, which is influenced by both natural factors and human activities. Throughout its journey via pore spaces and weathered formations, groundwater undergoes diverse hydrochemical mechanisms that can alter its composition. To ensure the sustainability of the ecosystem, it is crucial to effectively assess the physico-chemical parameters, their sources, and the control of hydrogeochemical processes. Addressing groundwater quality degradation has emerged as a critical environmental concern, particularly due to its direct impact on public health. Hence, systematic monitoring of groundwater is essential to safeguard the well-being of communities relying on this vital resource.

To ensure preventive measures for providing the safe drinking water among population and in order to study the geochemical characteristics and potability assessment for groundwater; 110 no. representative samples from different locations of entire Andaman and Nicobar Islands have been collected during pre-monsoon season 2022. Analytical result thus obtained on chemical analysis has been studied critically and interpretation made accordingly **(Annexure).**

Hydrogen Ion Concentration (pH)

pH is a measure of the balance between the concentration of hydrogen ions and hydroxyl ions in water. The pH of water provides vital information in many types of geochemical equilibrium or solubility calculations. The groundwater pH of the samples collected from Andaman and Nicobar Islands during AAP 2022 – 23 shows neutral to mildly alkaline in nature with pH value ranged from 7.03 (Corbyn's Cove, South Andaman) to 8.29 (Mount Harriyat, South Andaman) with an average value of 7.86 ± 0.20. No sample was found with pH values beyond the permissible limit of 6.5 - 8.5 as Per BIS: 2012.

Total Dissolved Solids (TDS)

As per the BIS:2012 specifications, the recommended TDS (Total Dissolved Solids) level for drinking water is 500 mg/L, while the maximum permissible limit is set at 2,000 mg/L. In the studied area, the TDS values range from a minimum of 58 mg/L to a maximum of 1750 mg/L, indicating that all groundwater samples fall within the permissible limit. Only 6% of the analysed samples showed TDS values above the acceptable limit of 500 mg/L, and none of the samples had TDS values higher than the permissible limit of 2000 mg/L for drinking purposes. Notably, the samples with TDS values exceeding the acceptable limit are all from the South Andaman District.

Table: 01 Chemical qualities of groundwater samples of Andaman & Nicobar Islands (2022-23) showing the maximum and minimum values vis-à-vis drinking water standards (IS 10500:2012)

Constituents		A&N Islands		IS 10500:2012	
		Range	Average	Acceptable Limit	Permissible Limit
pH		7.03 - 8.29	7.62 ± 0.24	6.5-8.5	6.5-8.5
EC (µs/cm) 25ºC		98 - 3079	472 ± 344	-	-
TDS	mg/L (ppm)	58 - 1750	273 ± 197	500	2000
Carbonate alkalinity as $CaCO_3$		-	-	-	-
Bicarbonate alkalinity as $CaCO_3$		18 - 403	189 ± 89	-	-
Total alkalinity as $CaCO_3$		15 - 330	155 ± 73	200	600
Chloride		7 - 854	47 ± 88	250	1000
Sulphate		0 - 131	21 ± 20	200	400
Nitrate		0 - 24	2 ± 5	45	45
Fluoride		0.00 - 1.06	0.19 ± 0.26	1	1.5
Calcium (as Ca)		2 - 46	23 ± 9	75	200
Magnesium (as Mg)		2 - 98	26 ± 18	30	100
Total Hardness (as $CaCO_3$)		30 - 510	163 ± 79	200	600
Sodium		4 - 465	36 ± 53	-	-
Potassium		0 - 26	3 ± 3	-	-
Iron		0.00 - 7.06	0.86 ± 1.21	1.0	NR
Uranium		0.00 - 0.01	0.00 ± 0.00	0.03	NR

Electrical Conductivity (EC)

Electrical conductivity is often used as a proxy for estimating the salinity of water. Higher EC values generally correspond to higher salinity levels, which can be an important factor in water quality assessment. Electrical Conductivity (EC) also serves as an approximate indicator of the total dissolved substance content in water and is influenced by factors like temperature, concentration, and the types of ions present (Hem 1985). In the groundwater of Andaman & Nicobar Islands, there exists a wide range of EC and Total Dissolved Solids (TDS) values, implying significant variations in dissolved constituents. The EC levels in the groundwater span from 98 µS cm^{-1} (Kishorinagar, North and Middle Andaman) to 3079 µS cm^{-1} (Ograbraj, South Andaman), with an average value of 472 ± 344 µS cm^{-1} and median value of 397 µS cm^{-1}.

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It is important to note that the World Health Organization (WHO) prescribes a desirable limit of 750 µS cm^{-1} for EC in drinking water. Based on this classification, EC levels can be categorized as follows: type I (low enrichment of salts) if EC < 1,500 µS cm^{-1}, type II (medium enrichment of salts) if EC falls between 1,500 and 3,000 µS cm^{-1}, and type III (high enrichment of salts) if EC > 3,000 µS cm^{-1}. According to this classification, most of the samples (98%) belong to type I, indicating low enrichment of salts, with only one sample falling under each of the type II and Type III, indicating medium to high enrichment of salts. The relatively higher EC value reported from only one source could also indicate potential contamination from human activities, such as industrial processes or agricultural practices, which may release salts or other dissolved substances into the groundwater. The water may be considered more saline, potentially limiting its suitability for drinking or irrigation purposes without appropriate treatment. Since for a large number sources Electrical Conductivity values are not alarming, it can be inferred that currently there is no sign of saline water intrusion observed in the study area.

Table: 02 Drinking Water Suitability as per the Physicochemical Constituents of Andaman & Nicobar Islands (2022-23, Total number of samples Analysed - 110)

Constituents		Acceptable Limit	Permissible Limit	No of Samples beyond Acceptable Limit	Percent of Samples beyond Acceptable Limit (%)	No of Samples beyond Permissible Limit	Percent of Samples beyond Permissible Limit (%)
pH	mg/L (ppm)	6.5-8.5	No Relaxation	0	-	0	-
TDS		500	2000	7	6	0	-
Total alkalinity as $CaCO_3$		200	600	29	26	0	-
Chloride		250	1000	2	2	0	-
Sulphate		200	400	0	0	0	-
Nitrate		45	No Relaxation	0	0	0	-
Fluoride		1	1.5	1	1	0	-
Total Hardness (as $CaCO_3$)		200	600	28	25	0	-
Calcium (as Ca)		75	200	0	0	0	-
Magnesium (as Mg)		30	100	33	30	0	-
Iron		1	No Relaxation	19	17	19	17
Uranium		0.03	No Relaxation	0	0	0	-

Major Cations

Total hardness (TH)

Total hardness as $CaCO_3$ in the groundwater of A&N Islands ranges from 30 to 510 mg/L (Ograbraj, South Andaman district). Groundwater of the entire study area lies within the maximum permissible limit prescribed by BIS: 2012. The analytical result indicates the water in the study area is hard to very hard. The hardness of the water is due to the presence of Carbonate and Bicarbonate salts of alkaline earths such as calcium and magnesium.

The quality of groundwater in terms of Total Hardness as $CaCO_3$ has been found as Moderately hard (31% of Total analysed samples) to hard (51% of Total analysed samples). The detail distribution is represented in Table: 03. (Fig: 01)

Table: 03 Hardness Classification of groundwater of A&N Islands (2021 - 22)

Water Class	TH as CaCO3 in mg/L	No. of Samples	% of Samples
Soft	<75	19	17
Moderately Hard	75–150	34	31
Hard	150–300	51	46
Very Hard	>300	06	05

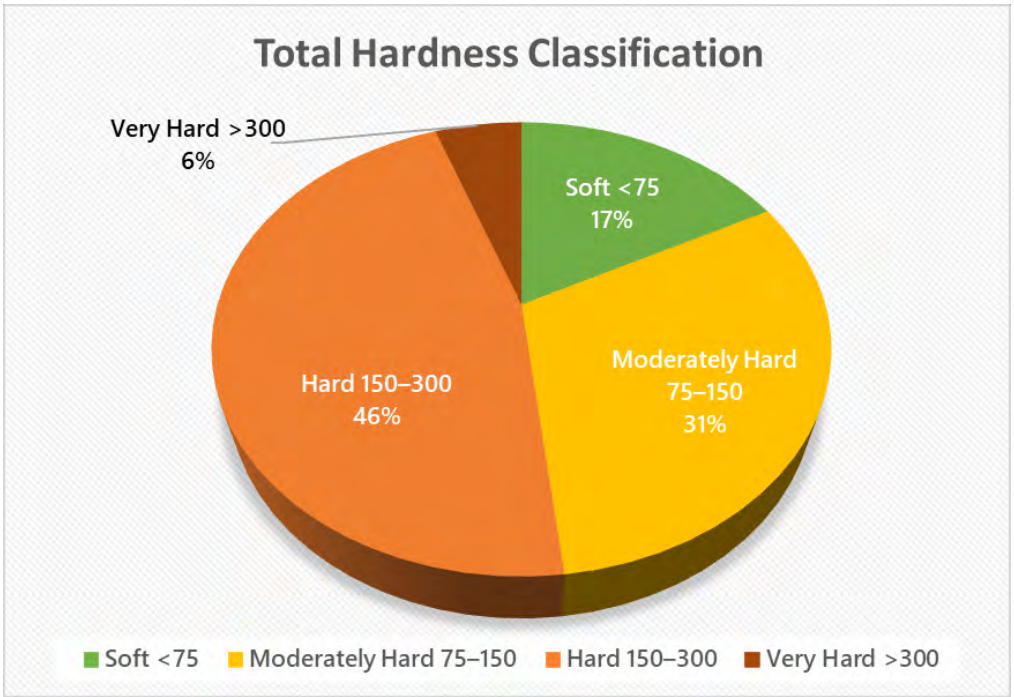


Fig:01 Classification of Groundwater based on Total Hardness

Calcium and Magnesium (Ca and Mg)

Calcium and magnesium are the most dominant elements found in natural surface and groundwater, primarily existing as bicarbonates and, to a lesser extent, as sulfates and chlorides. Higher Ca^{2+} content in water is considered undesirable for domestic purposes as it leads to encrustation and scaling issues. Therefore, it is crucial to monitor and control calcium levels in drinking water to ensure its suitability for human consumption and avoid potential problems associated with excessive calcium content. The concentration of Ca^{2+} in the study area varies from 02 to 46 mg/L (observed at Sippighat, South Andaman District). According to the specified limits by BIS 2012 for calcium concentration in drinking water, it has been observed that none of the groundwater samples from the study area have surpassed the either the desirable or the maximum permissible limit of 200 mg/L for calcium.

Magnesium content is varying from 2 to 80 mg/L (Ograbraj, South Andaman District). The maximum permissible limit of Mg^{2+} concentration of drinking water is specified as 100 mg/L (BIS 2012). No sample was found having Mg concentration higher than the maximum permissible limit.

Sodium and potassium (Na and K)

Sodium, ranking sixth among the most abundant elements, is a common presence in natural waters. However, it is generally found in low concentrations in freshwater. The observed concentration of Na+ in groundwater of the study area was varies in the range of 4 to 465 mg/L (Ograbraj, South Andaman). Consuming high levels of sodium can lead to health issues such as increased blood pressure, arteriosclerosis, oedema, and hyperosmolarity. Additionally, groundwater with high sodium content is not suitable for agricultural use as it can deteriorate the soil.

On the other hand, potassium is a naturally occurring element, but its concentration in groundwater remains relatively low compared to calcium, magnesium, and sodium. This is because potash feldspars, which contain potassium, are highly resistant to chemical weathering in the environment. The groundwater K^{+} concentration range has been observed between Traces to 26 mg/L (Ograbraj, South Andaman).

Major Anions

Chloride:

The presence of chloride in groundwater can originate from various sources, including weathering, sedimentary rock and soil leaching, intrusion of saltwater, salt in precipitation carried by wind, discharge of domestic and industrial waste, and municipal effluents. In the A&N Islands, the chloride concentration in groundwater ranges from 07 to 854 mg/L in the Ograbraj area of the South Andaman district. Except for two groundwater samples, all others have chloride levels within the acceptable limit for drinking water (250 mg/L, as per BIS: 2012). In natural waters, the concentration of chloride is closely related to sodium content and specific conductance. Groundwater with low levels of chloride and sodium indicates its fresh nature, which in turn suggests that it is replenished directly from rainfall every year.

Carbonate & Bi carbonate:

Carbonate has not been detected from groundwater of A&N Islands and Bicarbonate concentration ranged from 18 to 403 mg/L. The maximum concentration of HCO_3^- was found at Vijaynagar, South Andaman district. Almost 27% of the analysed sample showed Total alkalinity value higher than Acceptable Limit of 200 mg/L and no sample having value higher than the permissible limit of 600 mg/L for drinking purpose (BIS: 2012). Mostly Bicarbonate is the dominant ion, except in the groundwater, occurring near the coast. The higher concentration of HCO_3^- in the water points to the dissolution of carbon dioxide (CO_2) in water, which occurs during the weathering of rocks, dissolution of minerals or through the decomposition of organic matter.

Sulphate, Nitrate & Fluoride:

Nitrate concentration of the analysed samples ranged from traces to 24 mg/L (Shadipur, South Andaman). No sample showed NO_3 concentration higher than the permissible limit of 45 mg/L (BIS: 2012).

Sulphate is one of the major anions occurring in natural waters. Concentration of Sulphate ion ranged from traces to 131 mg/L at Ferrarganj, South Andaman district. None of the analysed samples showed higher sulphate concentration than the Acceptable limit of 200 mg/L (BIS: 2012). Evaporite deposits are formed when shallow water bodies evaporate, leaving behind concentrated solutions of dissolved salts. In such settings, sulphate ions can combine with Calcium (Ca^{2+}) and water (H_2O) to form gypsum, which is a hydrated Calcium Sulphate mineral. Anhydrite can also form if the conditions are drier and the water loss is more extensive, leading to the dehydration of gypsum. Formation of gypsum or anhydrite is a natural process and can occur over long geological timescales. When these minerals form, they may remove sulphate from the water, contributing to lower levels in groundwater.

Fluoride ion concentration varied from Traces to 1.06 mg/L, detected from Namunagar of South Andaman district with a mean of 0.19 ± 0.26 mg/L. None of the analysed sample showed higher Fluoride concentration than the permissible limit of 1.5 mg/L (BIS: 2012).

Heavy Metal

Iron

The presence of high concentrations of iron in groundwater is a common water quality issue and apart from anthropogenic factors it can be attributed to several natural phenomenon like – 1. Geological Sources: The geological composition of the aquifer plays a significant role in determining the iron content in groundwater. Iron naturally occurs in various rock formations and minerals. When water encounters iron-rich rocks and spends longer residence times, it may allow more iron to dissolve leach into the groundwater. 2. Redox Reactions: Iron exists in different forms, including ferrous iron (Fe^{2+}) and ferric iron (Fe^{3+}). The solubility of iron in water is influenced by redox conditions. In anaerobic (low-oxygen) environments, such as confined aquifers or waterlogged soils, iron can be reduced from its oxidized form (Fe^{3+}) to its more soluble form (Fe^{2+}). This soluble ferrous iron is more likely to be

present in high concentrations in groundwater. In A&N Islands, groundwater Iron content ranged between Traces to 7.06 mg/L detected from 8 no. Shol Bay, South Andaman District. Only 17% of analyzed samples were found to have Fe concentration more than permissible limit of 1.0 mg/L as per BIS (2012).

Uranium

Uranium, a naturally occurring radioactive element, is found in low concentrations in various natural sources like soils, rocks, particularly granites and metasedimentary rocks, and younger sedimentary deposits. The presence of Uranium in water can occur through leaching from soil and rocks or as a result of releases from processing plants. In the A&N Islands, the groundwater's Uranium content ranges from traces to 0.012 mg/L, with the highest concentration detected in Mangluton of the South Andaman district, averaging 0.002 ± 0.003 mg/L. Fortunately, none of the analyzed samples exceeded the permissible limit of 0.03 mg/L as set by the Bureau of Indian Standards (BIS: 2012).

Hydro-geochemical Facies

The representation of groundwater composition is best suited for linear plots. One widely used and modified trilinear diagram, introduced by Piper in 1944, is employed to analyze the hydrochemical regime of the study area. By plotting the analytical values obtained from the groundwater samples on the Piper trilinear diagram, we gain valuable insights into the variations of cation and anion concentrations in the study area. The diagram, presented in Fig. 2a, offers a clear visualization of the groundwater's chemical characteristics and facilitates the identification of prevailing hydrochemical trends. By analyzing the trilinear diagram, it becomes possible to discern patterns and relationships between different ions, which can be crucial for managing water resources and making informed decisions regarding sustainable water usage and environmental protection.

The groundwater samples analyzed from the study area exhibit relatively consistent major ion compositions. In approximately 95% of the samples, magnesium (Mg^{2+}) and/or calcium (Ca^{2+}) ions dominate, while the primary anion detected in around 96% of the samples is bicarbonate (HCO_3^-). According to the Piper Trilinear diagram, the cationic concentration in the groundwater chemistry does not show any dominant type across the Andaman & Nicobar Islands. However, in terms of anionic concentration, the samples are characterized by the HCO3- type.

According to the Chadhas Diagram (Fig. 2b), more than 90% of the groundwater samples have been categorized as either Ca^{2+}-Mg^{2+}-HCO_3^- or Ca^{2+}-Mg^{2+}-Cl^-, indicating a prevalence of similar ion compositions in the region. This observation points to a significant water-rock exchange process and a modern recharge mechanism in the area, suggesting active interactions between the groundwater and surrounding geological formations. It is worth noting that all the analyzed samples originate from shallow groundwater aquifers, which are characterized by being recharged with fresh water. The dominant hydrochemical process influencing the water is weathering-solubilization, wherein minerals in the aquifer bedrock dissolve, leading to the observed cation and anion compositions in the groundwater.

The study area is abundant in fresh groundwater characterized by the Ca-HCO_3 or Mg-HCO_3 type, indicating the presence of relatively pure and uncontaminated water sources. Additionally, the low levels of sodium and chloride content in the groundwater signify the absence of any significant salinity hazards throughout the study area at the present time. This valuable information aids in making informed decisions to protect the groundwater from potential contamination and to ensure its optimal utilization for various purposes, including drinking water supply and agricultural needs. Continual monitoring and further research will be essential to track any changes in groundwater quality and to maintain the region's water resources in a healthy state for future generations.

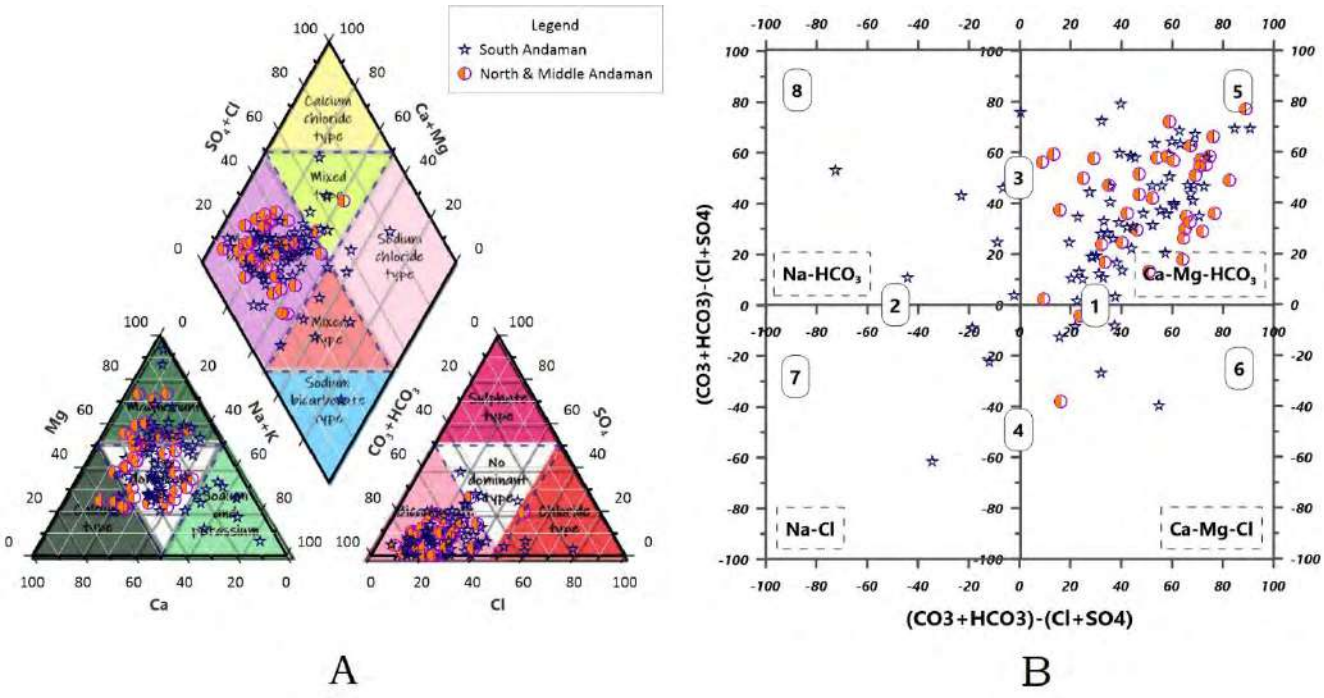


Figure:02 Samples of the Study Area of Andaman and Nicobar Islands plotted in Piper trilinear diagram (A) and modified Piper diagram (Chadha, 1999) (B) for hydrogeochemical facies

Assessment of Groundwater Suitability for Irrigation Purposes

Understanding the salinity hazards of the groundwater samples is crucial for making informed decisions regarding irrigation practices. Careful consideration of the salinity classes will enable effective water resource management and appropriate crop selection, ensuring sustainable agricultural practices and maintaining soil health in the study area.

High sodium content in water samples can have detrimental effects on soil permeability, leading to a reduction in available water for plants. The presence of excessive sodium in the water can lead to the displacement of adsorbed calcium and magnesium in the soil, posing a hazard as it causes structural damage and compaction, resulting in impervious soil. This compromised soil structure can negatively impact plant growth and agricultural productivity. In the context of this report, the assessment of groundwater suitability for irrigation is conducted by employing irrigation indices, specifically the USSL salinity and Wilcox diagrams. These tools are commonly used in agricultural and environmental

studies to evaluate the potential impacts of water quality on soil and crop health. The USSL salinity diagram helps in understanding the salinity hazards posed by the groundwater. High salinity levels and elevated SAR values in the water may lead to soil degradation and reduced crop yield if not managed appropriately. The Wilcox diagram, on the other hand, evaluates the potential risk of sodium-induced soil degradation caused by the irrigation water.

Sodium adsorption ratio (SAR) and USSL diagram

US salinity hazards (USSL 1954) diagram (Fig: 03a) reveal that for most groundwater samples fall under C1–S1 (low-salinity hazard and low-sodium hazard) to C3–S1 (high-salinity hazard and low-sodium hazard) class. Only one sample falls in each of the C3-S2 (high-salinity hazard and medium-sodium hazard) and C4-S3 (Very high-salinity hazard and high-sodium hazard) class.

Groundwater falling into the low to medium salinity hazard classes (C1 – C2) can generally be used for irrigation without the need for special practices to control salinity. These water sources are suitable for most crops and agricultural activities. However, groundwater falling under the C3–S2 category requires more careful management practices if used for irrigation. It is considered of moderate quality and can be used to irrigate semi-tolerant crops. Water samples falling in the high-salinity areas (C4) are not suitable for irrigation under ordinary conditions, as they can cause significant damage to soil structure and negatively affect plant growth. However, in certain cases, this very high-salinity water (C4) may be utilized for irrigation of salt-tolerant plants on permeable soils, provided that special management practices are implemented.

Percent sodium (% Na) and Wilcox diagram

For irrigation purpose, the percentage of sodium is important, because sodium reacts with soil to reduce permeability. For the study area the soluble sodium percentage or sodium content is expressed in terms of percentage of sodium (% Na), ranges from 5-86%. The Wilcox (1948) diagram (Fig: 3b) shows that, 95% samples fall under Excellent-to-good and good-to-permissible range. The absence of excess of sodium causes most of the samples to be suitable for irrigation and do not restrict air and water circulation infiltration and drainage in the soil during the wet condition in the study area. This condition is beneficial for crop growth and agricultural productivity, as it enables the roots to access the necessary nutrients and moisture while preventing soil compaction and waterlogging.

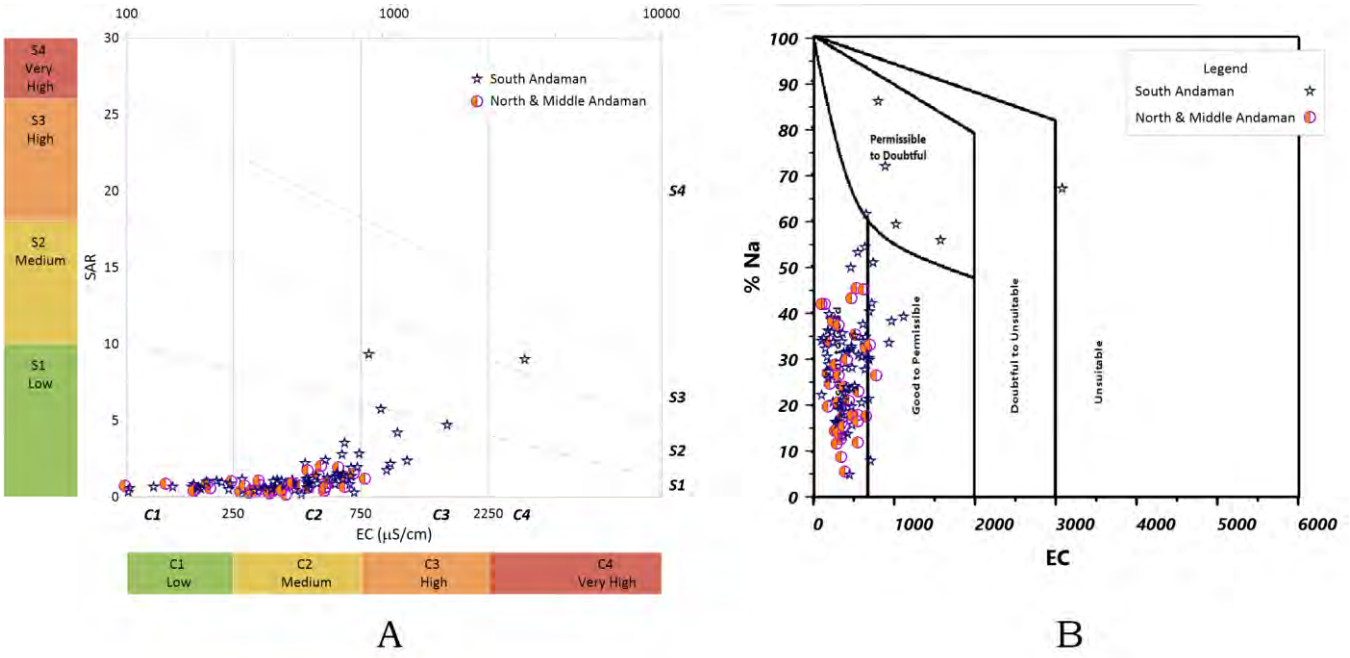


Figure:03 Samples of the Study Area of Dakshin Dinajpur plotted in US Salinity Diagram (A) and Wilcox Diagram (B) for Irrigation Suitability

Conclusion

The shallow aquifer quality of Andaman & Nicobar Islands in respect of major cations, anions, trace metals, and radioactive uranium have been assessed. Subsequently, the hydrogeochemical processes that control the groundwater composition and its suitability for drinking, domestic and irrigation purposes were evaluated. Mostly no major threat has been identified according to analysed basic parameters in the shallow aquifers of entire A&N Islands from drinking water perspective (Drinking water specification: BIS, 2012). Particularly water quality is questionable in respect of high Iron concentration at places of the entire islands. Overall, the dominant groundwater type from the area suggests that water-rock interaction, weathering, dissolution of carbonate minerals, and modern recharge are the key hydrochemical processes at play. Ground water in major part of A&N Islands has also been found suitable for use in irrigation, Industry and allied purposes as the analysed data ensuring the proper sodium and calcium balance. The groundwater contributes to sustainable farming practices and the preservation of soil health in the region. The study will help to make informed decisions about irrigation practices and water resource management at entire Andaman and Nicobar Islands.

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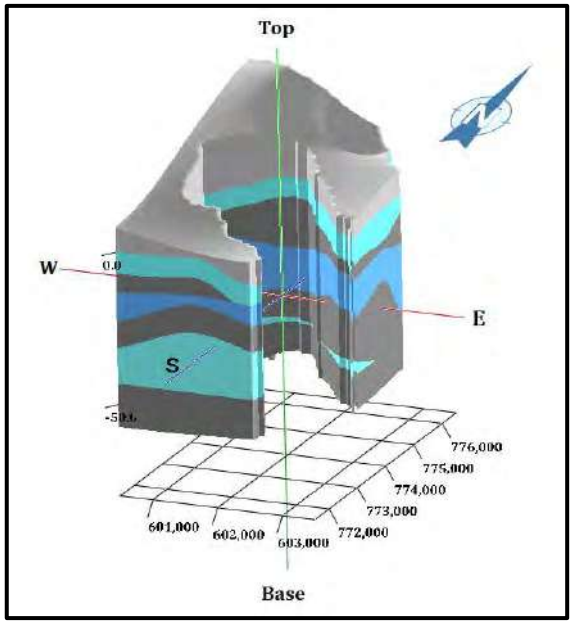
MINISTRY OF JAL SHAKTI

Department of Water Resources, River Development & Ganga Rejuvenation

Report On

NATIONAL AQUIFER MAPPING & MANAGEMENT PLAN

NICOBAR DISTRICT, A & N Islands



Central Ground Water Board

Eastern Region, Kolkata

2023

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केंद्रीय भूमि जल बोर्ड

जल संसाधन, नदी विकास और गंगा संरक्षण विभाग
जल शक्ति मंत्रालय
भारत सरकार

Central Ground Water Board

Department of Water Resources,
River Development & Ganga Rejuvenation
Ministry of Jal Shakti
Government of India

Report on
NATIONAL AQUIFER MAPPING AND MANAGEMENT PLAN

NICOBAR DISTRICT
Andaman & Nicobar Islands

पूर्वी क्षेत्र, कोलकाता

Eastern Region, Kolkata

2023

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FOREWORD

To understand the nature and occurrences of groundwater, Aquifer geometry, dispositions & characteristics and management of groundwater resource, National Aquifer Mapping & Management Programme (NAQUIM) has been taken up by CGWB under XIIth Plan. Under this program, Aquifer Mapping studies & Management plan preparation is taken up in Nicobar District, A & N Islands.

Present attempt to understand subsurface aquifer behavior under aegis of NAQUIM broadly includes four major components namely Data gap analysis, Data generation, Data collection & compilation and preparation of Aquifer maps and Aquifer Management Plan. Finally evaluation of data and prepared maps and 3D models of aquifers along with prepared aquifer management plans are compiled in the present report.

Preparation of this report in its present form is outcome of the efforts of Dr. Indranil Roy, Scientist 'D' (HG), Sujit Sarkar, Scientist 'D' (GP), Dr. Nilamoni Barman, Scientist 'B' (HM), Atalanta Narayan Chowdhury, Assistant Chemist, Suparna Dutta, Assistant Chemist and Awadhesh Kumar, STA (HG).

It is much anticipated that, this report will become an important tool not only for various User Agencies, Engineers, Scientists, Administrators, Planners and others involved in groundwater planning, development and management but also to the common people to make them aware of local groundwater issues and its sustainable management.



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Executive Summary

Nicobar District is studied by Central Ground Water Board (CGWB) for its hydrogeology under over all scope of NAQUIM project. Specifically, aim of the study is to understand ground water condition of Nicobar district, identify ground water sustainability issues, vulnerability of aquifer from sea-water ingress, assess the scenario with the perspective of Demand – Supply Management in view of development plans and ultimately to come up with a suggestion for mitigation measures based on conceived hydrogeological model.

Andaman and Nicobar group of islands is a Union Territory of India located in Indian Ocean. The Nicobar District lies in the southern part of this Union Territory. At present, Nicobar district consists of 3 tehsils viz. Car Nicobar, Nancowry and Great Nicobar. Demographic profile of Nicobar district presents mostly a tribal dominated picture. Population peaked in 2001 where after a decline is observed. Analysis shows that about 98% of reported area of these islands is under forest cover and the remaining only 2% is available for other land uses including agriculture.

Recently, Niti Aayog identified that development of Great Nicobar Island is significant from the point of view of national security as well as country's economic prosperity. In current geopolitical situation, Indian Ocean Region (IOR) in general and the Indian Ocean in particular have turned into a strategic hotspot. Hence development in the Andaman & Nicobar Islands is necessary for strengthening India's regional presence. Niti Aayog proposed construction of both sea-port and airport with associated township and ancillaries in the island. Demand from the economic drivers would translate into change to a water demand of 388 KLD.

The district being entirely rural, under ***Jal Jeevan Mission*** (JJM) of Govt of India, the entire district is covered with Functional Household Tap Connection (FHTC) in every rural home. As per Jal Jeevan Mission Dashboard, the work is complete (https://ejalshakti.gov.in /jjmreport/JJMIndia.aspx accessed on 31st Oct, 2022). Groundwater is the main source with 89.9% of all structures. Surface water contributes in 8.6% structures and Rain water collection systems 1.5% structures.

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Results show that, per-capita Fresh Water Resource availability declined from about 39000 m^3 in 1901 to 6800 m^3 in 2011 and approaching water scarcity. In view of proposed development of Great Nicobar Island with proposed 6.5 lakh population it will further dwindle to a meager 392 m^3 and reach "absolute" water scarcity (< 500 m^3 per year per capita, as per FAO classification).

Climate modeling results show that Southern group of islands received maximum rainfall, while middle group of islands received lowest rainfall during 2001-2020. Forecasting model shows that the rainfall will increase in the upcoming years in the Southern group of islands, while in the other islands groups rainfall will further decrease.

Several drillings were carried out by CGWB in Great Nicobar Island during 1987-88 in search of groundwater. Exploratory wells were constructed to locate potential fresh water aquifer in Tertiary sandstone. Lithologs reveal that Tertiary consolidated formations are mostly composed of argillaceous material devoid of any significant granular zone. Down to maximum explored depth of 101 m.

Presently Surface Geophysical Investigations are carried out at Great Nicobar Island. The aim of the geophysical investigation was to determine the lithological variation with depth from sea shore to inland part of the island along with saturated water quality variation at the eastern coast of the island.

Exploratory data and geophysical investigation data are compiled and correlated to understand aquifer disposition. In Nicobar district, mainly two broad hydrogeological units are present.

Fractured Consolidated Formation: Lithologically, marine sedimentary group of rocks comprising shale, sandstone, grit and conglomerate and extrusive, intrusive igneous rocks (volcanics and ultramafics) and coralline limestone contributes towards this hydrogeological unit. Occurrence and movement of ground water in this formation is controlled mainly by the zone of secondary porosity and along the contact plane of various litho-units. Weathered Mantle and Saprolitic Zone plays important role in recharging the zone of secondary porosity. Because of active tectonism, this group of rocks is highly deformed. However, the nature of deformation is expected to be brittle in nature at shallow depth and

ductile at deeper part. In case of coralline limestone, solution cavity forms the main pathway for movement of ground water. However, formation of marl over coralline limestone as weathering product impedes ground water movement.

As per the very limited exploration records, this has limited yield potential of 5 – 10 m3/day. Exploratory borehole yielded meager discharge. Large diameter (4 – 6 m) dugwells may be constructed down to 4 – 6 m depth. However, several springs across the islands emerge from this unit. This indicates that its actual yield potential may not be properly understood.

Unconsolidated formation: Lithologically, mainly Coralline sand horizon constitutes this aquifer. Recent beach sand, coral rags, alluvium, colluvium and valley-fills also contributes to the formation. Weathered mantle and saprolitic zone over consolidated formation is in hydrological continuity with this aquifer system in general. The unit occurs mainly at the coastal parts of the island and thins out towards island interior with increase in elevation.

Present population of the islands mainly depends on this formation for water supply. In every habitation, several dugwells are constructed tapping this one. However the aquifer horizons are isolated and discontinuous in nature and getting their replenishment from connected weathered mantle at higher elevation. Except in exposed sand horizons, very low infiltration rate due to high clay content of valley-wash at top horizon shows direct rainfall recharge is not significant. This unit has yield potential of 10 – 20 m3/day. Large diameter (3 – 5 m) dugwells may be constructed down to 3 – 5 m depth.

As such all the islands are under *Safe* category with overall Stage of Groundwater Extraction (SGWE) of the district 0.28 % with the exception of Chowra Island, which has been categorized as *Saline.*

On an average groundwater quality of various islands are under acceptable limits of BIS, 2012 except iron, which is under permissible limits. Hence, groundwater quality of various islands is suitable for domestic use as per BIS standards and potable in nature. Quality-wise it is also suitable for irrigational and industrial use.

For irrigational demand management, suitable crop planning and intensification is proposed. Suggested crop alignment, if implemented along with Drip Irrigation System, is

expected to reduce water consumption by about 40% by reducing area as well as increasing cropping intensity. Hence, annual agricultural water demand in 2050 will be reduce to the tune of 1.58 mcm, thereby reducing a demand of 1.05 mcm of irrigation water need.

In order to harness the water already used in domestic and drinking sector, extensive water recovery through STP and recycling it to industrial need, will lead to maximum utilization of scarce water resource and may fulfill industrial demand.

Ground water based Water Supply should be in low-key considering fragility of groundwater system in these islands. During pumping of freshwater from an aquifer having both fresh and brackish/saline water, the pressure head in the vicinity of well is lowered which ultimately leads to the rise of brackish/saline water.

Suggested structure for groundwater abstraction

Type of Structure	Depth	Topographic Feature Type	Elevation Class
Skimming Wells	Very Shallow	Coastal plains	3 – 10 m
Large diameter Dug well	Shallow (< 8m)	Foot Slope	10 – 20 m
Shallow Tube well	Moderately Shallow (< 15m)	Upland	20 – 50 m
Deep Tube well	Deep (< 30m)	Highland	> 50 m

Considering Island setup, geomorphological context, land-use pattern and relative groundwater potentialities of underground aquifer system, only a few types of artificial recharge / conservation structures are possible for augmentation & conservation of ground water resources. However if implemented and maintained properly, will help immensely towards protection of precious groundwater resource of the Islands.

Most importantly, it’s the People’s participation that matters in water security in these islands. There is a need to start educating the communities on how to use water and integrate positive practices. In future scenario of developing prospect of these islands. Hence awareness generation should be the prime aim for successful implementation of all suggested management interventions.

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Projected and Modified Freshwater Requirement by 2050

Need	Projected Fresh Water Resource Requirement	Management Intervention	Modified Fresh Water Resource Requirement after Management Intervention
	mcm		mcm
Drinking & Domestic	33	Augmentation of SW + GW	33
Irrigation	2.63	Crop Modification	1.58
Industrial	26.5	Waste Water Recycling	-Nil-
Total	**62.13**		**34.58**

Quantitative Impact on Water Resource

Intervention	Demand Class	Impact on Water Resource			Major Impact on
		Augmented	Load Reduced	Depleted	
		mcm	mcm	mcm	
Reservoir Creation	Drinking & Domestic	20	–	–	SW + GW
Check Dam Creation	Drinking & Domestic	10	–	–	SW + GW
Groundwater Pumping	Drinking & Domestic	–	–	3	GW
Desalination Plant	Drinking & Domestic	Strategic	–	–	SW
Wastewater Recycling	Industrial & Infrastructure	–	26.5	–	SW + GW
Rainwater Harvesting	Drinking & Domestic + Agriculture	0.23	–	–	GW
Other Recharge Initiatives	Drinking & Domestic + Agriculture	0.01	–	–	GW
Crop Orientation and Drip irrigation	Agriculture	–	1.05	1.58	GW

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Fig. 8.6 Nicobarese Huts: (A) to (D) 120 years earlier (Boden Kloss, 1903); and (E) to (F) Modern;

Fig. 8.7 Rainwater Harvesting in Modern Houses

Fig. 8.8 Amrit Sarovar initiatives in Nicobar District

Fig. 8.9 People’s Participation Program (PIP) in Campbell Bay Area of Great Nicobar Island on 14th March, 2023

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Chapter I

Introduction

Aquifer mapping can be defined as a scientific process, wherein a combination of geologic, geophysical, hydrologic and chemical field and laboratory analyses are applied to characterize the quantity, quality and sustainability of ground water in aquifers. The process is expected to improve our understanding of the geologic framework of aquifers, their hydrologic characteristics, water levels in the aquifers and how they change over time. Results of these studies contribute significantly to groundwater resource management by planners, policy makers and other stakeholders. In this context, National Aquifer Mapping & Management Programme (NAQUIM) has been taken up by CGWB under XIIth Plan. Details about the project are available at https://www.aims-cgwb.org/general-background.php. As per the annual action plan, groundwater management studies of Nicobar District of Union Territory of Andaman and Nicobar have been taken up by CGWB, ER, Kolkata during **AAP 2022-23**.

Nicobar District is studied by Central Ground Water Board (CGWB) for its hydrogeology under over all scope of National aquifer Mapping (NAQUIM) project. Specifically, aim of the present study is to understand ground water condition of Nicobar district, identify ground water sustainability issues, vulnerability of aquifer from sea-water ingress, assess the scenario with the perspective of Demand – Supply Management in view of development plans and ultimately to come up with suggestions for groundwater management based on conceived hydrogeological model.

Andaman and Nicobar group of islands is a Union Territory of India located in Indian Ocean. The island group forms an arcuate shaped island chain with Bay of Bengal on the West and the Andaman Sea on the East. There are 572 islands in the island group having a total area of 8,249 km^2. Of these, only 38 are permanently inhabited. The islands extend broadly from 6° to 14° North latitudes and from 92° to 94° East longitudes. Entire chain of islands is divided into two sub-groups namely Andaman group in north and Nicobar group in south separated by 10° latitude (also known as 10° Channel which is about 150 km wide). Extreme southern-most 'Pygmalion Point' presently known as Indira Point (6°45'10" N and

93°49'36" E) located in Great Nicobar Island, is the southernmost landmass of India and lies only 150 km from Sumatra Peninsula (Indonesia).

The capital of the union territory, *Port Blair*, is located about 1,255 km from Kolkata, about 1,200 km from Visakhapatnam and about 1,190 km from Chennai and is connected by regular air and ship services. Nicobar Group of Islands is connected with Port Blair through ships ferrying bi-weekly as well as helicopter service.

The existence of the Nicobar Islands is known from the time of Ptolemy onwards. It is mentioned in few ancient Chinese texts. As the islands are located on sea route from Sumatra to Mainland India, they were source of fresh rations and drinking water for ancient mariners. The tribal inhabitants were in touch with the outer world through the trade of '*copra*' (Dried coconut meat) and '*cowri*' (Conch shell). From 17th century onwards Portuguese and French tried to colonize the islands through missionary activities. In 1756, the Danes took control of these islands with base at Kamorta Island, but later abandoned in 1848. In 1869 the British formally took possession of these islands and included within the territory of A & N Islands in 1871. This Administrative arrangement continued till Independence of India. Prior to 1974, the Union Territory of Andaman and Nicobar Islands was a uni-district territory. Two districts viz. Andaman and Nicobar were formed in the year 1974 vide Andaman & Nicobar Administration's notification dated 19-7-1974. Erstwhile part of District of Andaman, District of Nicobar came into existence on 1st of August, 1974.

The Nicobar District lies in the southern part of this Union Territory. At present, Nicobar district consists of 3 tehsils viz. Car Nicobar, Nancowry and Great Nicobar. The tehsil of Nancowry was bifurcated into 2 tehsils, Nancowry and Great Nicobar, vide Notification No. 149/2006 F.No.3-195/2002-LSG (Rev) dated 17th August, 2006, of the Andaman & Nicobar Administration. The island group can be located in SOI Toposheets 87C/15, 87C/12, 87C/16, 87D/13, 87H/3, 87H/4, 87H/8, 87H/10, 87H/3, 87H/11, 87H/12, 88E/5, 88E/9, 88E/10, 88E/11, 88E/12, 88E/15, 88E/16, 88F/9, and 88E/13.

Nicobar Group island chain has an overall length of 310 km and 58 km width. Google map of the island chain with main study area is given in **Fig. 1.1.** Detailed map of the island chain is given in **Fig 1.2.** Car Nicobar is the district headquarter of Nicobar district. The island is located about 275 km south of UT capital Port Blair. There are three CD Blocks in this

district viz., Car Nicobar comprising only 16 inhabited villages, Nancowry comprising of 44 inhabited villages and Campbell Bay comprising of 30 inhabited villages, which are placed under respective Tehsils *i.e.,* Car Nicobar, Nancowry and Great Nicobar. Administrative divisions are given in **Table 1.1 a**.

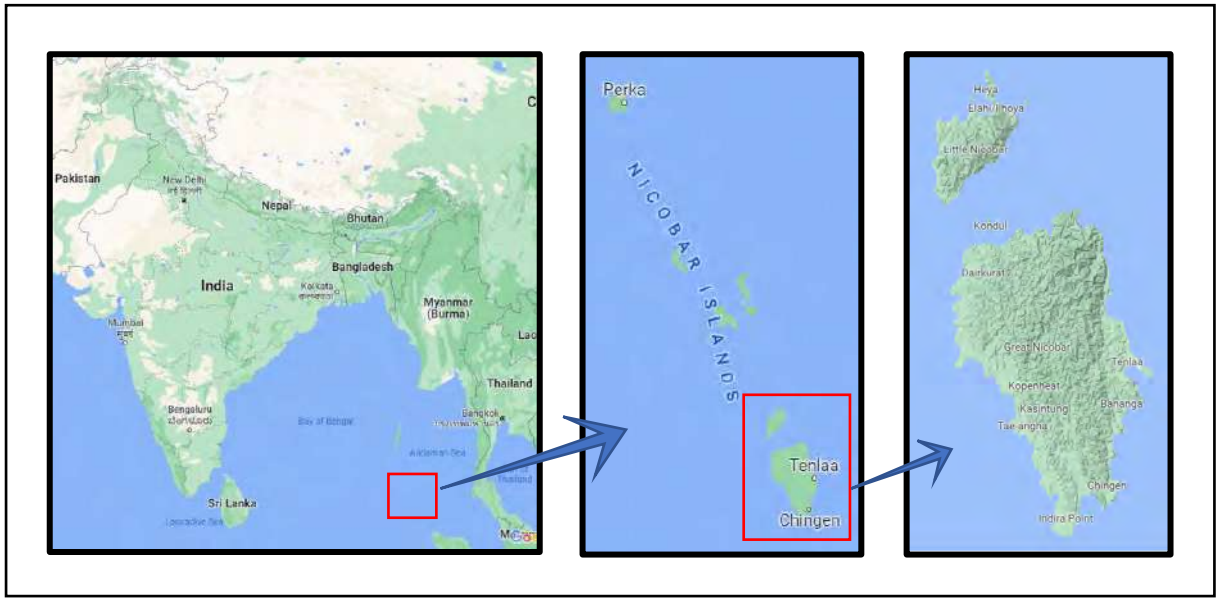
Nicobar group of islands comprise of twenty-two (22) islands with a total area of 1,841 km^2 of which only 10 islands are inhabited (Census, 2011). Car Nicobar and Pulomilo are the most and least populated Islands respectively in the Nicobar District (Census, 2011). Bampooka, Trinket and Kondul Islands were shown inhabited in 2001 Census but became uninhabited during the last decade as no population is reported in 2011 Census (Census, 2011). Island-wise and population details are given in **Table 1.1 b**.

Car Nicobar Island represented by the single inhabited island represents the administrative sub-division. On the other hand, Nancowry refers to a single island, and act as administrative sub-division for rest of the adjoining islands. The island is approximately 160 km south-southeast of Car Nicobar. Great Nicobar sub-division is represented by Campbell Bay block covering Great Nicobar Island and adjoining islands. The Great Nicobar Island is separated from rest of the Nicobar Islands by the six-degree channel (aka Sombrero channel). Campbell Bay area is the administrative headquarters of Great Nicobar Island. It is about 600 km south of Port Blair. District population growth pattern, Island-wise demographic details and occupational profile is given **Table 2a, 2b and 2c** respectively. Population variation graph is given in **Fig. 1.3**.

All the Islands are declared **Tribal Reserve Area** under Andaman and Nicobar Islands (Protection of Aboriginal Tribes) Regulation, 1956 Act with the exception of the eastern coast of Great Nicobar, comprising 7 villages, which is a non-reserve area. In that area initial settlement of 330 Ex-servicemen families were done in 1969-72 under Accelerated Development Program of Ministry of Labour and Rehabilitation, GOI.

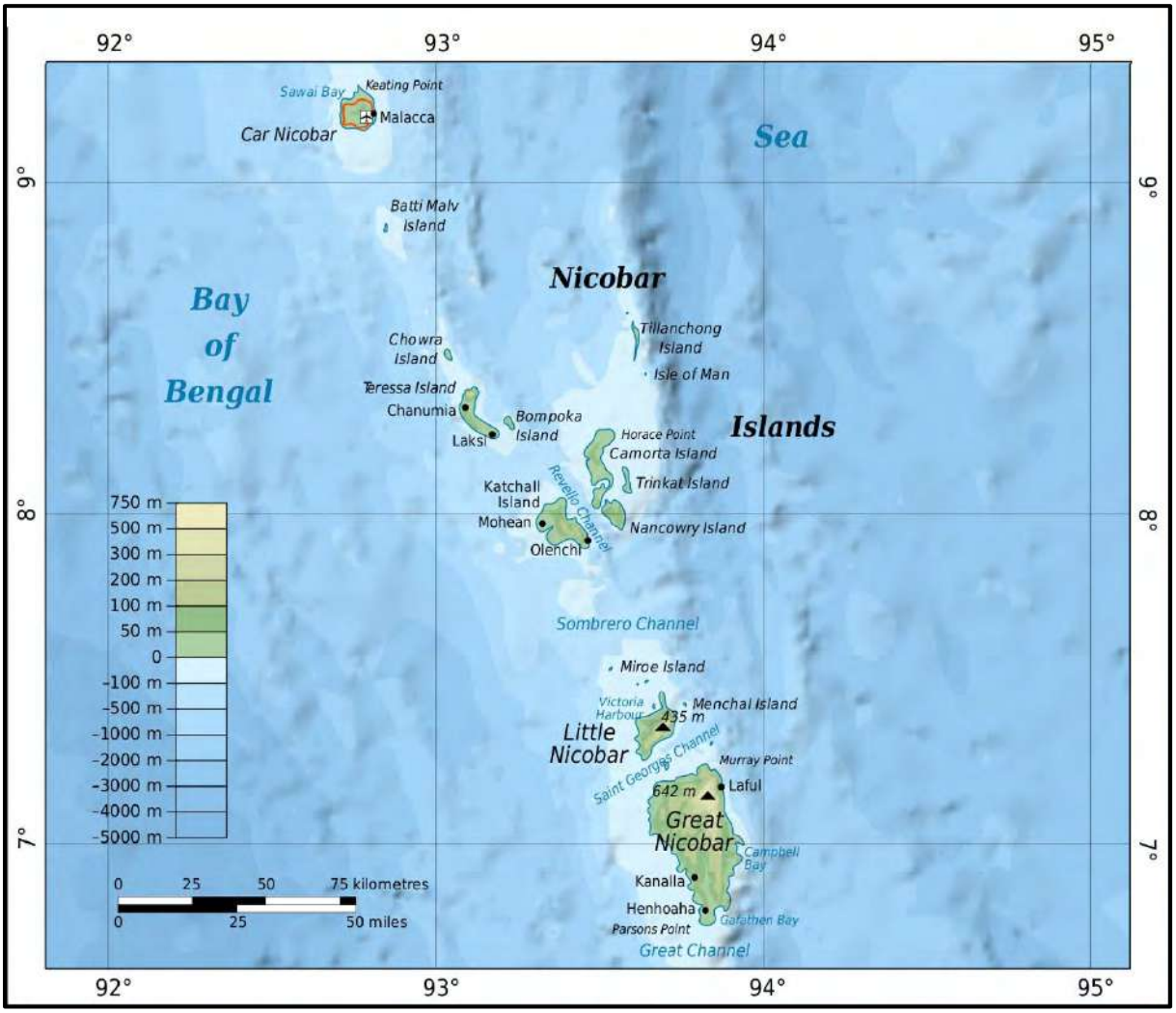
Table 1.1a Administrative divisions of Nicobar group of islands

District	Sub-Division / Tehsil	CD block
Nicobar	Car Nicobar	Car Nicobar
	Nancowry	Nancowry
	Great Nicobar	Campbell Bay



(Source: Google Earth)

Fig. 1.1 Location of Nicobar Group of Islands with main study area



(Source: Wikipedia)

Fig. 1.2 Detailed map of Nicobar Group of Islands

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Table 1.1b Habitation Status of Nicobar group of islands

Sl.	Island Name	Native Name	Block	Status	Area	Population	
					sq. km.	2001	2011
1	Car Nicobar	Pu	Car Nicobar	Inhabited	126.9	20292	17841
2	Chowra	Sanenyo	Nancowry	Inhabited	8.2	1385	1270
3	Teressa	Luroo	Nancowry	Inhabited	101.4	2026	1934
4	Katchal	Tihayu	Nancowry	Inhabited	174.4	5312	2685
5	Kamorta	Kamorta	Nancowry	Inhabited	188.2	3412	3688
6	Nancowry	Mout	Nancowry	Inhabited	66.9	927	1019
7	Little Nicobar	Long	Campbell Bay	Inhabited	159.1	348	278
8	Great Nicobar	Tokieong Long	Campbell Bay	Inhabited	1045.1	7566	8069
9	Tillang Chong Island	La-ukg	Nancowry	Inhabited	16.84	13	38
10	Pulomillow Island	–	Campbell Bay	Inhabited	1.3	145	20
11	Battimaly	Kuono	Car Nicobar	Uninhabited	2.01	–	–
12	Meroe	Meroe	Campbell Bay	Uninhabited	0.52	–	–
13	Treis	Tean / Albatai	Campbell Bay	Uninhabited	0.26	–	–
14	Menchal	Menchal	Campbell Bay	Uninhabited	1.3	–	–
15	Trak	Fuya /Mafuya	Campbell Bay	Uninhabited	0.26	–	–
16	Cubra	Konwana	Campbell Bay	Uninhabited	0.52	–	–
17	Bompuka	Poahat	Nancowry	Uninhabited	13.3	55	–
18	Kondul	–	Campbell Bay	Uninhabited	4.6	150	–
19	Trinket	Laful	Nancowry	Uninhabited	86.3	432	–
20	Isle of Man	Laouk	Nancowry	Uninhabited	–	–	–
21	Megapod	–	Campbell Bay	Uninhabited	–	–	–
22	Pigeon	–	Campbell Bay	Uninhabited	–	–	–

(Source: Area and Population figures are from Census 2001 & 2011)

1.1 Demographic Profile

Demographic profile of Nicobar district presents mostly a tribal dominated picture. Salient information is tabulated in **Table 1.2a, 1.2b, and 1.2c**. Population peaked in 2001 where after a decline is observed.

Table 1.2a Population Growth Pattern in Nicobar District

Census Year	Population	% Decadal Growth
1901	6511	-
1911	8818	35.43
1921	9272	5.15
1931	10240	10.44
1941	12452	21.6
1951	12009	-3.56
1961	14563	21.27
1971	21665	48.77
1981	30454	40.57
1991	39208	28.74
2001	42068	7.29
2011	36842	-12.42

Table 1.2b Demographic Profile of Inhabited Island in Nicobar group of islands

	Island	Area	Census Villages (2011)			Population 2011			ST Population	
		sq. km	Inhabited	Uninhabited	Total	Male	Female	Household	Male	Female
1	Car Nicobar	126.91	16	0	16	9735	8106	4250	7659	7368
2	Great Nicobar	1044.54	19	26	45	4849	3197	2180	506	392
3	Chowra	8.28	5	0	5	656	614	367	610	611
4	Teressa	101.26	8	3	11	1059	875	551	938	845
5	Katchal	174.3	6	33	39	1538	1147	715	652	587
6	Nancowry	66.82	10	9	19	530	489	238	522	484
7	Kamorta	188.03	15	16	31	2146	1542	915	1135	1051
8	Pilomillo	1.29	1	0	1	15	5	5	15	5
9	Little Nicobar	159.02	10	15	25	161	140	63	156	140
10	Tillangchong	16.83	1	0	1	38	0	4	5	0

(Source: Census, 2011)

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Table 1.2c Occupational Profile of Inhabited Island in Nicobar group of islands

Sl.	Island	Occupation				Farmers	Agriculture Farm
		Main	Marginal	Total	Non workers		
1	Car Nicobar	3664	5180	8844	8997	2723	1
2	Great Nicobar	3337	491	3828	4218	392	2
3	Chowra	89	249	338	932	198	0
4	Teressa	205	394	599	1335	140	0
5	Katchal	1080	278	1361	1324	178	1
6	Nancowry	80	306	386	633	184	0
7	Kamorta	1145	573	1718	1970	240	1
8	Pilomillo	0	0	0	20	0	0
9	Little Nicobar	13	0	13	288	0	0
10	Tilongchang	38	0	38	0	0	0

(Source: Census, 2011 and District Irrigation Plan for Nicobar District, 2015)

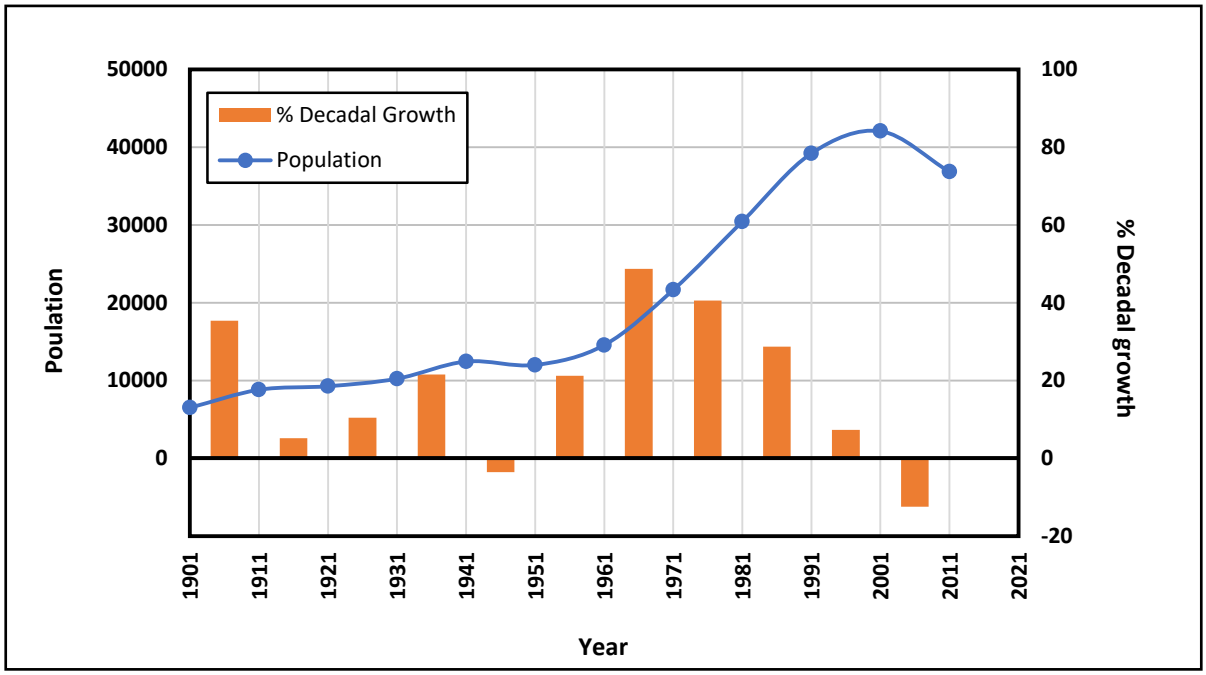


Fig. 1.3 Decadal Variation in Population and Growth rate

1.2 Land-Use and Forest Cover

Nicobar group of islands are covered by lush green tropical vegetation backed by copious rainfall almost throughout the year. As these islands are till date mostly untouched, they maintain their natural state. Details of land-uses statistics for Nicobar District are given in **Table 1.3**. Graphical representation of the Land use statistics is given in **Fig. 1.4**. Details of forest cover in Nicobar group of islands are given in **Table 1.4**.

Table 1.3 Land-use in Nicobar District

Sl.	Land-use Category	2008-09	2009-10
		Area (ha)	Area (ha)
1.	Total Geographical area	184100.00	184100.00
2.	Reporting area for land utilization	157746.32	157794.50
3.	Forest area	154207.00	154207.00
4.	Not available for Cultivation	1625.61	1670.61
5.	Other uncultivated land excluding fallow land	444.16	444.16
7.	Current fallow	467.37	472.98
8.	Fallow land other than current fallow	731.88	731.88
9.	Net area sown	270.37	270.87
10.	Area sown more than once	151.00	110.00
11.	Total cropped area	421.37	377.87

(Source: District Statistical Handbook, 2011)

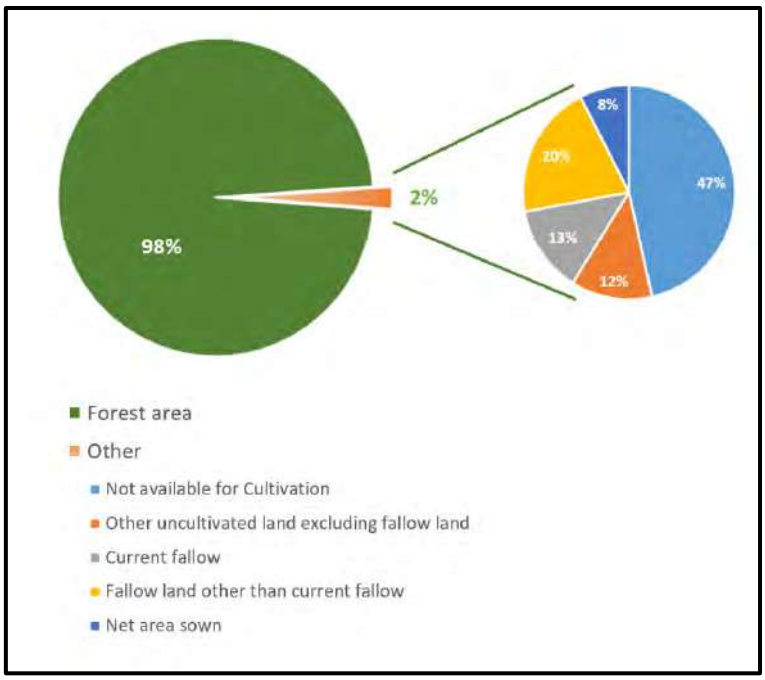


Fig. 1.4 Pie Diagram of Components of Land-Use

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Table 1.4 Details of forest cover in Nicobar group of islands

Sl.	Island Name	Total Area (ha)	Declared Forest Area (ha)	% Area	Remarks
1	Car Nicobar	12691	12691	100	Tribal Reserve
2	Chowra	828	828	100	Tribal Reserve
3	Teressa	10126	6000	59.3	Tribal Reserve
4	Katchal	17430	12000	68.8	Tribal Reserve
5	Kamorta	18803	14000	74.5	Wild Life Sanctuary
6	Nancowry	6682	4000	59.9	Tribal Reserve
7	Little Nicobar	15902	15500	97.5	Tribal Reserve
8	Great Nicobar	104454	96040	91.9	02 National Park & 01 Biosphere Reserve *
9	Tillang Chong Island	1683	1683	100	W.L Sanctuary / Tribal Reserve
10	Pulomillow Island	129	129	100	Tribal Reserve
11	Battimaly	207	207	100	Wild Life Sanctuary
12	Meroe	51	51	100	Tribal Reserve
13	Teris	26	26	100	Tribal Reserve
14	Menchal	129	129	100	Tribal Reserve
15	Trak	26	26	100	Tribal Reserve
16	Cubra	51	51	100	Wild Life Sanctuary
17	Bompuka	1346	1346	100	Tribal Reserve
18	Kondul	466	466	100	Tribal Reserve
19	Trinket	3626	2000	55.2	Tribal Reserve
20	Megapod	12	12	100	Wild Life Sanctuary

*Galathea National Park (11000 ha), Campbell Bay National Park (42623 ha), & Great Nicobar Biosphere Reserve (88500 ha) declared on 28th Nov 1996, 18th March 1992 and 06th Jan 1989 respectively. National Parks are part of Biosphere Reserve. All the forests in the district have legal status of Protected Forest.

Source: Forest Statistics, DEF (2019)

Analysis shows that about 98% of reported area of these islands is under forest cover and the remaining only 2% is available for other land uses including agriculture. Land-Use / Land Cover Map of Nicobar District is given in **Fig. 1.5**

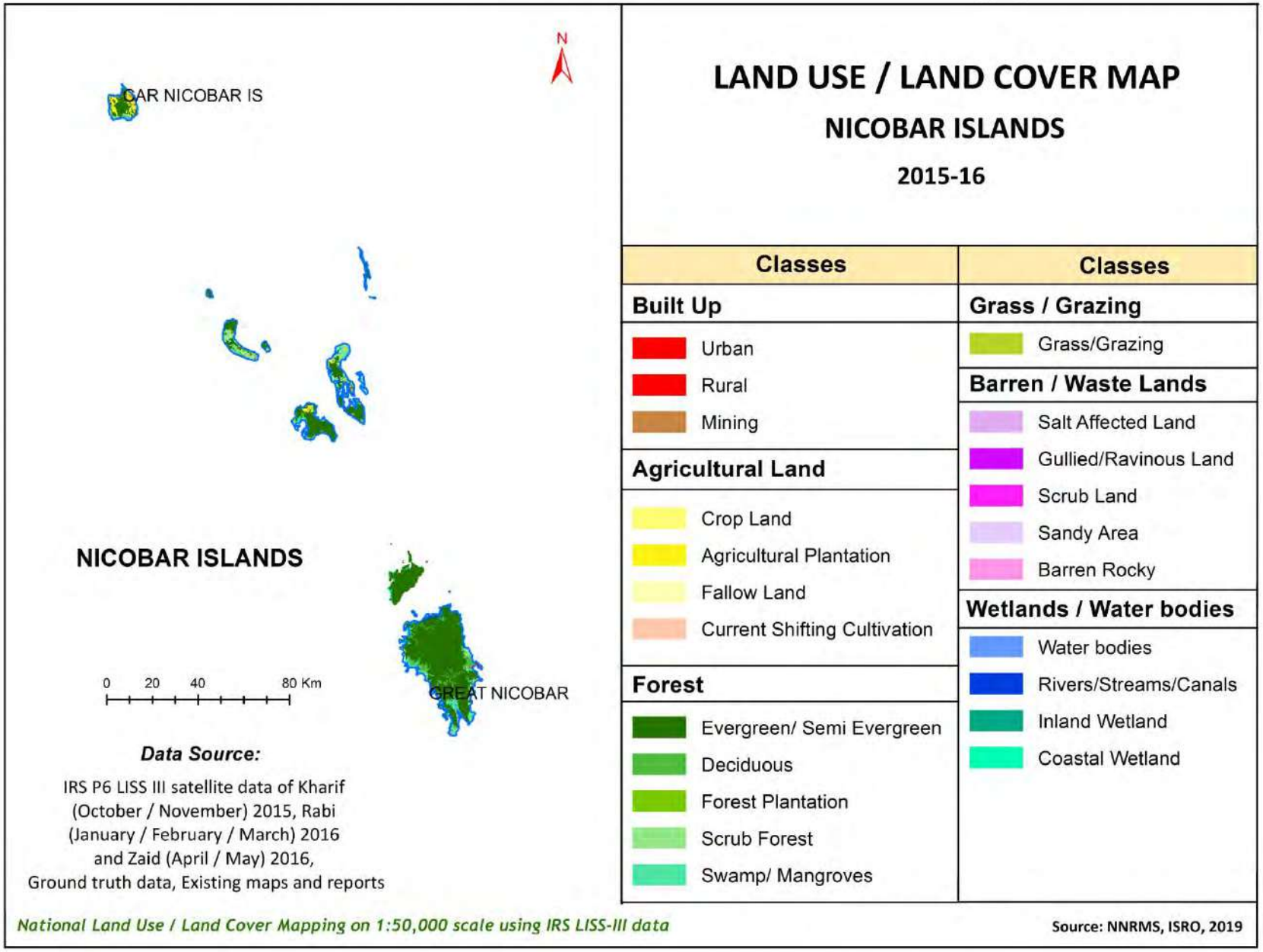


Fig. 1.5 Land-Use / Land Cover Map of Nicobar District

1.3 Agriculture and Irrigation

As per land-use data, about 98% of reported area of these islands is under forest cover and the remaining only 2% is available for other land uses including agriculture. Of this only 8 % is net sown area. Hence, only in 0.16 % of reported area is under agriculture. Only Teressa, Katchal, Kamorta, Nancowry, Little Nicobar, Great Nicobar and Trinket islands have agricultural land. Proportion of agricultural land to total area varies significantly from island to island.

The central group of islands shows signs of human influence in the form of extensive grassland introduced by the European colonizers. Similarly, rubber plantation was introduced into Katchal islands after independence. However, coconut plantation is the main plantation crop followed by Areca Nut and Cashew Nut. Major agricultural crops grown in Nicobar Islands are given in **Table 1.5**. Agricultural land-use in Nicobar District is given in **Table 1.6**.

Table 1.5 Major agricultural crops grown in Nicobar Islands

Sl.	Island	
1	Car Nicobar	Coconut, Arecanut, Fruits, Tuber Cops, Vegetables
2	Chowra	Coconut, Tuber Crops
3	Teressa	Coconut, Arecanut, Cashew, Fruits, Tuber Crops
4	Bampooka	Coconut, Tuber Crops
5	Katchal	Paddy, Red Oil Palm, Vegetables, Coconut, Arecanut, Spices
6	Nancowry	Coconut, Arecanut, Fruits, Tuber Crops
7	Kamorta	Coconut, Arecanut, Cashew, Banana
8	Trinket	Coconut
9	Little Nicobar	Coconut, Arecanut, Colocasia, Dioscorea
10	Pilomilo	Coconut, Colocasia
11	Kondul	Dioscorea
12	Great Nicobar	Paddy, Vegetables, Coconut, Arecanut, Fruits

Source: Srivastava and Ambast (2009)

Agricultural practice is mostly rain-fed. Broad bed-Furrow system is used for water conservation. Agriculture Contingency Plan for Nicobar District (2015) shows that irrigation in the islands is dug well and pond based (**Table 1.7**). No bore-well is used for the purpose. Irrigation is given to sugar cane, banana, papaya and chilies only. Field-crop production and

Horticulture & Plantation Crop production in Nicobar District is given in **Table 1.8a and 1.8b** respectively.

Table 1.6 Agricultural land-uses in Nicobar District

Agricultural land use	Area (ha)	Cropping intensity
Net sown area	267.9 ha	141.06 %
Area sown more than once	110 ha	
Gross cropped area	377.9 ha	
Net irrigated area	110 ha	
Sources of Irrigation	**Number**	
Open wells	170	
Ponds	45	
Machinery for Irrigation	**Number**	
Pump Set	405	

(Source: Agriculture Contingency Plan for Nicobar District, 2015)

Table 1.7 Island-wise Irrigation Sources

Sl.	Island	Farmers	Agriculture Farm	Sources of irrigation	
				Pond	Well
1	Car Nicobar	2723	1	1	87
2	Great Nicobar	392	2	27	44
3	Chowra	198	0	0	0
4	Teressa	140	0	3	9
5	Katchal	178	1	6	5
6	Nancowry	184	0	0	11
7	Kamorta	240	1	8	14

(Source: District Irrigation Plan for Nicobar District, 2015)

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Table 1.8a Field-crop production in Nicobar District

Major Field Crops Cultivated	Area (ha)						
	Kharif			*Rabi*			Summer
	Irrigated	Rainfed	Total	Irrigated	Rainfed	Total	Grand Total
Paddy	-	2.65	2.65	-	-	-	2.65
Maize	-	-	-	-	9.66	9.66	9.66
Black gram	-	-	-	-	6.32	6.32	6.32
Sugarcane	11.00	-	11.00	-	-	-	11.00
Root crops	-	241.03	241.03	-	-	-	241.03

(Source: Agriculture Contingency Plan for Nicobar District, 2015)

Table 1.8b Horticulture & Plantation Crop production in Nicobar District

Horticulture / Plantation	Area (ha)		
	Total	Irrigated	Rain-fed
Horticulture Crops – Fruits			
Banana	170.0	170.0	-
Papaya	149.9	149.9	-
Pineapple	51.5	-	51.5
Citrus fruits	32.3	-	32.3
Mango	26.0	-	26.0
Other minor fruits	101.3	-	101.3
Horticulture Crops - Vegetables			
Chilies	5.70	5.70	-
Sweet Potato	8.51	-	8.51
Tapioca	21.99	-	21.99
Root crops	210.53	-	210.53
Plantation Crops			
Coconut	14655		14655
Areca nut	890.5		890.5
Cashew nut	1036.9		1036.9
Rubber	645.03	-	645.03

(Source: Agriculture Contingency Plan for Nicobar District, 2015)

1.4 Drinking Water Supply

The district being entirely rural, under ***Jal Jeevan Mission*** (JJM) of Govt of India, the entire district is covered with Functional Household Tap Connection (FHTC) in every rural home. As per Jal Jeevan Mission Dashboard, the work is complete (https://ejalshakti.gov.in /jjmreport/JJMIndia.aspx accessed on 31st Oct, 2022). As on date the daily supply of potable water to households in the entire district is 4512 m^3. Details of habitation-wise drinking water supply in various islands are given in **Annexure 8**. Summary of Island-wise planned capacity of water supply in Nicobar district is given in **Table 1.9a**. However, outside the coastal stretches of the islands water wells are absent as in most of the islands, habitation is limited to the coastal part only. In the central part of the islands, springs or spring fed perennial streams are present. They are sustainable moderately yielding sources.

Groundwater is the main source with 89.9% of all structures. Surface water contributes in 8.6% structures and Rain water collection systems 1.5% structures (**Table 1.9b**). Various components of drinking water supply by source types in shown in **Fig. 1.6**. Initially all the groundwater abstraction structures were dug wells, however from 2012-13 onwards, in the most water scarce tehsil *i.e.,* Nancowri tehsil, implementation of skimming wells / infiltration wells took place to tackle the problem. Altogether, these wells are planned to provide 575 m^3 of water in various islands in the tehsil. Photo of few groundwater source in Car Nicobar Island is given in **Fig. 1.7a** and **1.7b**.

Table 1.9 a Summary of Island-wise planned capacity of Water Supply in Nicobar district

Island	No. of Habitation	Water Supply Capacity (m^3)
Car Nicobar	16	2781
Kamorta	12	575
Katchal	1	125
Nancowry	6	100
Theresa	8	15
Chowra	5	9
Great Nicobar	9	875
Little Nicobar	6	32
Total	**63**	**4512**

Table 1.9 b Summary of water abstraction structures in Nicobar group of islands

	Source Type	Number	%
Groundwater	Open Dug well	52	26.3
	Infiltration Well	126	63.6
Surface Water	Nallah	10	5.1
	Spring	6	3.0
	Pond	1	0.5
Rain Water	Rain Water	3	1.5
	Total	**195**	100

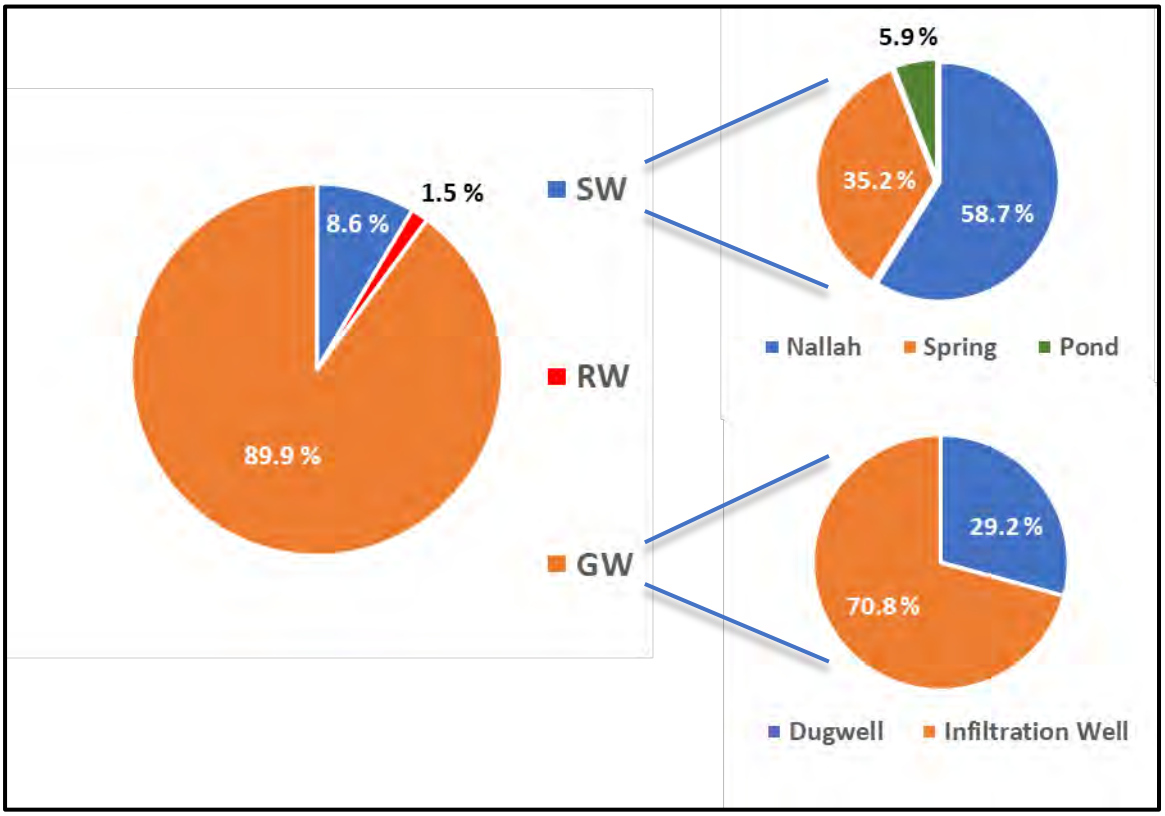


Fig. 1.6 Pie Diagram of Components of Drinking Water Supply by Source Type

Earlier, Chowra Island had not any drinking water sources (Kar, 2004). From 2006-07 onwards, five (05) infiltration wells and one (01) pond is created as viable drinking water source. Rain water collection systems are also implemented in three (03) habitations of Chowra Island and are planned to augment groundwater-based sources.



Fig. 1.7a Water Supply Dugwell at Arong, Car Nicobar



Fig. 1.7b Water Supply Dugwell at Kimious, Car Nicobar

1.5 Traditional Water Collection – Storage - Management System in Nicobar

Jackwell

Shompen tribe of Great Nicobar Island has indigenous rainwater harvesting technique. Taking benefit of undulating terrain, in small catchments, bunds of hard bullet wood were built in the lower parts of the catchment with pits constructed in the upstream side of the bund. Rainwater is collected in those pits. These pits are called "*Jackwell*". Split bamboos are also extensively used in the water harvesting systems. A full length of split bamboo was placed along the slope. Rainwater flow through it and get collected in the pits. Splitted bamboo pipes are also placed under trees to collect the dripping water from the leaves. A series of increasingly bigger jackwells were connected by such bamboo pipes to make sure that overflow from one is conserved by the next. This series ultimately leads to the biggest jackwell, with an approximate diameter of 6 m and depth of 7 m.

However, during field visit no such structure could be located. This may be due to the restriction in movement in Tribal land. Interaction with locals also could not shed light on the matter.

Use of Coconut Shells as Primitive Water Collection System

A very primitive rainwater collection system using coconut shells is in practice in Chowra island. This age-old rainwater collection system is practiced by the islanders where hollow coconut shells are hung at the sides of hutments to collect roof-top rainwater. At times of great crisis, islanders also collect water from contiguous Teressa Island with canoes.

1.6 Present Perspective

Recently, Niti Aayog identified that development of Great Nicobar Island is significant from the point of view of national security as well as country's economic prosperity. In current geopolitical situation, Indian Ocean Region (IOR) in general and the Indian Ocean in particular have turned into a strategic hotspot. Hence development in the Andaman & Nicobar Islands is necessary for strengthening India's regional presence.

Additionally, Great Nicobar Island represents a significant economic development opportunity. The main east-west shipping route that links East Asian exports with the Indian Ocean, Suez Canal and Europe runs just to the south of Great Nicobar Island. Niti Aayog

proposed construction of both sea-port and airport with associated township and ancillaries in the island so that India can participate more fully in the global shipping trade, creating employment opportunities for its citizens and improving quality of life for current and future residents of the island.

Demand for workers from the economic drivers would translate into change in residing population for the region. Pre-Feasibility Report (2021) of survey carried out by AECOM for Niti Aayog projects population density of 27 person /hectare for the region with a total population of 6.5 lakh by 2050. As per the said report, this translates to a water demand of 388 KLD.

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Chapter 2

HYDROMETEOROLOGY

2.1 Climate Pattern in Nicobar District

Lying well within the tropics and controlled by the equatorial belt, climate of the Nicobar Group of Islands can be defined as humid, tropical, coastal climate. Proximity to the equator and the sea ensures a hot-humid uniform climate. The climate is equable and no distinct and well-marked seasons are experienced. The Islands have rainfall from both the Southwest and Northeast monsoons and the maximum rainfall is between May to December (**Table 2.1)**. In Nicobar District the lowest annual rainfall was 1335.8 mm during 1982 and the highest annual rainfall was 3923.8 mm during 1975.

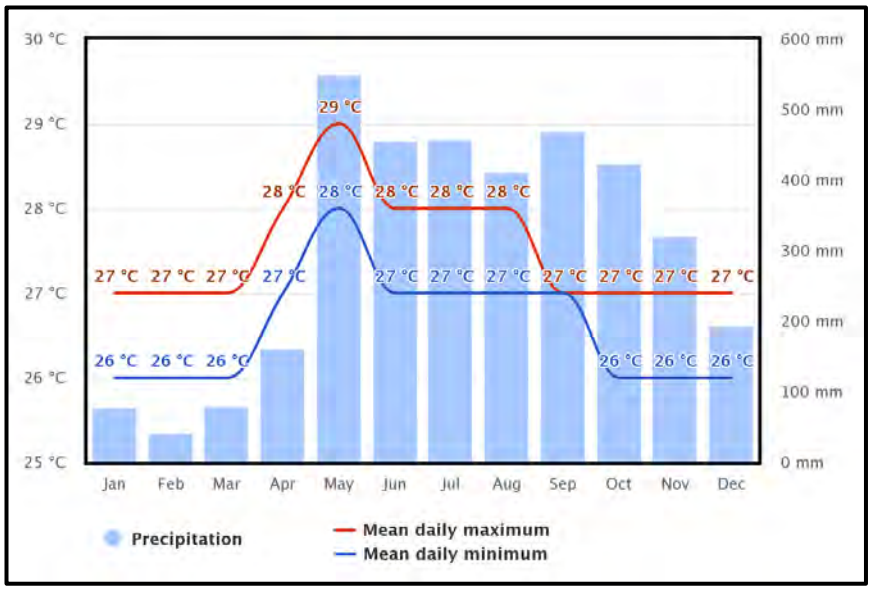
Table 2.1 Rainfall Pattern in Nicobar District

Rainfall	Average Rainfall (mm)	Average Rainy days	Normal Onset	Normal Cessation
Period	2000-2021	2008 – 2015		
SW monsoon (June-Sep)	1111.5	64	20th May	Last week of September
NE Monsoon (Oct-Dec)	760.5	41	First week of October	Last week of December
Winter (Jan- March)	265.0	16	First week of January	End of March
Summer (Apr-May)	413.2	26	Start of April	Mid May
Annual	2550.4	147	-	-

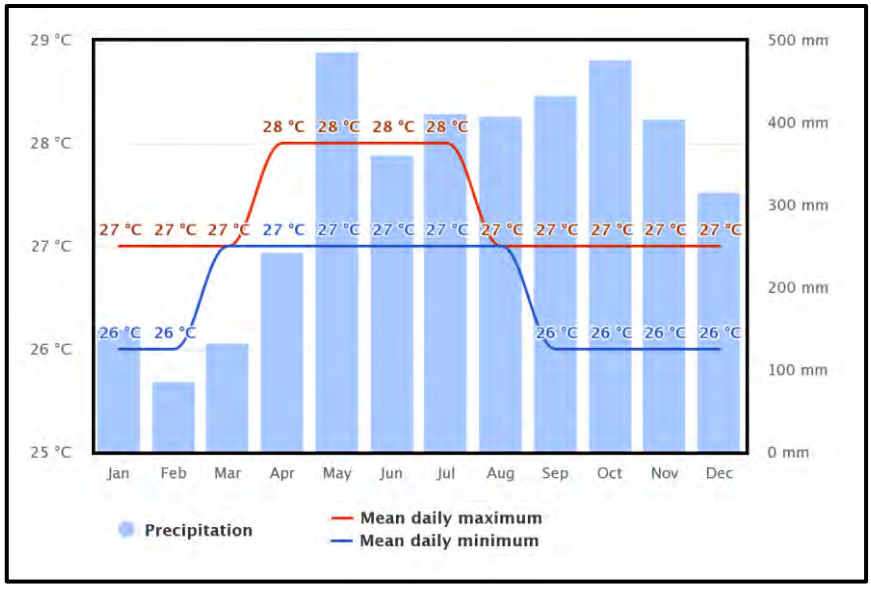
(Based on Car Nicobar IMD Station data)

However, the climate regimes of these small islands located in the Indian Ocean are predominantly influenced by the Asian monsoon. Seasonal alternation of atmospheric flow patterns results in two distinct climatic regimes summer monsoon and winter monsoon, with a clear association with ENSO events (Mimura et al., 2007). Monthly variability in precipitation and temperature at two extremities of Nicobar District (climate diagrams are based on 30 years of hourly weather model simulations) are given in **Fig. 2.1**. Annual and Monthly rainfall data of Car Nicobar IMD station is given in **Table 2.2**. Trend in annual rainfall is given in **Fig. 2.2**. It's correlation with ONI index (**Fig. 2.3**) may be clearly observed.

A. Car Nicobar Island



B. Great Nicobar Island



(Source: meteoblue, https://www.meteoblue.com/)

Fig. 2.1 Monthly variability in precipitation and temperature at two extremities of Nicobar District (climate diagrams are based on 30 years of hourly weather model simulations)

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Table 2.2 Annual and Monthly rainfall data of Nicobar Subdivision of IMD

Month	January	February	March	April	May	June	July	August	September	October	November	December	Total
2000	108.9	26.0	227.3	116.5	333.2	313.8	99.2	382.9	177.9	420.0	175.9	116.0	**2497.6**
2001	100.8	43.0	83.5	87.5	409.8	154.3	204.8	216.6	202.2	214.8	421.2	139.5	**2278.0**
2002	0.0	0.2	39.2	16.8	329.0	205.3	44.4	245.4	321.0	90.7	253.2	115.9	**1661.1**
2003	34.0	20.6	211.4	18.8	203.5	57.7	421.0	416.8	192.0	408.0	276.4	211.5	**2471.7**
2004	62.4	113.1	32.2	43.1	363.7	311.5	101.7	160.0	182.3	200.4	193.8	8.0	**1772.2**
2005	34.0	0.0	160.5	51.4	208.9	373.2	131.4	199.5	280.1	232.5	244.7	544.2	**2460.4**
2006	44.2	61.6	147.8	251.6	365.4	277.2	95.4	149.5	516.2	498.8	83.2	52.4	**2543.3**
2007	0.8	0.0	0.0	56.4	543.1	402.7	187.1	441.5	390.6	237.2	446.4	55.0	**2760.8**
2008	38.5	32.2	159.0	233.3	177.2	354.5	204.3	421.0	108.0	426.3	424.7	210.1	**2789.1**
2009	8.0	43.6	81.4	259.6	599.8	167.8	90.8	125.4	183.3	141.9	156.6	129.2	**1987.4**
2010	79.0	26.0	1.7	28.3	229.3	501.9	447.8	318.9	234.8	249.1	583.2	355.7	**3055.7**
2011	322.2	163.1	270.5	158.6	187.9	348.8	346.4	184.8	347.6	203.0	218.2	350.9	**3102.0**
2012	328.0	50.8	103.3	115.8	472.3	145.2	325.8	205.5	518.8	114.4	282.9	272.9	**2935.7**
2013	209.5	110.4	101.2	35.7	268.7	666.7	377.9	224.1	351.2	307.9	183.9	164.4	**3001.6**
2014	176.9	30.5	0.0	35.1	388.1	276.9	198.6	220.9	331.3	269.9	264.2	228.6	**2421.0**
2015	118.2	20.2	2.7	157.9	163.3	376.3	205.0	138.4	481.6	221.8	401.4	175.5	**2462.3**
2016	164.3	69.4	0.0	5.0	136.0	495.9	117.6	204.8	532.0	285.6	190.8	696.2	**2897.6**
2017	643.1	20.1	69.7	144.2	344.2	199.5	170.2	253.2	290.5	233.7	277.2	488.4	**3134.0**
2018	209.4	94.7	17.9	201.7	300.7	377.8	133.4	126.1	229.2	215.4	173.0	321.8	**2401.1**
2019	174.6	24.4	23.8	56.3	255.6	379.0	184.3	263.8	297.2	181.1	229.3	103.8	**2173.2**
2020	15.2	10.0	0.4	44.3	252.0	553.9	183.1	222.8	435.2	252.2	235.5	229.1	**2433.7**
2021	104.0	42.0	119.0	163.8	277.1	227.0	372.1	473.1	444.7	333.6	248.3	63.9	**2868.6**
2022	135.3	45.5	84.2	103.7	309.5	325.8	211.0	254.3	320.4	260.8	271.1	228.8	**2550.4**
Mean	**108.9**	**26.0**	**227.3**	**116.5**	**333.2**	**313.8**	**99.2**	**382.9**	**177.9**	**420.0**	**175.9**	**116.0**	**2497.6**

(Source: IMD, Kolkata)

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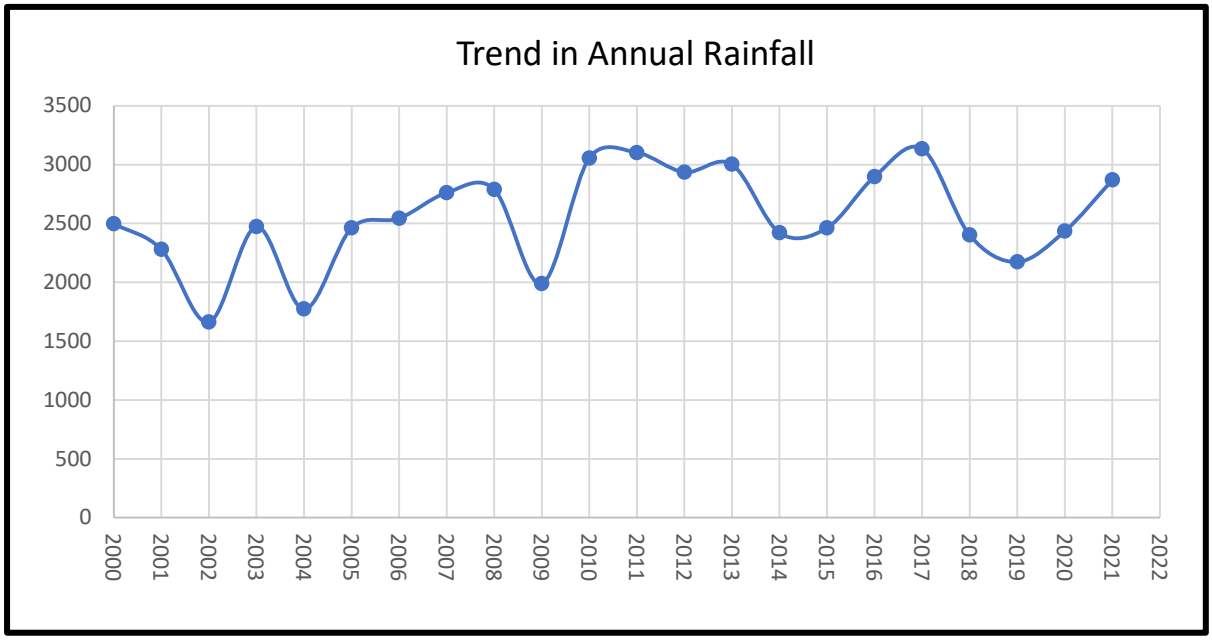


Fig. 2.2 Trend in Annual Precipitation

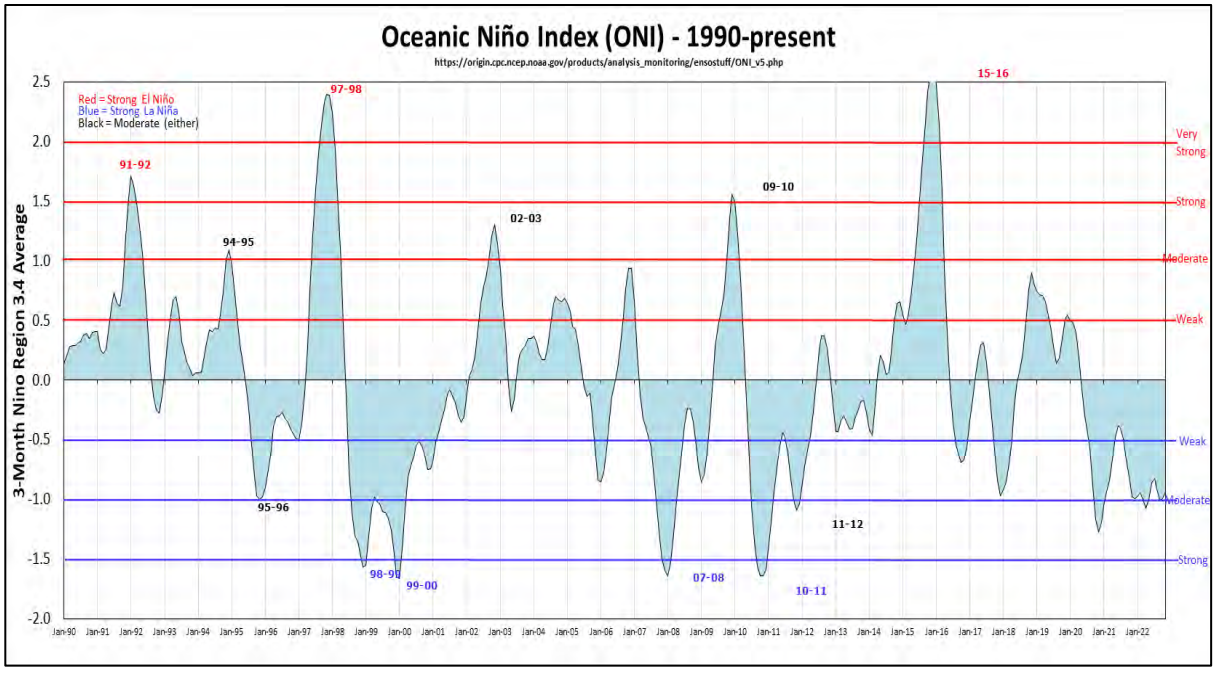


Fig. 2.3 ONI Index (Year 1990-Present)

2.2 Rainfall and Potential Evapotranspiration Trend Analysis

Two most significant climatological parameters, namely, Rainfall (RF) and Potential Evapotranspiration (PET) are studied and forecasting is done up to the year 2030. Forecasting modeling is done for the district as a whole and specifically for Great Nicobar Island in view of its development prospect.

Pre-whitening, Mann–Kendall test analysis, Sen-Slope and Exponential Triple Smoothing (ETS) Algorithm are utilized in the analysis of the climatic data. The RF and PET data are acquired from the Global Precipitation Measurement Satellite System (GPM IMERG Final Precipitation L3 1 month 0.1° x 0.1° V06) and Famine Early Warning Systems Network (FEWS NET) Land Data Assimilation System (FLDAS) (FLDAS Noah Land Surface Model L4 Global Monthly) with 0.1° x 0.1° spatial resolution from the year 2000 to 2020.

A) Nicobar District

Annual cumulative RF value and the forecasted RF value is plotted for the duration of 2000 to 2020 for the various islands of Nicobar district. RF varies from 2000 mm to 4300 mm over the islands. Average annual RF from 2001-2020 over various island groups in Nicobar district are given in **Table 2.3**. Southern group of islands received maximum RF, while middle group of islands received lowest RF during the period. Forecasting model (**Fig. 2.4**) shows that the RF will increase in the upcoming years in the Southern group of islands, while in the other islands groups RF will decrease.

Table 2.3 Average annual RF from 2001-2020 over Nicobar district

Islands	Mean RF (mm)	Std. Dev.
Car Nicobar	2972.2	±493.69
Katchal, Nancowri and Kamorta	2777.15	±486.26
Great Nicobar and Little Nicobar	3123.25	±452.59

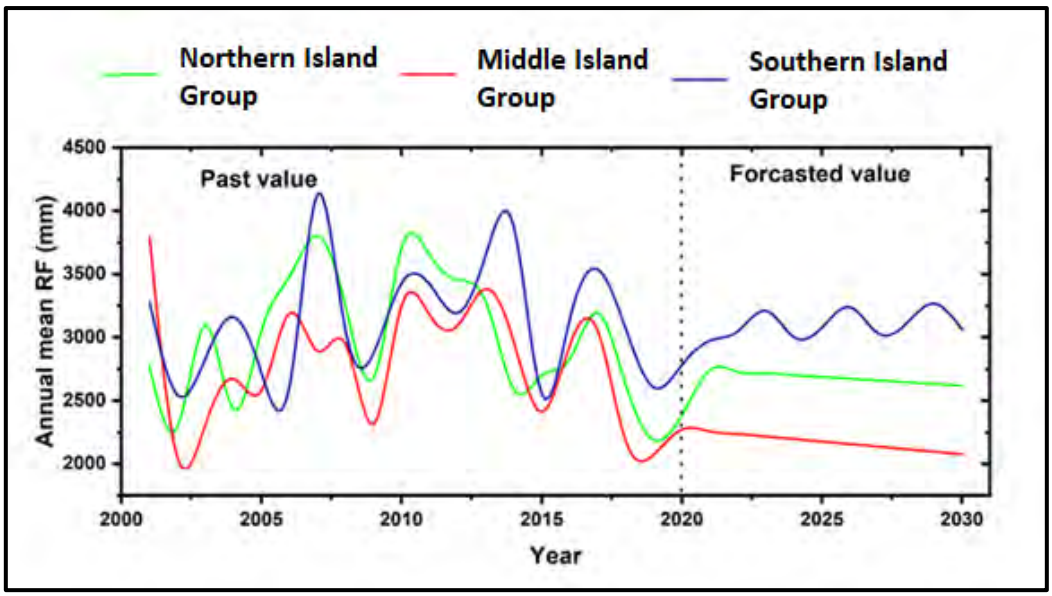


Fig. 2.4 Past and forecasted value of Nicobar island districts from 2001-2030

B) Great Nicobar Island

Study region is divided in to five different domains (D-1, D-2, D-3, D-4, and D-5) (**Table 2.4 and Fig 2.5**). This present model is generated mostly over the Island, hence the predictions are to be high influenced by the oceanic phenomena over the region.

Utilized twenty years (2000-2020) of RF and PET monthly dataset for M-K trend analysis and Sen-slope-estimator, over different domains do not show significant variability in the magnitude and direction of trends (**Table 2.5**). Season-wise analysis of RF indicates that the island receives RF in all seasons. It is noteworthy that the region is influenced by the south-west monsoon, north-east monsoon and pre-monsoon showers (**Fig. 2.6**). It is observed that north-east monsoon carried higher RF than the south-west monsoon. In the winter season, the forecasted RF is higher than the mean RF, whereas, in the other seasons forecasted RF is lesser than mean RF (except in post-monsoon season in D-3), which indicates that the RF will increase in winter season and decrease in the other seasons (**Fig. 2.6**). Season-wise predicted future trend of RF are given in **Fig. 2.7**.

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Table 2.4 Domain details

S. No.	Domain	Latitude	Longitude
1	D-1	6.7°-7.3°	93.3°-94°
2	D-2	7.2°	93.7° -93.8°
3	D-3	7.1°	93.7° -93.9°
4	D-4	6.9° -7°	93.8°
5	D-5	6.9° -7°	93.9°

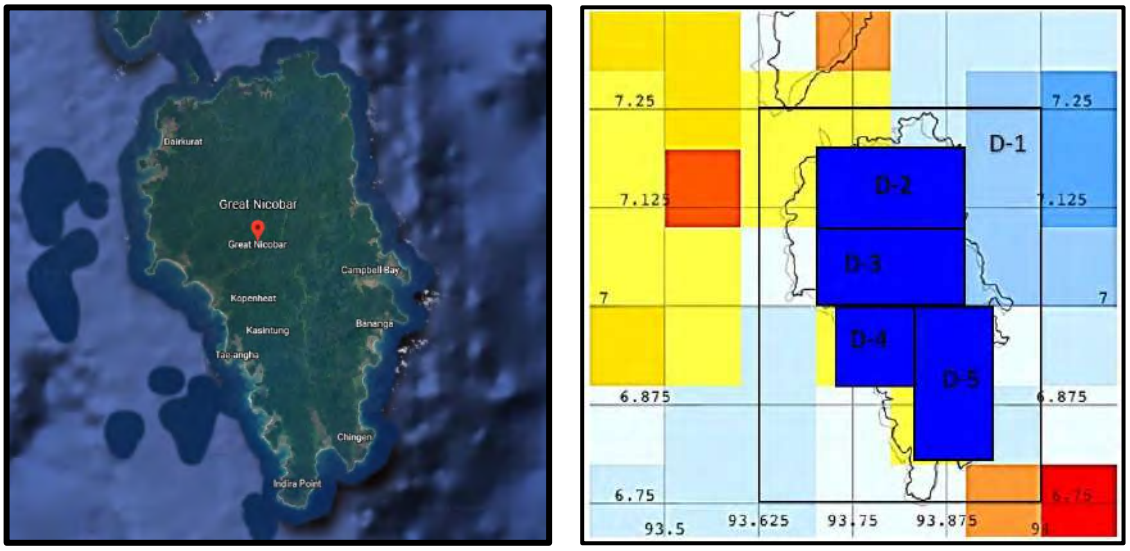


Fig. 2.5 Google earth image and different selected domains (blue box) over the Great Nicobar Island

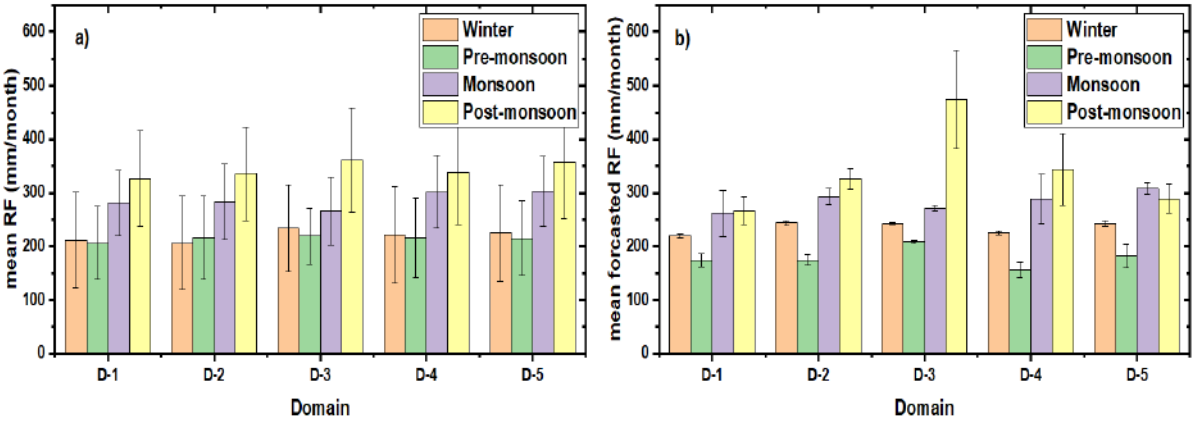


Fig. 2.6 Seasonal a) Mean RF and b) Forecasted RF over various domains

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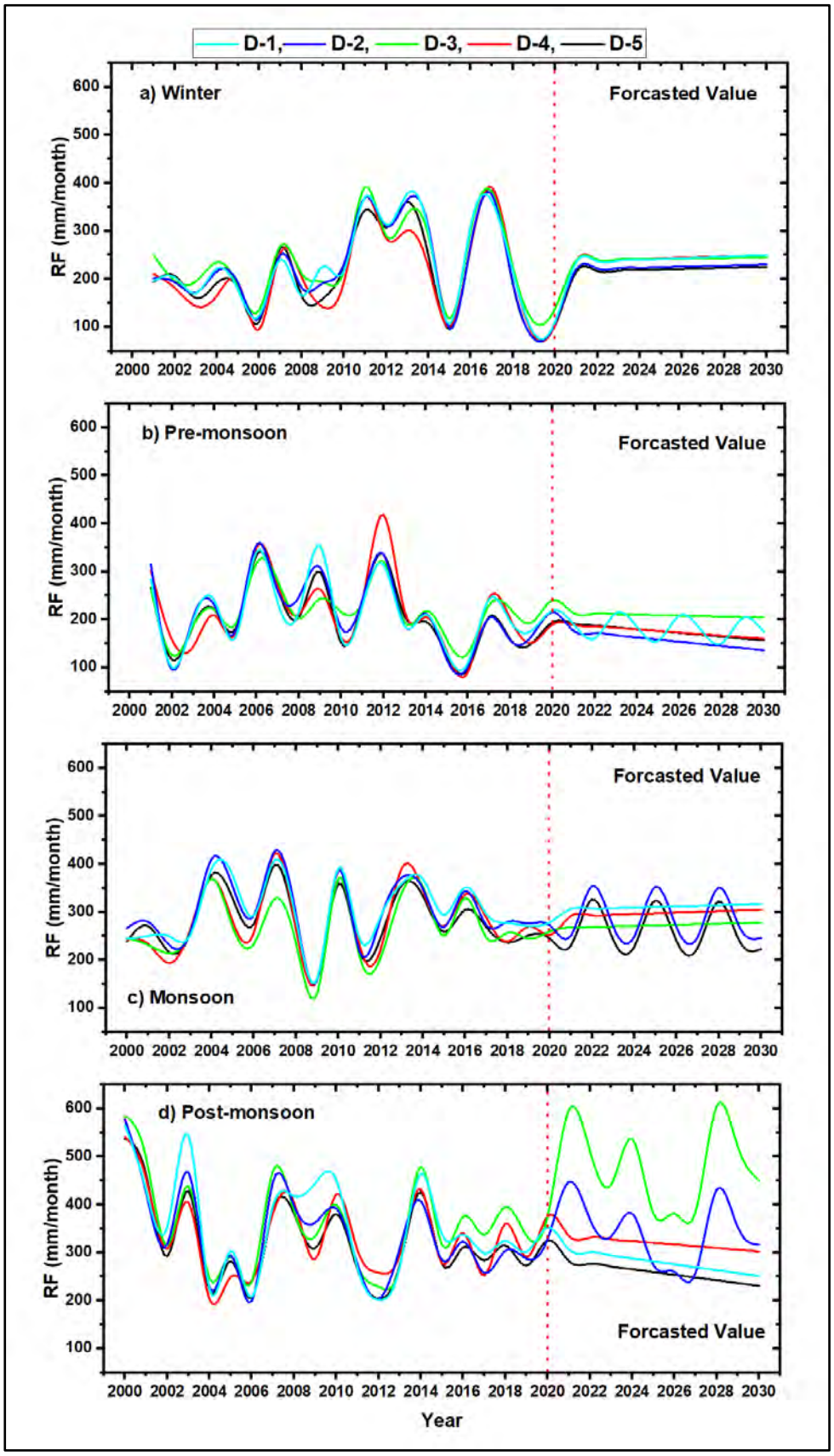


Fig. 2.7 Mean RF and Forecasted RF in different seasons in Great Nicobar

2.3 Seasonal Variation of RF and PET in Great Nicobar Island

Monthly RF and PET are plotted from 2000 to 2020 for the different selected domains of Great Nicobar (**Fig. 2.8**). More or less, RF occurs every month over the region. Simultaneously, PET is negligible in the rainy season (monsoon, post-monsoon and winter). Only in the pre-monsoon season, PET enhanced over the region. As the study region is an island with complex topography, the maximum RF leads to ocean as a surface runoff and some part lost as evapotranspiration.

Seasonal analysis of RF indicated that the island received RF in all the seasons. Though the region is influenced by the south-west monsoon, north-east monsoon and pre-monsoon showers, it is observed that the north-east monsoon carried higher RF than the south-west monsoon in the area. PET is negligible in the rainy season (monsoon, post-monsoon and winter). Only in the pre-monsoon season, PET enhanced over the region.

On monthly basis, RF starts rising in February and reached a peak in May which is considered pre-monsoon rain. South-west monsoon appears in the region in May. RF drops in August due to the southwest monsoon break and rise in September again. Owing to the south-west monsoon retreat RF drops in October and again rises in November and the winter season. The north-east monsoon appears in the island during winter season and RF is higher than the south-west monsoon. February receives the minimum RF of < 100 mm of the year and the rest of the months receive higher RF of > 100 mm.

On monthly basis, PET starts rising in January and reached the maximum value of 55 mm in April. After April, PET starts falling up to the minimum value of 2 mm in September. January to May is the period when maximum water is lost in terms of PET and less groundwater recharge takes place. For the rest of the months, PET is low owing to the higher RF and maximum groundwater recharge occurs during this period. Month-wise variation in RF and PET over Great Nicobar Island is given in **Fig. 2.9**.

Hence, it’s evident that recharge is taking place for the month of May to January as RF exceeds PET. Decline in water table will be observed during the months of February to April.

Table 2.5 M-K trend and Sen-slope for RF and PET
(Over different quadrant/domains in various seasons)

Parameters	Season	Quadrant	M-K trend	Sen-slope
Rainfall	Winter	D-1	No	0.8833
		D-2	No	1.987
		D-3	No	1.976
		D-4	No	1.156
		D-5	No	3.024
	Pre-monsoon	D-1	No	-3.993
		D-2	No	-3.285
		D-3	No	-0.197
		D-4	No	-4.515
		D-5	No	-2.308
	Monsoon	D-1	No	-0.8603
		D-2	No	0.9884
		D-3	No	0.726
		D-4	No	-0.3756
		D-5	No	1.0406
	Post-monsoon	D-1	No	-4.143
		D-2	No	-1.8903
		D-3	No	-2.487
		D-4	No	-6.46
		D-5	No	-6.048
Potential Evapotranspiration	Winter	D-1	No	Negligible
		D-2	No	Negligible
		D-3	No	Negligible
		D-4	No	Negligible
		D-5	No	Negligible
	Pre-monsoon	D-1	No	Negligible
		D-2	No	Negligible
		D-3	No	Negligible
		D-4	No	Negligible
		D-5	No	Negligible
	Monsoon	D-1	No	Negligible
		D-2	No	Negligible
		D-3	No	Negligible
		D-4	No	Negligible
		D-5	No	Negligible
	Post-monsoon	D-1	No	Negligible
		D-2	No	Negligible
		D-3	No	Negligible
		D-4	No	Negligible
		D-5	No	Negligible

2203

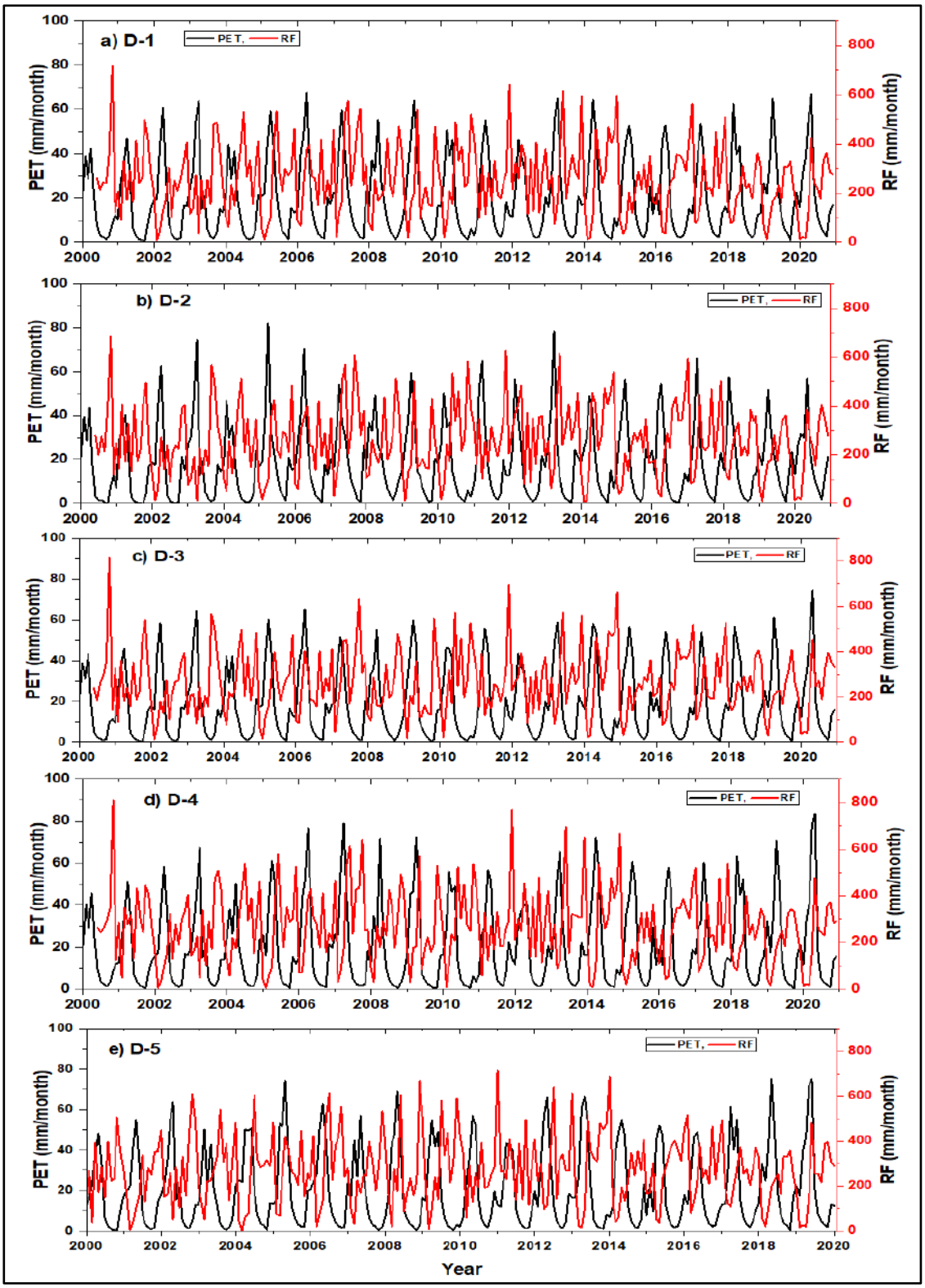


Fig. 2.8 Time series RF and PET variation over the selected domains in Great Nicobar

Table 2.6 Mean and forecasted RF over the different zones over Great Nicobar

Season	Domain	Avg. RF (mm/month) (2000-2020)	Avg. forecasted RF (mm/month) (2020-2030)	% Difference
Winter	D-1	211.6	220.2	3.9
	D-2	206.4	243.9	16.6
	D-3	233.4	242.3	3.7
	D-4	220.7	225.32	2
	D-5	224.7	242.5	7.5
Pre-monsoon	D-1	206.4	173.9	-17
	D-2	216.3	174.5	-21.4
	D-3	219.4	208.6	-5
	D-4	215.5	156.1	-31.9
	D-5	215.1	181.9	16.7
Monsoon	D-1	280.9	262	-6.9
	D-2	283.5	292.9	3.2
	D-3	265.9	270.9	1.8
	D-4	301.4	288.3	-4.4
	D-5	302.7	307.5	1.5
Post-monsoon	D-1	325.7	266	-20
	D-2	335.3	325.8	-2.8
	D-3	360.7	473.5	-27
	D-4	337.7	343.3	1.6
	D-5	357	288.8	-21

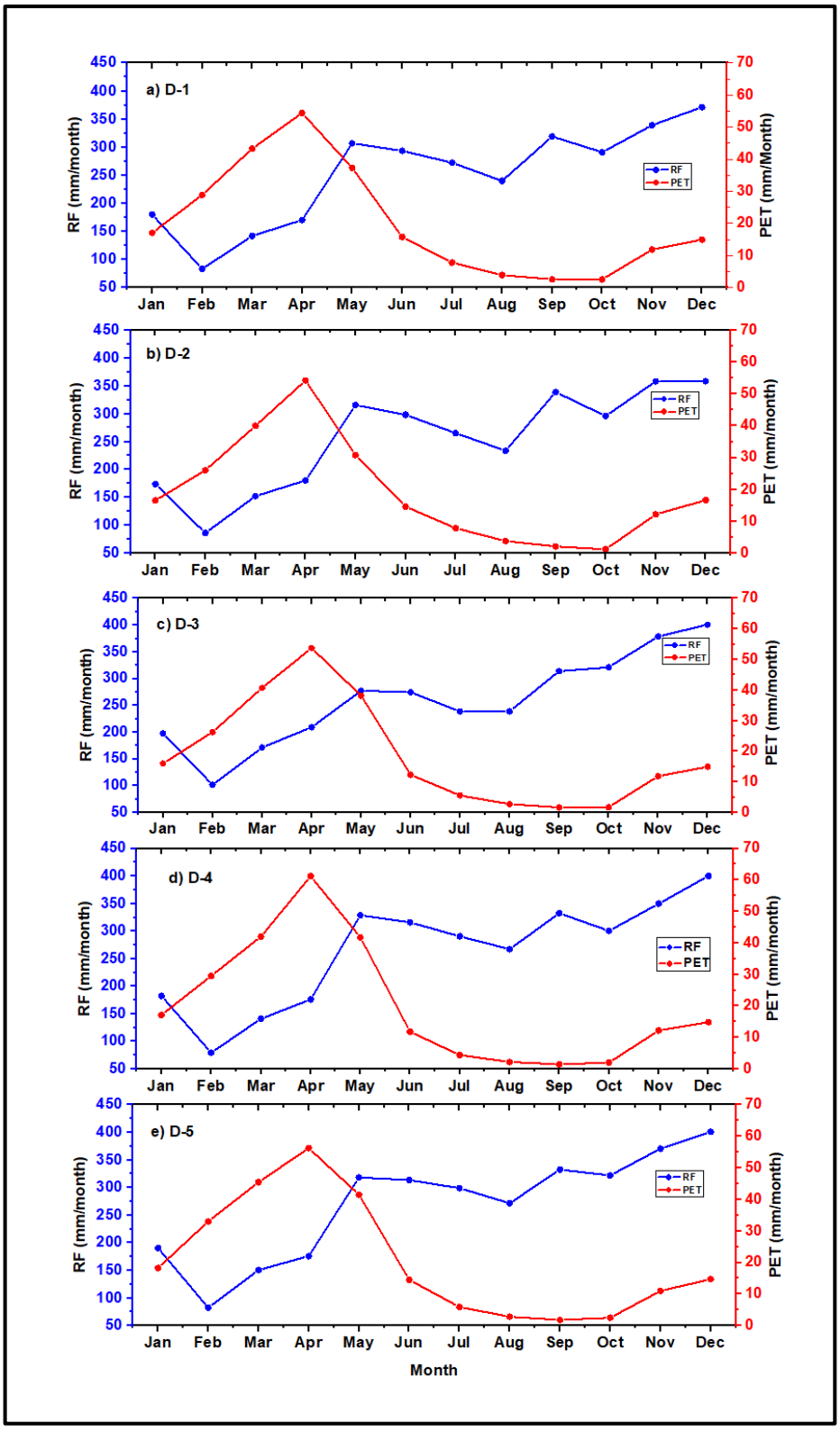


Fig. 2.9 Monthly RF and PET variation over the selected domains in Great Nicobar Island

Chapter 3

REGIONAL GEOLOGY

Tectonically, Andaman and Nicobar Group of Islands are located at the central part of Sunda-Java subduction complex. Along the subduction complex, Indian Plate is subducting along the geophysically traced Arakan-Yoma-Andaman-Java trench (Curray and Moore, 1974; Karig *et al*. 1979; Mukhopadhyay, 1988). Nicobar group of islands represent the tail part of the island chain. The predominance of sedimentary rocks and local thrust-emplaced ophiolite slices and olistoliths (Ray, 1982) are consistent with an outer arc setting for the Andaman and Nicobar Islands (Chakraborty and Pal, 2001). Major tectono-stratigraphic elements in these islands strike approximately parallel to the trend of the trench. Tectonic elements of the island chain of Andaman and Nicobar are: (a) Outer-arc comprised of oceanic crust (in the form of ophiolites) and trench sediments and (b) Fore-arc represented by siliciclastic to carbonate turbidites (Pal *et al*., 2003). Generalized Litho-Stratigraphy of Nicobar district is given in **Table 3.1**. Tectonic Setup of Andaman-Nicobar Island Area is given in **Fig. 3.1**. Schematic 3-D Block diagram of Andaman Subduction Zone (Singh and Moeremans, 2017) is given in **Fig. 3.3**.

In a broad sense, lithologically, marine sedimentary group of rocks comprising shale, sandstone, grit and conglomerate; extrusive and intrusive igneous rocks (volcanics and ultramafics) and Coralline limestone mainly occupy the area. Amongst these marine-sedimentary group is most pervasive and occupy nearly 70% of the entire area of the islands while the igneous group covers nearly 15% while the rest 15% by coralline and limestone formations. Because of tectonism the igneous and marine-sedimentary group of rocks are fractured and fissured. The geology of the islands is highly varied and even changes within a small distance. Island-wise occurrence of various litho-groups are summarized in **Table 3.2**. Geological Map of Nicobar group of Islands is given in **Fig. 3.4**. Detailed geological maps of Car Nicobar Island (**Fig. 3.5**), Chowra, Teressa and Bampooka Island (**Fig. 3.6**), Katchal, Kamorta, Nancowri, and Trinket Island (**Fig. 3.7**), Tillangchong Island (**Fig. 3.8**), Little Nicobar Island (**Fig. 3.9**), and Great Nicobar Island (**Fig. 3.10**) are prepared.

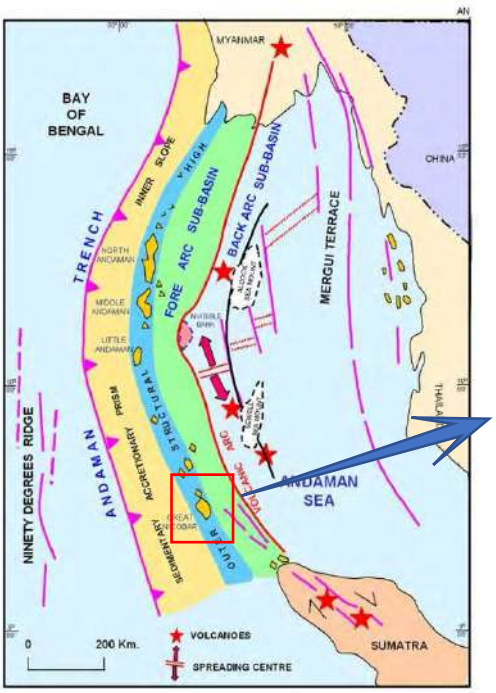
Table 3.1 Generalized Litho-Stratigraphy
(After Karunakaran, *et al*, 1967; Ray, 1982; Pal *et al*, 2003)

Tectonic Setting	Age	Stratigraphic Unit	Lithological Character
	Holocene to Recent	Recent	Beach sand, Swampy clay, raised beach shell limestone
Fore Arc	Pliocene (cf. Ray, 1982) Miocene (Chatterjee, 1964)	Archipelago Group (400m thick)	Interbedded sequence of tuff, limestone, sandstone and clay.
	Unconformity		
	Upper Eocene Oligocene (Pawde & Ray, 1963) Oligocene- Lower Miocene	Andaman Flysch Group (300m thick)	Interbedded sequence of sandstone, siltstone and shale
	Unconformity / transitional		
Trench Slope	Middle to Late Eocene (Karunakaran *et al*, 1967)	Mithakhari Group (1400m thick)	Conglomerate, sandstone and shale
	Tectonic / Unconformity		
Accretionary Slices	Late Cretaceous to Paleocene (Roy *et al*, 1988) Early Cretaceous (cf Jafri, 1990).	Ophiolite Group	Metamorphics, tectonites, cumulates, plagiogranite - diorite - andesite suite, basalt and pelagic sediments

Table 3.2 Island-wise occurrence of various litho-groups

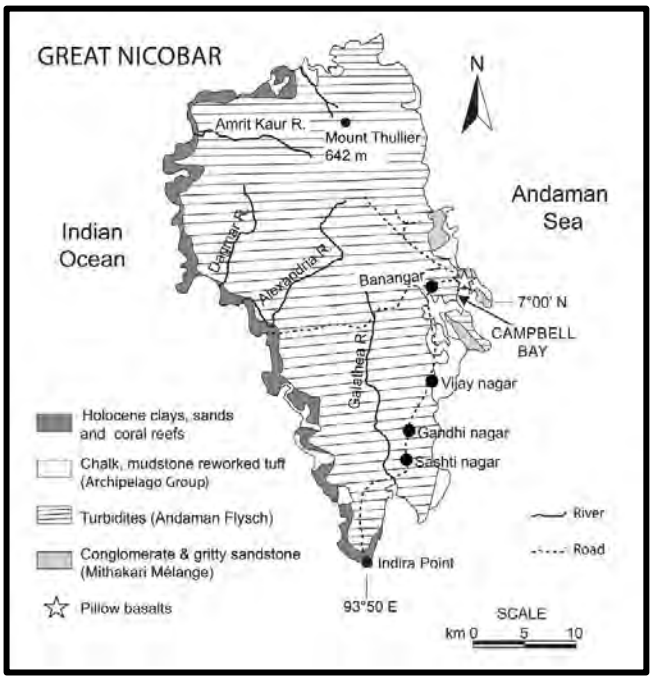
Stratigraphic Units	Islands												
	Car Nicobar	Chowra	Teressa	Bompoka	Katchal	Nancowri	Kamorta	Trinket	Tillangchong	Pulo milo	Little Nicobar	Kondul	Great Nicobar
Recent Sediments	P	P	P	P	P	P	P	P	P	P	P	P	P
Archipelago Group	N	P	P	N	N	P	P	N	N	N	N	N	P
Andaman Flysch Group	N	N	N	N	P	N	N	N	N	N	P	N	P
Mithakhari Group	N	N	N	N	P	N	N	N	N	N	N	N	P
Ophiolite Group	N	N	P	P	P	P	P	N	P	N	N	N	P

P: Present; N: Not Observed; (Compiled from GSI Map)



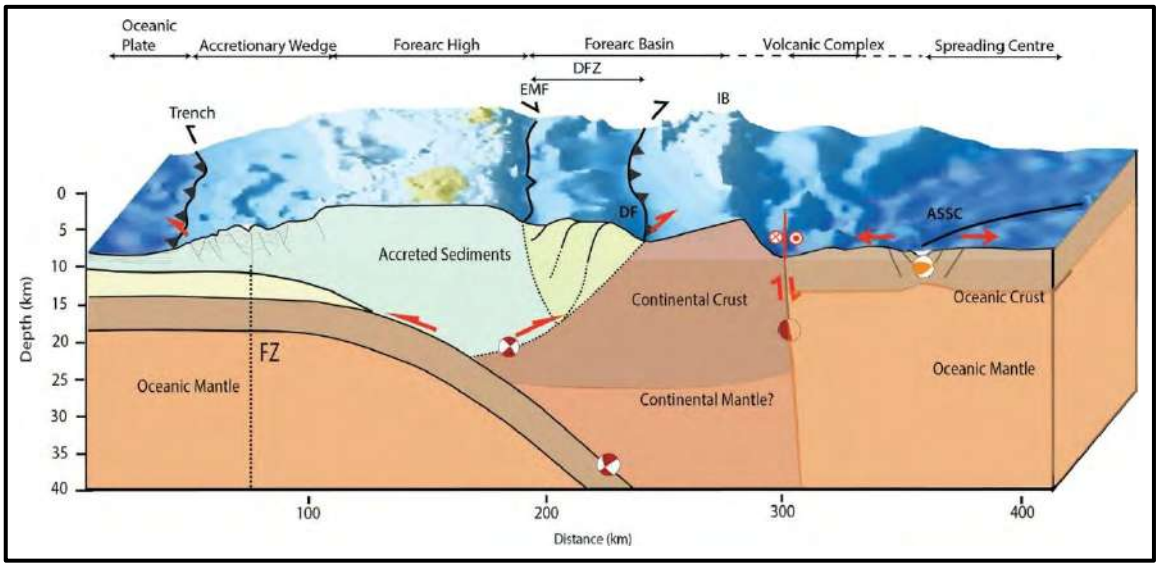
NDR, DGH, Min. of Pet and Nat. Gas, GoI

Fig. 3.1 Tectonic Setup of Andaman-Nicobar Island Area



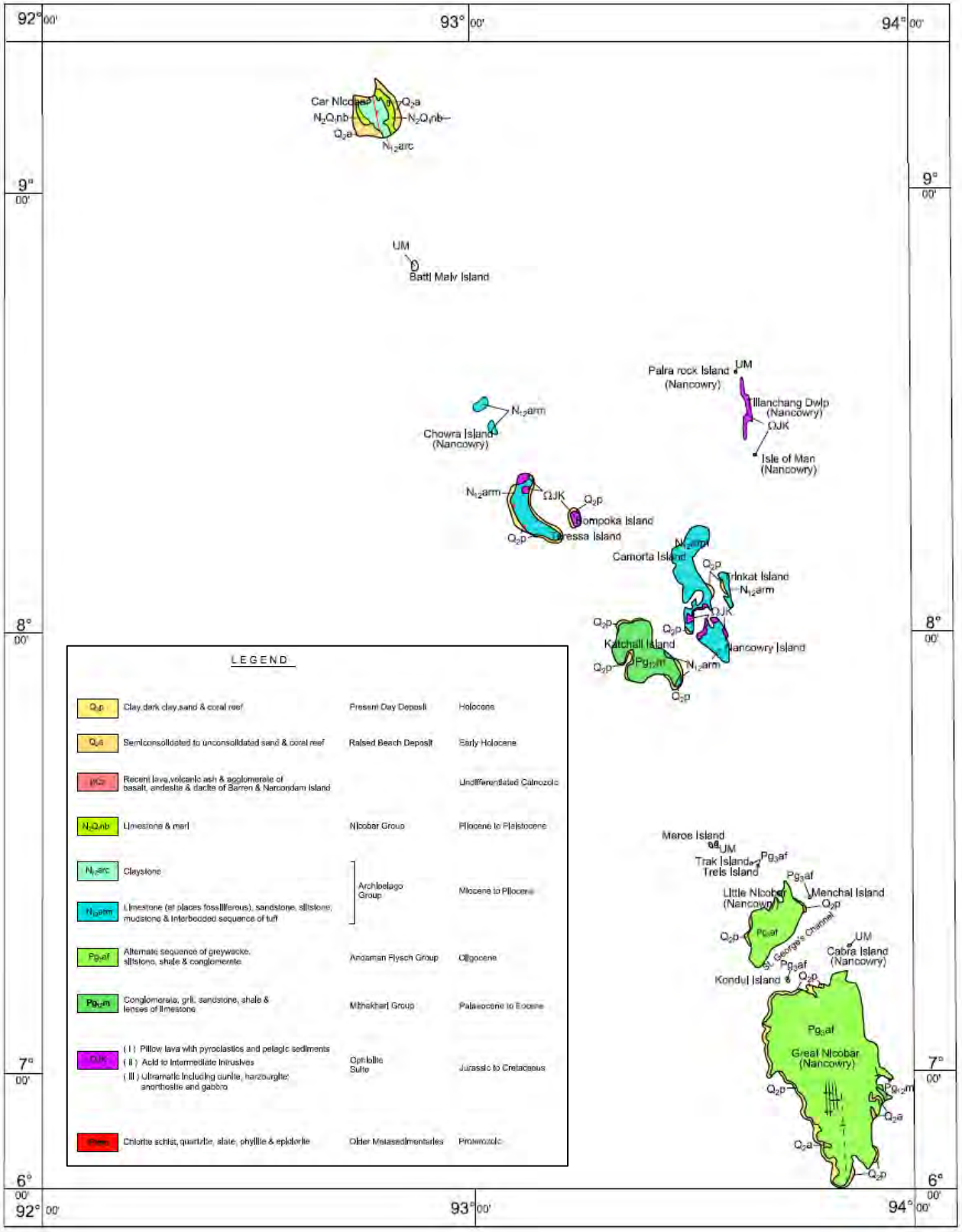
Bandopadhyay and Carter (2017)

Fig. 3.2 Geological map of Great Nicobar Island



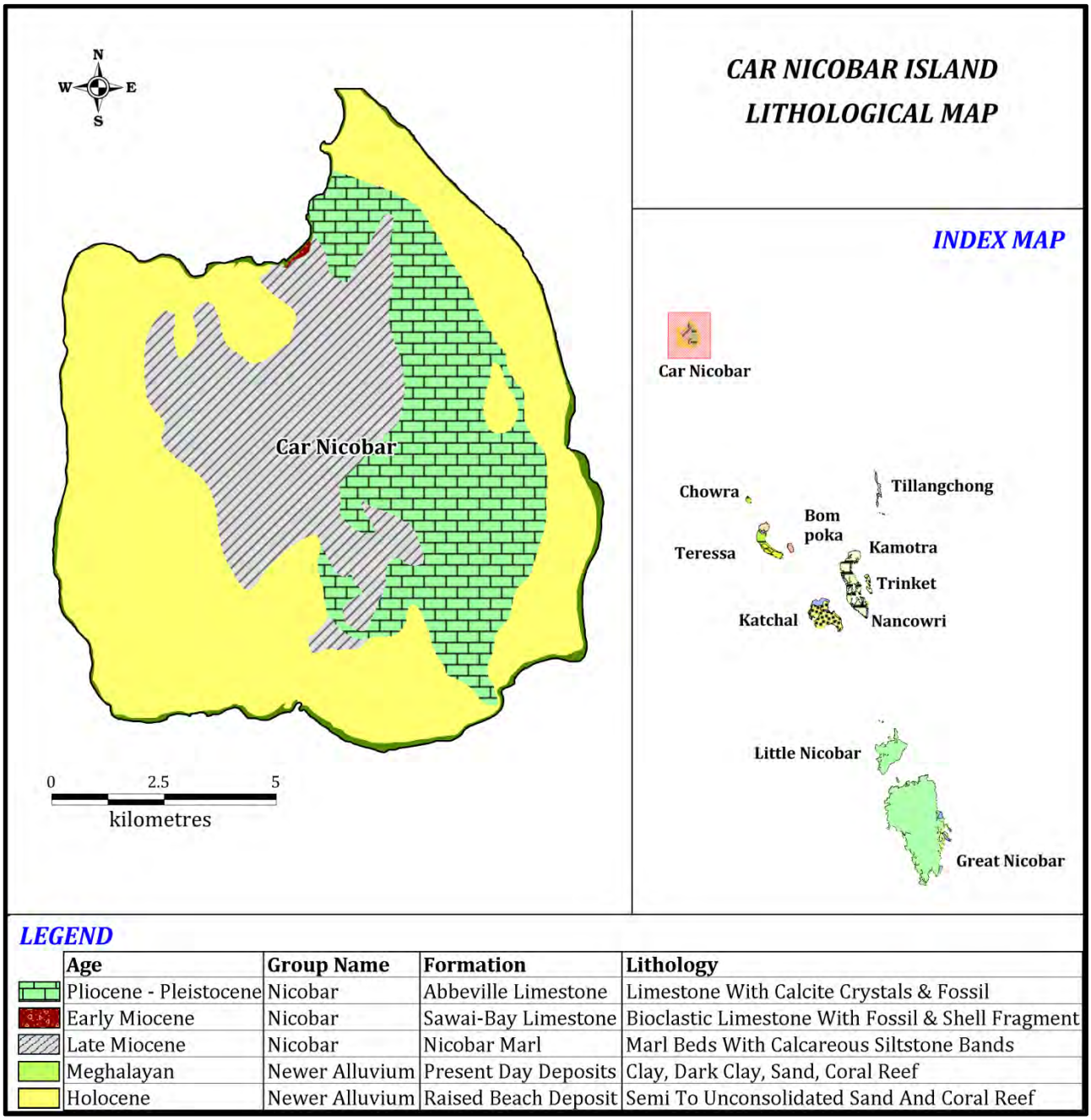
(Singh and Moeremans, 2017)

Fig. 3.3 Schematic 3-D Block diagram of Andaman Subduction Zone



Source: Geological Survey of India

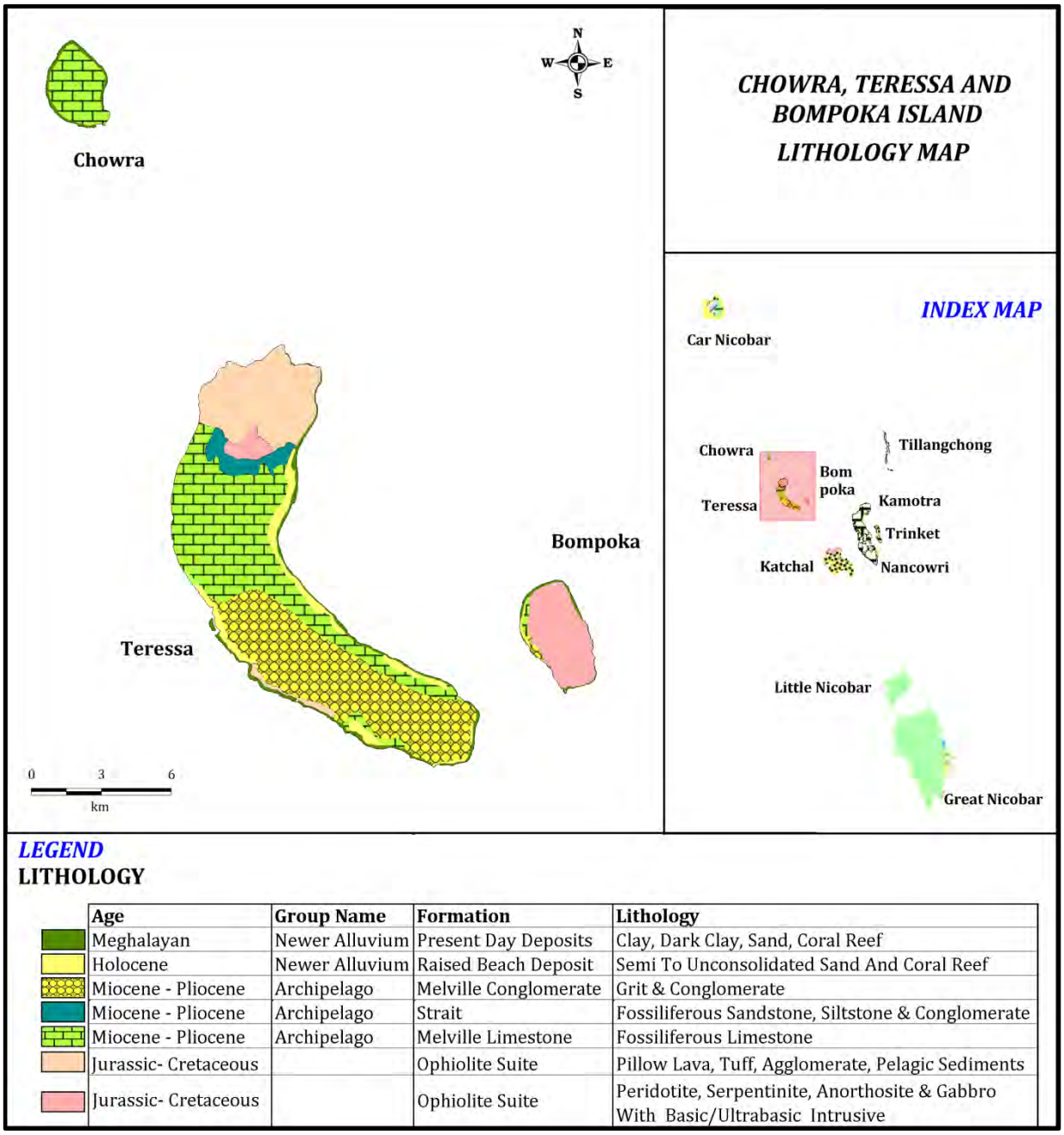
Fig. 3.4 Geological Map of Nicobar group of Islands



LEGEND

Age	Group Name	Formation	Lithology
Pliocene - Pleistocene	Nicobar	Abbeville Limestone	Limestone With Calcite Crystals & Fossil
Early Miocene	Nicobar	Sawai-Bay Limestone	Bioclastic Limestone With Fossil & Shell Fragment
Late Miocene	Nicobar	Nicobar Marl	Marl Beds With Calcareous Siltstone Bands
Meghalayan	Newer Alluvium	Present Day Deposits	Clay, Dark Clay, Sand, Coral Reef
Holocene	Newer Alluvium	Raised Beach Deposit	Semi To Unconsolidated Sand And Coral Reef

Fig 3.5 Geological Map of Car Nicobar Island (Source: GSI)

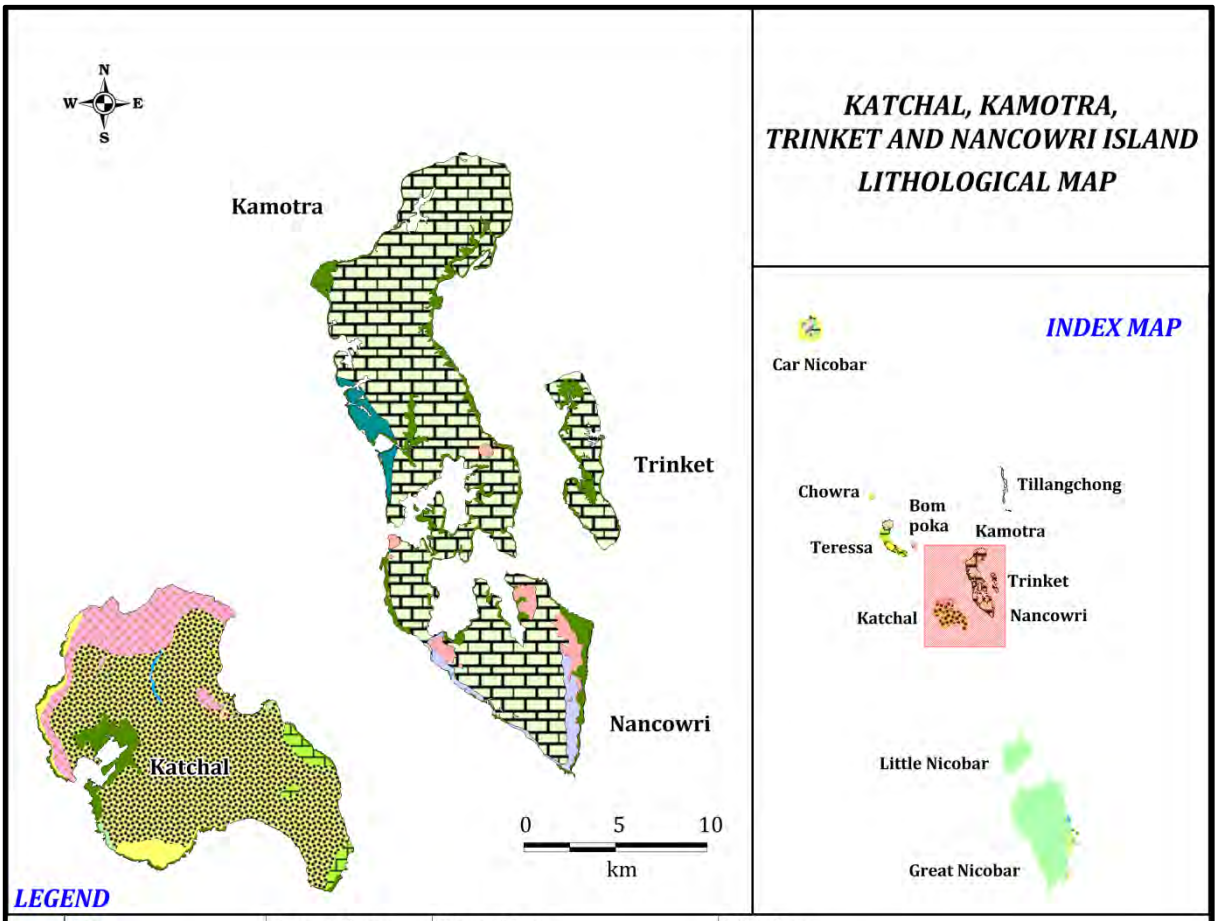


LEGEND

LITHOLOGY

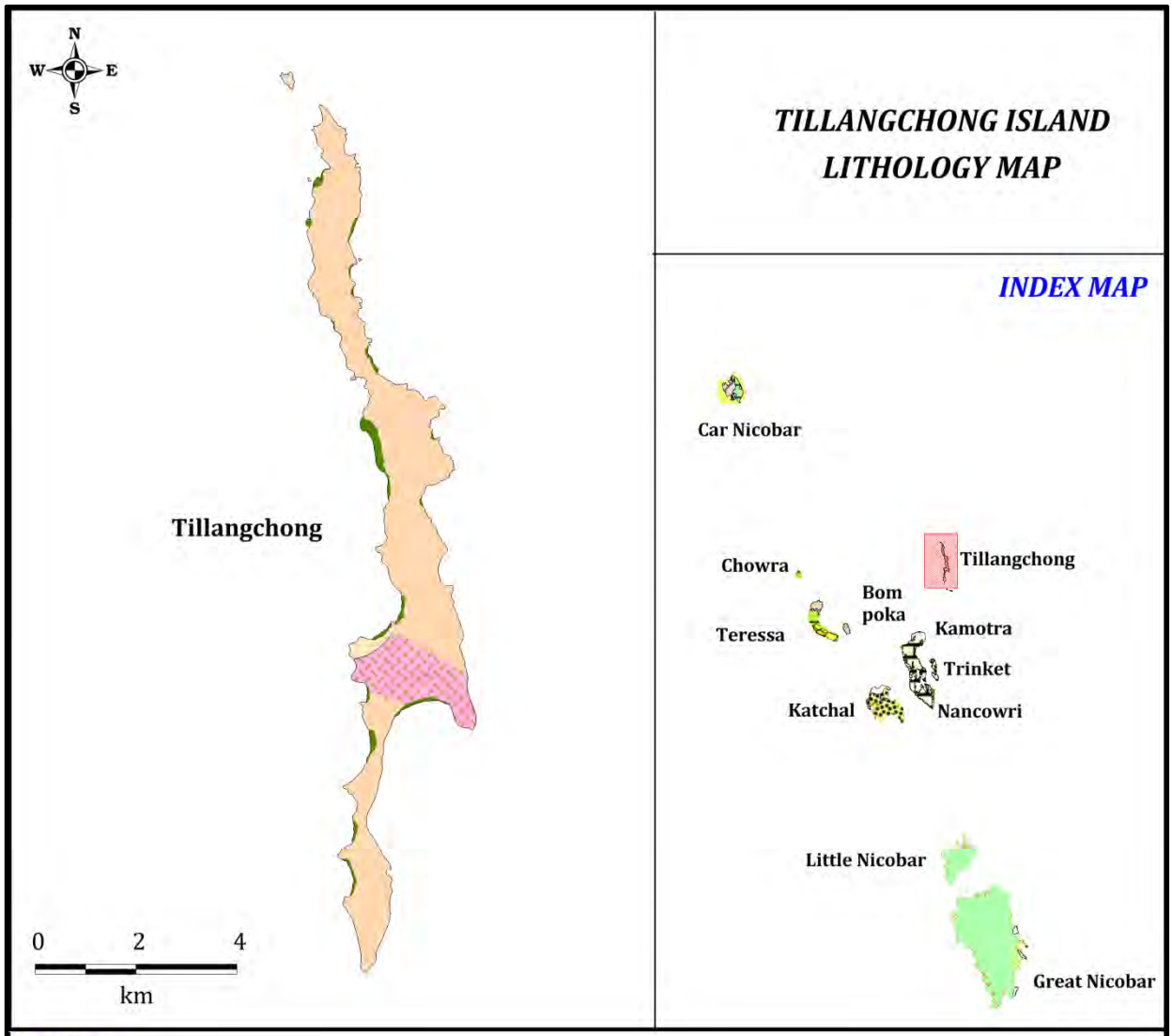
Age	Group Name	Formation	Lithology
Meghalayan	Newer Alluvium	Present Day Deposits	Clay, Dark Clay, Sand, Coral Reef
Holocene	Newer Alluvium	Raised Beach Deposit	Semi To Unconsolidated Sand And Coral Reef
Miocene - Pliocene	Archipelago	Melville Conglomerate	Grit & Conglomerate
Miocene - Pliocene	Archipelago	Strait	Fossiliferous Sandstone, Siltstone & Conglomerate
Miocene - Pliocene	Archipelago	Melville Limestone	Fossiliferous Limestone
Jurassic- Cretaceous		Ophiolite Suite	Pillow Lava, Tuff, Agglomerate, Pelagic Sediments
Jurassic- Cretaceous		Ophiolite Suite	Peridotite, Serpentinite, Anorthosite & Gabbro With Basic/Ultrabasic Intrusive

Fig 3.6 Geological Map of Chowra, Teressa and Bampooka Island (Source: GSI)



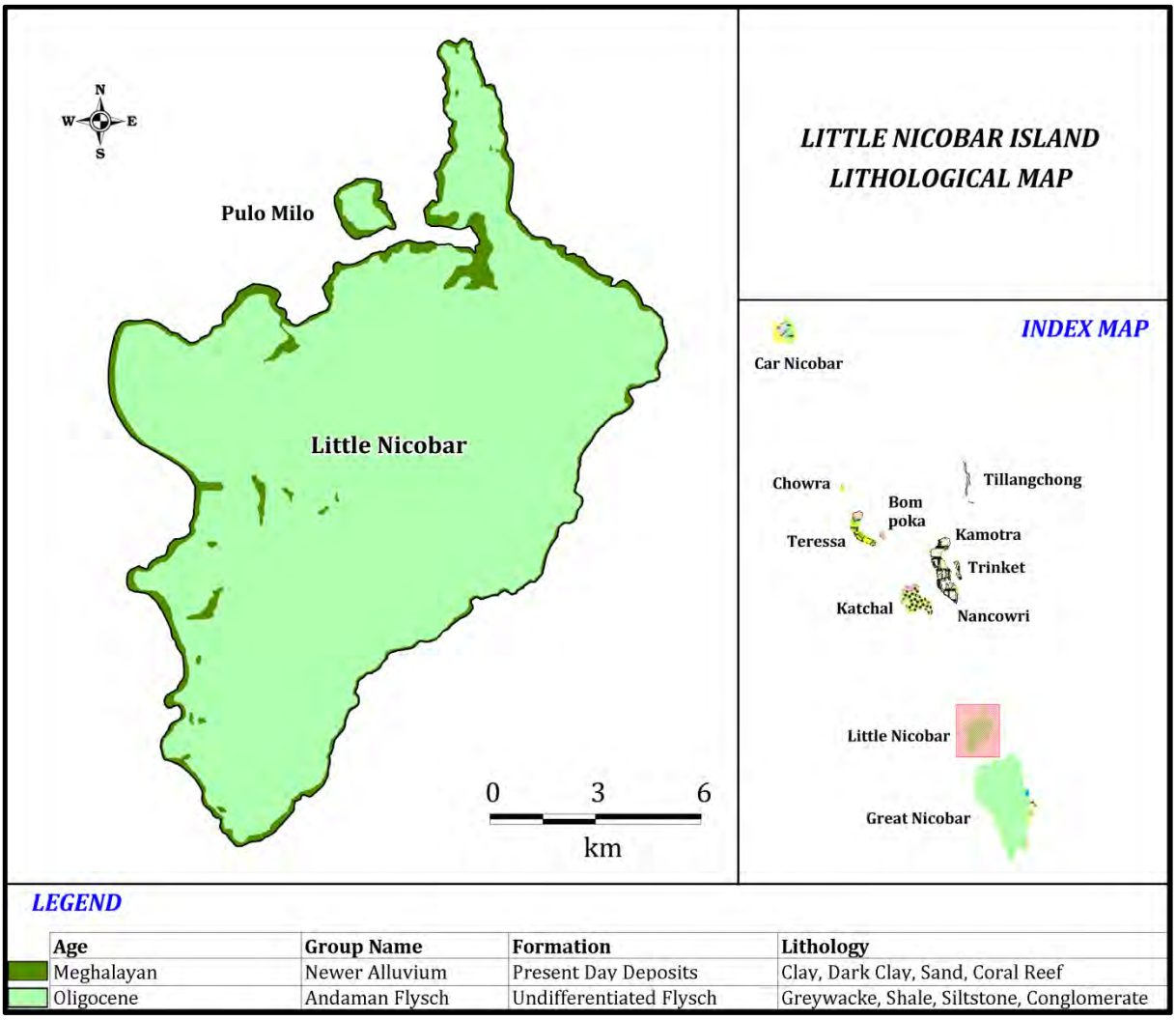
	Age	Group Name	Formation	Lithology
	Meghalayan	Newer Alluvium	Present Day Deposits	Clay, Dark Clay, Sand, Coral Reef
	Holocene	Newer Alluvium	Raised Beach Deposit	Semi To Unconsolidated Sand And Coral Reef
	Miocene - Pliocene	Archipelago	Round Chalk	Calcareous Mudstone With Siltstone & Sandstone
	Miocene - Pliocene	Archipelago	Strait	Fossiliferous Sandstone, Siltstone & Conglomerate
	Miocene - Pliocene	Archipelago	Undifferentiated Archipelago	Grit, Conglomerate ,Fossiliferous Limestone
	Miocene - Pliocene	Archipelago	Melville Limestone	Fossiliferous Limestone
	Oligocene	Andaman Flysch	Undifferentiated Flysch	Greywacke, Shale, Siltstone, Conglomerate
	Palaeocene - Eocene	Mithakhari	Namunagarh Grit	Gritty Sandstone
	Palaeocene - Eocene	Mithakhari	Undifferentiated Mithakari	Greywacke, Grit, Sandstone & Conglomerate
	Palaeocene - Eocene	Mithakhari	Hopetown Conglomerate	Conglomerate, Pebbly And Gritty Sandstone
	Jurassic- Cretaceous		Ophiolite Suite	Pillow Lava, Tuff, Agglomerate, Pelagic Sediments
	Jurassic- Cretaceous		Ophiolite Suite	Peridotite, Serpentinite, Anorthosite & Gabbro with Basic/Ultrabasic Intrusive

Fig 3.7 Geological Map of Katchal, Kamorta, Nancowri, and Trinket Island (Source: GSI)



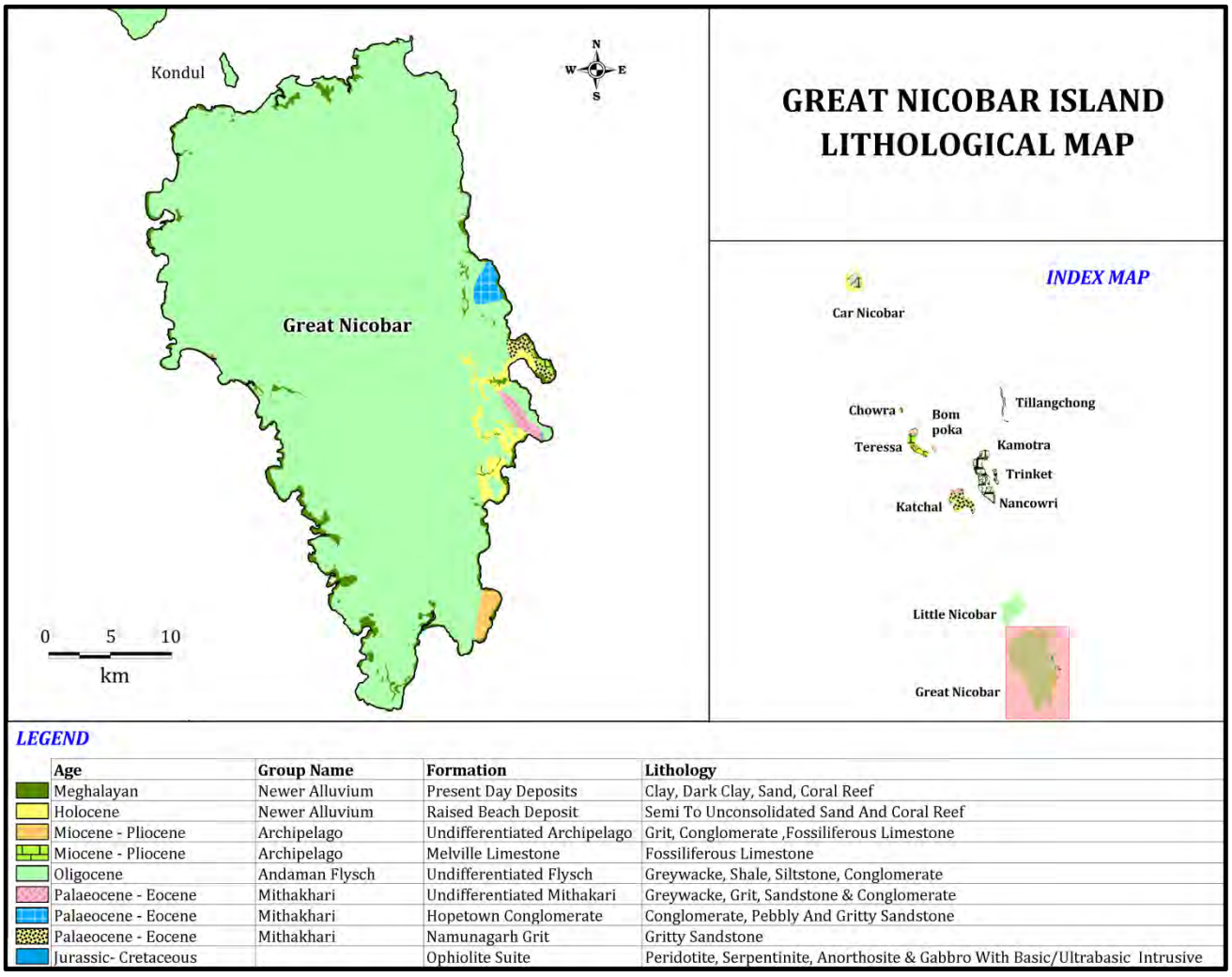
Age	Group_Name	Formation	Lithology
Meghalayan	Newer Alluvium	Present Day Deposits	Clay, Dark Clay, Sand, Coral Reef
Palaeocene - Eocene	Mithakhari	Undifferentiated Mithakari	Greywacke, Grit, Sandstone & Conglomerate
Jurassic- Cretaceous		Ophiolite Suite	Pillow Lava, Tuff, Agglomerate, Pelagic Sediments
Proterozoic	Older Metasedimentaries (Andaman)		Quartzite, Schist, Epidiorite, Slate, Phyllite

Fig 3.8 Geological Map of Tillangchong Island (Source: GSI)



Age	Group Name	Formation	Lithology
Meghalayan	Newer Alluvium	Present Day Deposits	Clay, Dark Clay, Sand, Coral Reef
Oligocene	Andaman Flysch	Undifferentiated Flysch	Greywacke, Shale, Siltstone, Conglomerate

Fig 3.9 Geological Map of Little Nicobar Island (Source: GSI)



	Age	Group Name	Formation	Lithology
	Meghalayan	Newer Alluvium	Present Day Deposits	Clay, Dark Clay, Sand, Coral Reef
	Holocene	Newer Alluvium	Raised Beach Deposit	Semi To Unconsolidated Sand And Coral Reef
	Miocene - Pliocene	Archipelago	Undifferentiated Archipelago	Grit, Conglomerate ,Fossiliferous Limestone
	Miocene - Pliocene	Archipelago	Melville Limestone	Fossiliferous Limestone
	Oligocene	Andaman Flysch	Undifferentiated Flysch	Greywacke, Shale, Siltstone, Conglomerate
	Palaeocene - Eocene	Mithakhari	Undifferentiated Mithakari	Greywacke, Grit, Sandstone & Conglomerate
	Palaeocene - Eocene	Mithakhari	Hopetown Conglomerate	Conglomerate, Pebbly And Gritty Sandstone
	Palaeocene - Eocene	Mithakhari	Namunagarh Grit	Gritty Sandstone
	Jurassic- Cretaceous		Ophiolite Suite	Peridotite, Serpentinite, Anorthosite & Gabbro With Basic/Ultrabasic Intrusive

Fig 3.10 Geological Map of Great Nicobar Island (Source: GSI)

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Chapter 4

GEOMORPHOLOGY

4.1 Physiography

Physiography of the island group is controlled mainly by rock types (lithology) and associated geological structures. In general, hard competent rocks formed elevated ground where as argillaceous rocks generally eroded and formed depressional areas. This situation is accentuated where structural features such as fold hinges coincided with lithology to form the ridges. This clearly indicate that most of the ridges are represented by massive, thick bedded sandstone of Mithakhari and Andaman Flysch formations. The lithological control may sometimes override structural control through synclines occupying hills and anticlines the valley. Low coastal areas are mostly contributed by coralline formations.

Car Nicobar Island is remarkably flat except for some cliffs in the north and small hilly areas in the interior. Maximum elevation is 80 m.

Katchal Island has a central highland consisting of two main strike ridges in this island trending NNW-SSE direction. East Bay Range has the maximum elevation of 230 m and has a gentle westerly slope. On the other hand, Tapain-Olench Range has a gentle easterly slope. Northern part of the inland is characterized by almost flat topography.

Adjoining Kamorta Island shows a rolling topography with maximum elevation of 203 m. Nancowri Island has the highest elevation of 143 m.

Chowra Island is generally flat but has a 93 m high rocky upland at its southern end. Coral reefs extend about 1.5 miles from the northwestern side of the island.

In Teressa Island topography is generally flat. However, northern portion of the island has elevations reaching 263 meters.

Trinket Island shows a flat and low topography with maximum elevation of 32 m. The island is surrounded by shallow waters and coral reefs.

Little Nicobar Island has two peaks, Mt. Deoban (435 m) and Mt. Empress (432 m) in Sathabang Hill range located in the South-central part of the island.

Great Nicobar Island exhibits highly undulating topography. The general trend of the main hill ranges is N-S and act as water divides. Mt. Thullier with an elevation of 641.5 m is

the highest peak of the island and is situated at the central part of the island. In general, lithological and structural controls seem to have played a major role in the formation of physiographic features. Island-wise topographic characteristics are summarized in **Table – 4.1**. Perimeter-Area (P/A) ratio indicates that larger islands have highly dissected coastline in contrast to smaller islands.

Table 4.1 Island-wise topographic characteristics

Sl.	Island Name	Area (A)	Coast Line Length (P)	Highest Elevation	Length (L)	Width (W)	Form Factor	Aspect Ratio	P/A Ratio	Elongation Direction	Shape
		(Km^2)	(Km)	(m)	(Km)	(Km)	A/L^2	L/W	P/A		
1	Great Nicobar	960.5	216.36	642	53.71	25.84	0.33	2.1	0.23	N-S	Inverted Tear Drop
2	Katchal	164.0	78.95	230	20.22	11.7	0.40	1.7	0.48	NE-SW	Irregular
3	Little Nicobar	149.5	71.31	420	18.31	11.74	0.45	1.6	0.48	NW-SE	Elongated
4	Kamorta	143.1	114.01	203	27.19	7.26	0.19	3.7	0.80	NNW-SSE	Arcuate
5	Car Nicobar	126.9	54.27	80	15.14	12.22	0.55	1.2	0.43	NNW-SSE	Tear Drop
6	Teressa	94.18	58.05	263	22.36	4.78	0.19	4.7	0.62	NNW-SSE	Arcuate
7	Nancowri	51.6	44.65	143	11.54	7.19	0.39	1.6	0.86	NNW-SSE	Inverted Tear Drop
8	Trinket	18.8	27.69	32	9.63	1.89	0.20	5.1	1.47	NNW-SSE	Elongated
9	Tillangchong	18.19	48.65	304	17.05	1.95	0.06	8.7	2.67	N-S	Elongated
10	Bompoka	11.1	14.19	206	4.32	2.56	0.59	1.7	1.28	NNW-SSE	Lozenge
11	Chowra	7.46	11.39	93	2.42	3.69	1.27	0.7	1.53	NNW-SSE	Lozenge
12	Kondul	2.2	7.59	147	2.89	0.99	0.26	2.9	3.48	NNW-SSE	Elongated
13	Batt Malv	2.06	5.68	53	1.95	1.12	0.54	1.7	2.76	NNE-SSW	Lozenge
14	Meroe	1.42	4.88	39	1.51	0.77	0.62	2.0	3.44	N-S	Tear Drop
15	Pulo milo	1.34	4.66	56	1.42	0.96	0.66	1.5	3.48	NE-SW	Arcuate
16	Menchal	0.92	3.77	74	0.98	0.98	0.96	1.0	4.10	NNW-SSE	Round
17	Isle of Man	0.75	4.17	106	1.34	0.41	0.42	3.3	5.56	WNW=ESE	Elongated
18	Trails	0.65	3.19	45	0.81	0.71	0.99	1.1	4.91	NE-SW	Oval
19	Trek	0.23	1.87	24	0.22	0.1	4.75	2.2	8.13	NNE-SSW	Elongated
20	Kabra	0.18	1.85	35	0.46	0.26	0.85	1.8	10.28	NE-SW	Elongated
21	Pigeon	0.12	1.42	54	0.36	0.22	0.93	1.6	11.83	NNW-SSE	Elongated
22	Megapod	0.09	1.36	55	0.45	0.29	0.44	1.6	15.11	NE-SW	Oval

Data Source: SRTM Plus 1-arc-sec DEM Ver. 3 (GCS: WGS 1984)

Prepared digital elevation model (DEM) using SRTM Data for the entire Nicobar group of islands is given in **Fig. 4.1**.

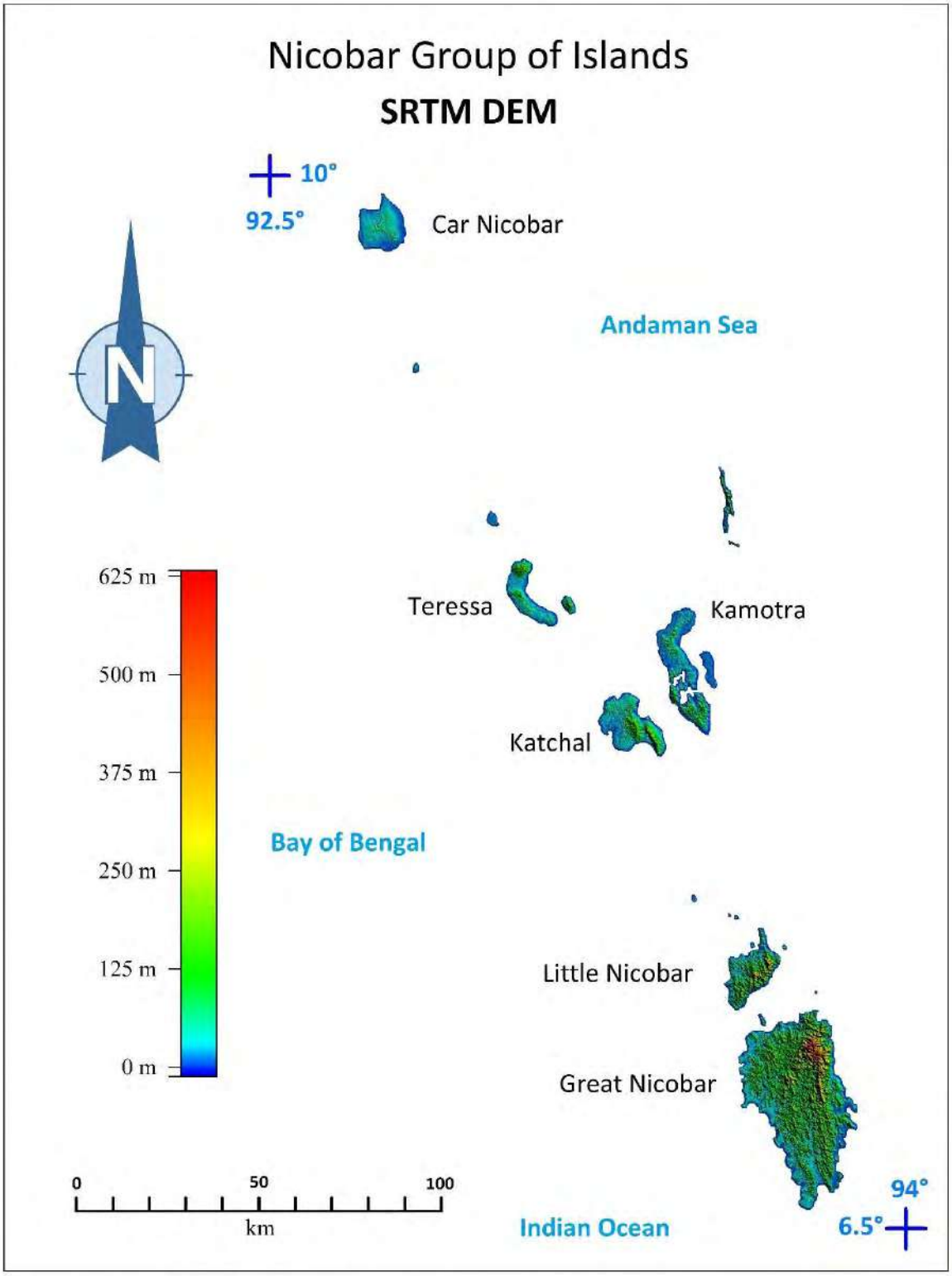
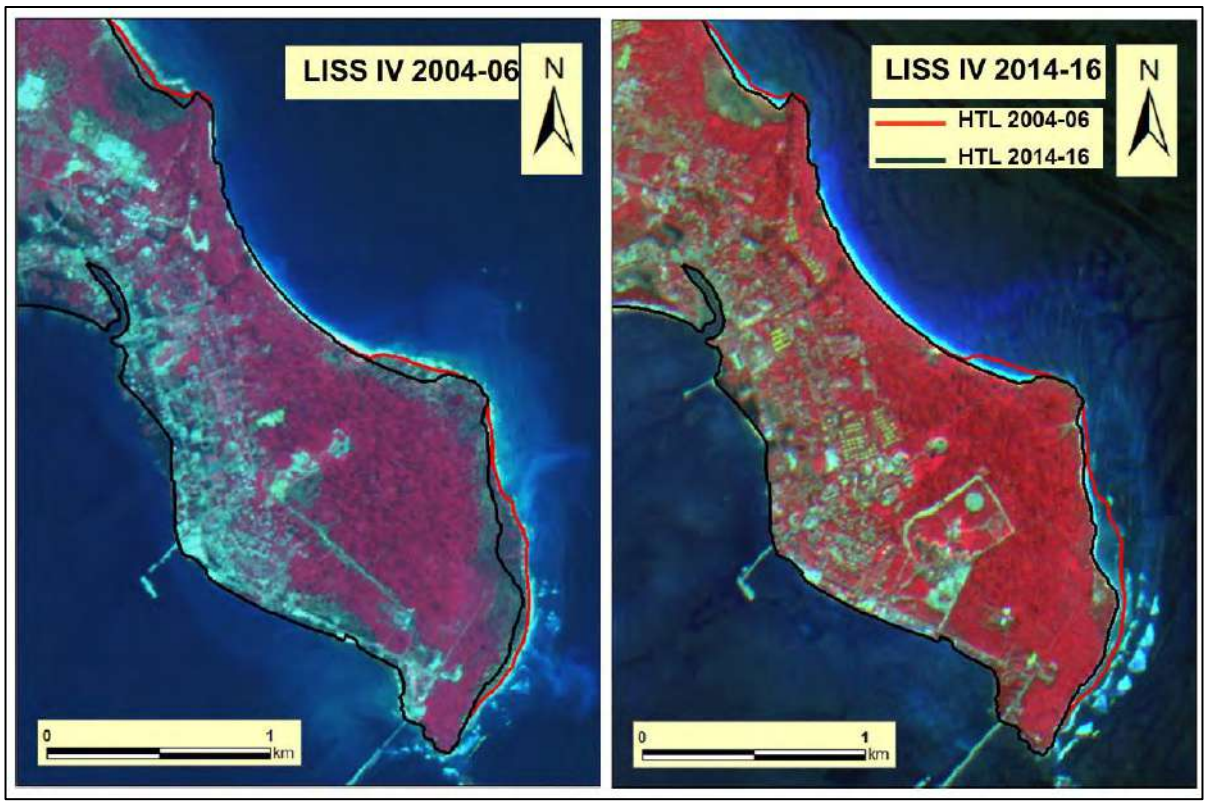


Fig. 4.1 Prepared DEM of the Nicobar group of Islands

Shoreline Change Atlas of India (Ratheesh *et al*, 2021) reported results of shoreline changes between 2004-06 and 2014-16. The main observations are

1. Large-scale changes in coastline in Nicobar group of islands happened due to the December 2004 tsunami and earthquake.
2. As on 2014-16, around 123 km of the coast is under erosion, along 112 km of the coast is under accretion and 455 km of the coast is under stable condition.
3. Deterioration of the shoreline is observed along east coast of Car Nicobar Island, Campbell Bay, and Trinket Island. A long stretch of coast at Pullo Ullo area in Little Nicobar Island is under erosion. Coastal erosions in Car Nicobar Island are observed along Mus, Sawal and Tamalo area.



Source: Shoreline Change Atlas of India (Ratheesh *et al*, 2021)

Fig. 4.2 Erosion at Campbell Bay area (Great Nicobar Island)

4.2 Elevation and Slope Characteristics

The Island group shows distinct elevation classes separated by sloppy plains representative of interplay in various energy conditions. District Irrigation Plan of Nicobar (2016) subdivided island physiography into (i) moderate to steep hill ranges, (ii) intermountain narrow valley, and (iii) coastal tracts including swamps. Island profile analyses show that the islands may be broadly classified in to the five elevation classes (**Table 4.2**). Schematics of observed elevation classes in Nicobar group of Islands are given in **Fig. 4.3**. Island-wise area under various elevation classes is tabulated in **Table 4.3**. Stacked column chart for percent area for main islands are given in **Fig. 4.4** for comparison among islands. The graph shows that Great Nicobar, Little Nicobar and Nancowri are dominated by highlands, Katchal, Kamorta, Teresa, and Car Nicobar is dominated by uplands. In Katchal and Car Nicobar significant coastal plain area is present.

Table 4.2 Identified Elevation Classes

Sl.	Topographic Feature Type	Elevation Class	Slope Characteristics
1.	Shore	0 - 3 m	0 - 3°
2.	Coastal plains	0 – 10 m	1° - 2°
3.	Foot Slope	10 – 20 m	3° - 5°
4.	Upland	20 – 50 m	2° - 10°
5.	Highland	> 50 m	> 20°

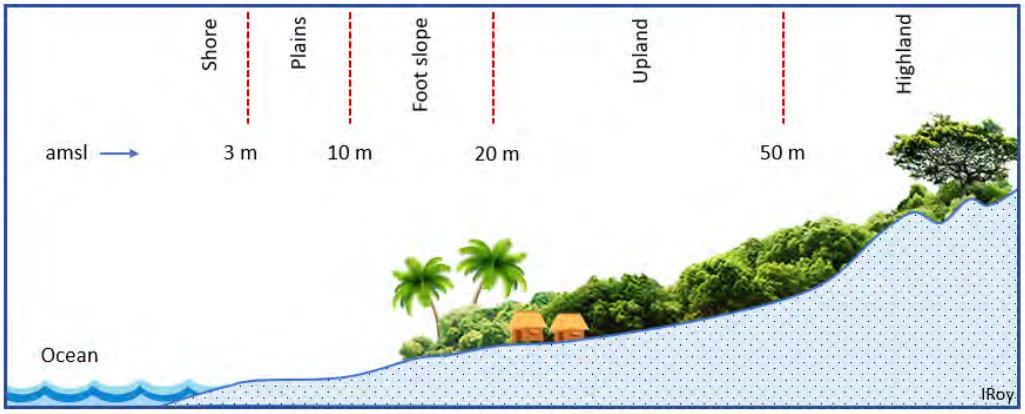


Fig. 4.3 Schematics of observed elevation classes in Nicobar group of Islands

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Table 4.3 Island-wise Area under various elevation classes

Sl.	NAME	Total	0-3 m	% Area	3-10 m	% Area	10-20 m	% Area	20-50 m	% Area	> 50 m	% Area
1	Great Nicobar	960.47	**6.73**	0.70	**1.76**	0.18	**37.24**	3.88	**226.77**	23.61	**687.97**	71.63
2	Katchal	163.98	**2.21**	1.35	**1.00**	0.61	**11.90**	7.26	**82.77**	50.48	**66.10**	40.31
3	Little Nicobar	149.52	**2.33**	1.56	**2.14**	1.43	**4.98**	3.33	**39.34**	26.31	**100.73**	67.37
4	Kamorta	143.05	**3.92**	2.74	**1.51**	1.06	**42.75**	29.88	**68.71**	48.03	**26.16**	18.29
5	Car Nicobar	130.17	**2.11**	1.62	**7.86**	6.04	**33.57**	25.79	**69.12**	53.10	**17.51**	13.45
6	Teressa	94.18	**2.82**	2.99	**2.96**	3.14	**10.29**	10.93	**47.40**	50.33	**30.71**	32.61
7	Nancowri	51.63	**1.19**	2.30	**1.53**	2.96	**4.07**	7.88	**14.70**	28.47	**30.14**	58.38
8	Trinket	18.80	**1.05**	5.59	**1.35**	7.18	**14.99**	79.73	**1.41**	7.50	**0.00**	0.00
9	Tillangchong	18.19	**1.19**	6.54	**1.09**	5.99	**1.45**	7.97	**3.69**	20.29	**10.77**	59.21
10	Bompoka	11.07	**0.62**	5.60	**0.56**	5.06	**0.77**	6.96	**2.22**	20.05	**6.90**	62.33
11	Chowra	7.46	**0.56**	7.51	**0.54**	7.24	**5.76**	77.21	**0.44**	5.90	**0.16**	2.14
12	Kondul	2.18	**0.21**	9.63	**0.18**	8.26	**0.23**	10.55	**0.48**	22.02	**1.08**	49.54
13	Batt Malv	2.06	**0.18**	8.74	**0.24**	11.65	**0.28**	13.59	**1.35**	65.53	**0.01**	0.49
14	Meroe	1.42	**0.23**	16.20	**0.16**	11.27	**0.62**	43.66	**0.41**	28.87	**0.00**	0.00
15	Pulo milo	1.34	**0.13**	9.70	**0.15**	11.19	**0.56**	41.79	**0.49**	36.57	**0.01**	0.75
16	Menchal	0.92	**0.10**	10.87	**0.08**	8.70	**0.11**	11.96	**0.40**	43.48	**0.23**	25.00
17	Isle of Man	0.75	**0.15**	20.00	**0.14**	18.67	**0.12**	16.00	**0.13**	17.33	**0.21**	28.00
18	Trails	0.65	**0.10**	15.38	**0.10**	15.38	**0.20**	30.77	**0.25**	38.46	**0.00**	0.00
19	Trek	0.23	**0.07**	30.43	**0.06**	26.09	**0.10**	43.48	**0.00**	0.00	**0.00**	0.00
20	Kabra	0.18	**0.07**	38.89	**0.04**	22.22	**0.04**	22.22	**0.03**	16.67	**0.00**	0.00
21	Pigeon	0.12	**0.03**	25.00	**0.03**	25.00	**0.02**	16.67	**0.04**	33.33	**0.00**	0.00
22	Megapod	0.09	**0.01**	11.11	**0.02**	22.22	**0.06**	66.67	**0.00**	0.00	**0.00**	0.00
	Total	1758.46	**26.00**	1.48	**23.48**	1.34	**170.14**	9.68	**560.15**	31.85	**978.69**	55.66

(Area in Sq. Km.)

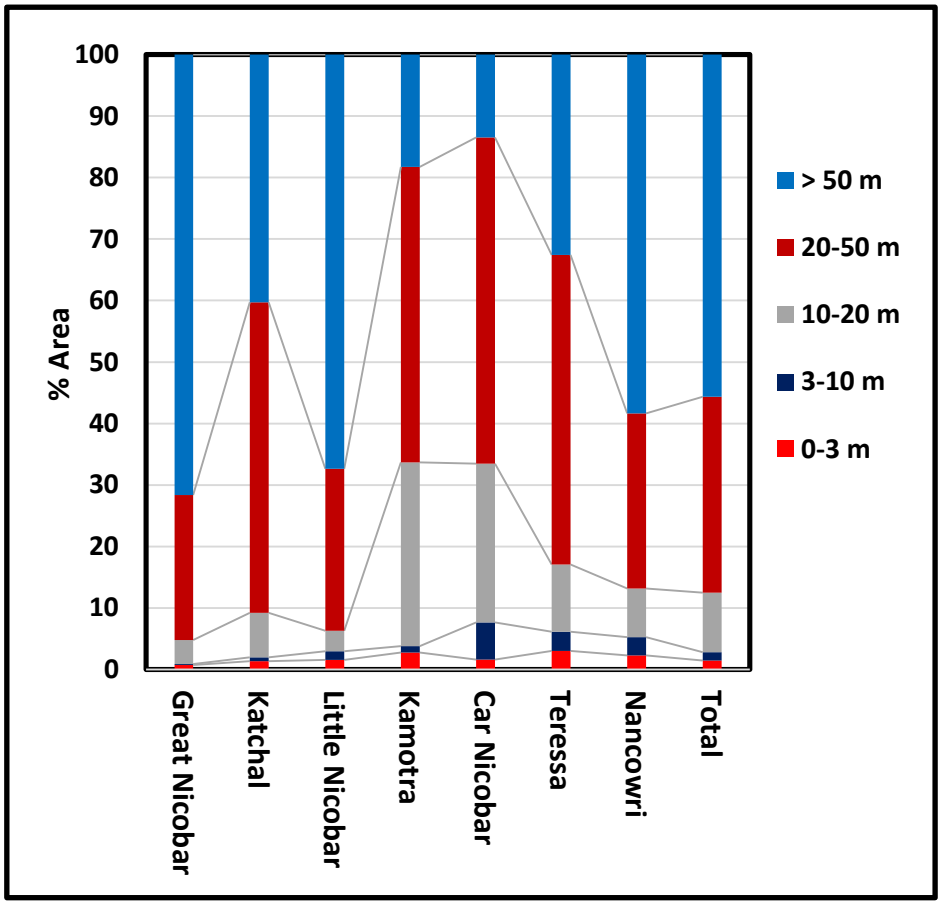


Fig. 4.4 Stacked column chart for % area in main islands

4.3 Drainage

Nicobar group of Islands are devoid of any big river system. Great Nicobar is the only Island having five perennial rivers viz., Alexandria, Amrit Kaur, Dagmar, Galathea and Danes. Each of these rivers originates from Mt. Thullier range (**Fig. 4.5**).

Galathea River flows southernly over faulted anticline is the most important river of Great Nicobar Island. This river is mostly used by Shompen tribes for various purposes, including drinking, fishing and transportation. Other important river is westward flowing Alexandria River which originate from central high land. South-westerly flowing Dagmar River is also counted as the major perennial river of the Great Nicobar. There are several Nallah (Small River) in Great Nicobar Island *e.g.,* Magar Nallah, Dhilon Nallah, Vijay Nagar Nallah etc. which are used for water supply in the island. In all other island, including Car Nicobar Island, there is no large stream / river system. The existing streams are small and mostly seasonal in nature.

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Detailed drainage map of Great Nicobar Island is prepared along with drainage divide is prepared and given in **Fig. 4.6**. The prepared map shows dendritic, parallel and trellis pattern. This indicates about presence of cyclic lithology (*i.e.* alternate soft and hard rock-strata as in Shale-Sandstone) as well as structural control.

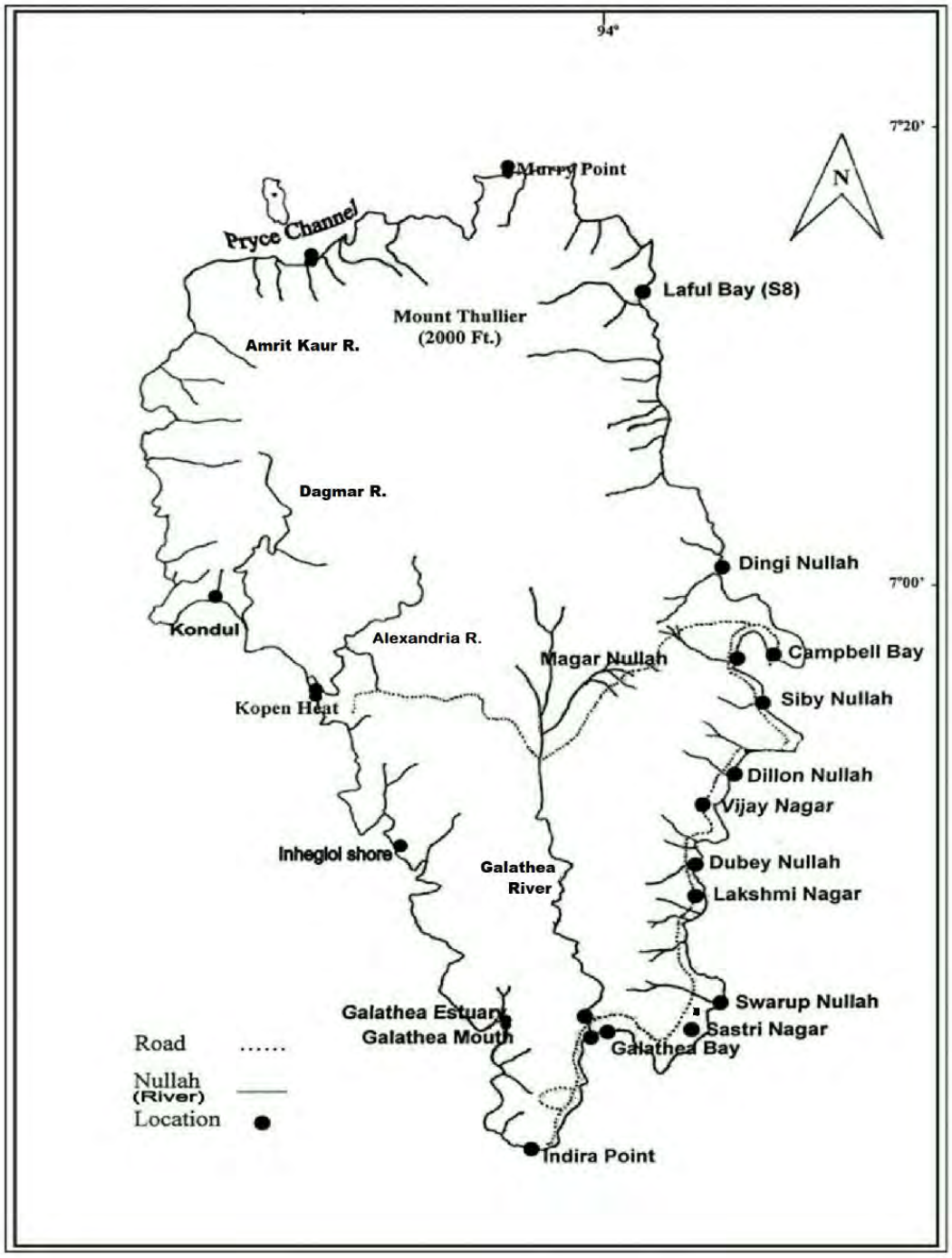


Fig. 4.5 Major River and Nallahs in Great Nicobar Island

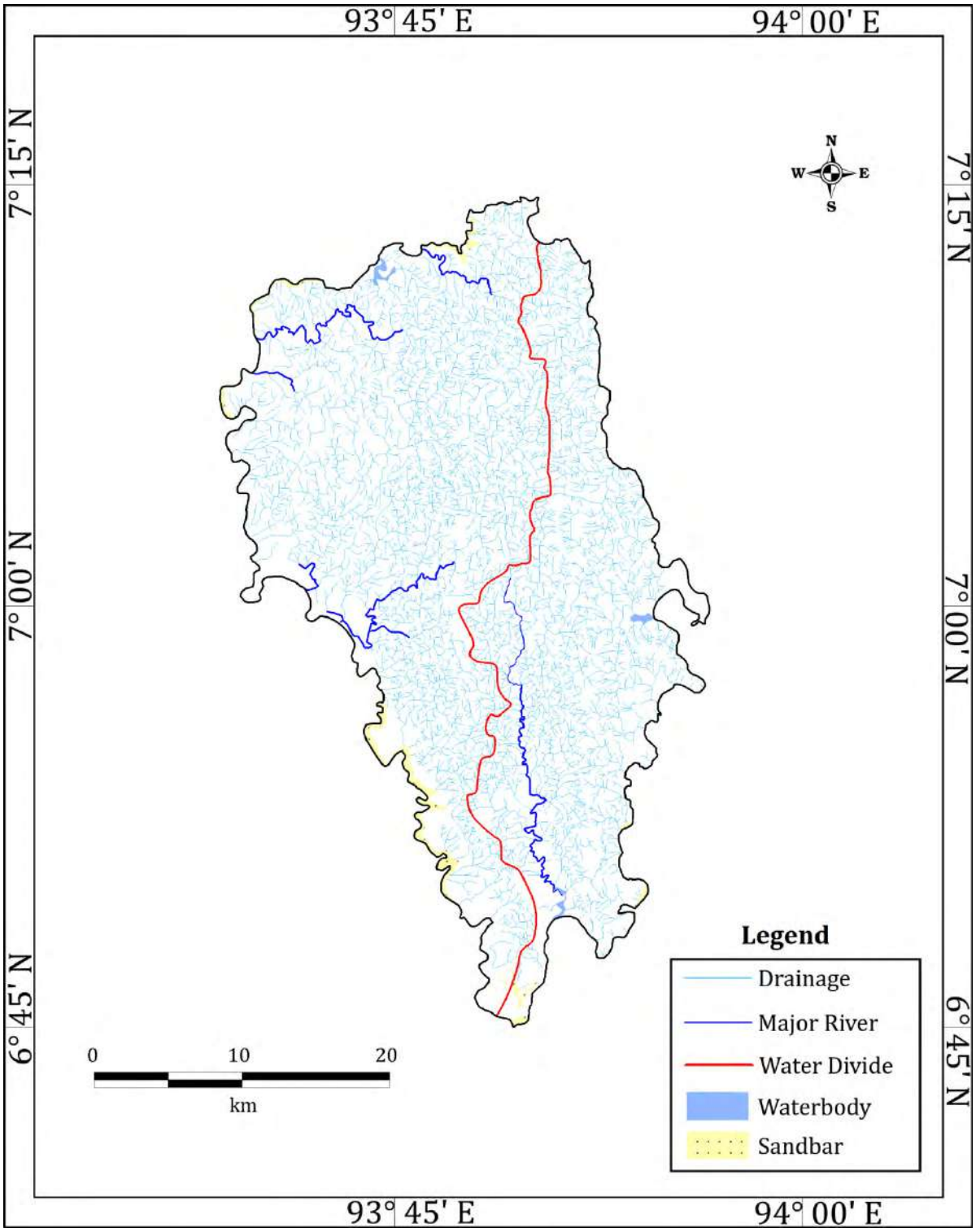


Fig. 4.6 Detailed drainage map of Great Nicobar Island

4.4 Soil Characteristics

Soils in islands of Nicobar district are of alluvial and colluvial origin and are mainly derived from sedimentary rocks like sandstone, lime stone, mud stone, and clay stone. However, in places, ophiolitic rocks also contributed to soil formation. Island soils vary in depth, texture and chemical composition and are generally acidic in nature except Car Nicobar and Katchal (Velmurugan *et al*., 2016). In general, sandy to clay loam mixed with coarse materials of coralline origin dominates the soil texture. They are partially drained and have poor water retention capacity. Depth of the soils is very shallow in the hill slopes moderately deep in table land (50-100 cm) to more than 1.5 m and rarely exceeding 2 m in the valleys. The coastal plains and beaches have sandy soil in most of the islands.

The soils of Nicobar Islands are classified into 3 orders Entisol, Inceptisol and Alfisol (**Table 4.4**) (Velmurugan et al., 2016). The soils of the islands vary in humus content and is generally lacking in the forest soils as it is generally washed away due to copious rainfall and steep slopes. The soils are low to moderate in nitrogen and phosphorus content and moderate in potassium content. Soils are generally acidic in nature except Car Nicobar and Katchal. The salinity is not a major concern as the EC values are well within the acceptable limits. Organic carbon is high with mean values more than 1.2% except in coastal sandy soils. Average chemical characteristic of soil is given in **Table 4.5**.

Table 4.4 Taxonomic position and limitations of soils in Nicobar Districts

Sl.	Order	Suborder	Great group	Limitations
1.	Entisol	Fluvent	Tropofluvent	Moderate erosion and Organic Carbon, low base status
		Orthent	Troporthent	Moderate erosion, loss of top soil, low nutrients
		Psamment	Fluventic	Coarse texture, low water holding and nutrient retention capacity
2.	Inceptisol	Ochrept	Typic dystrochrept	Sloppy land, moderate erosion, shallow depth of soil
3.	Alfisol	Ustalf	Haplustalf	Moderate erosion, low water holding and nutrient retention capacity

Source: Velmurugan *et al*., 2016

Table 4.5 Surface Soil Properties of Nicobar Islands

Island	pH	EC ($dS\ m^{-1}$)	Organic Carbon (%)	Available macronutrients (kg/ha)		
				N	P	K
Car Nicobar	7.07 ± 0.67	0.06 ± 0.05	2.03 ± 0.39	261 ± 66	22 ± 7.32	230 ± 82
Nancowry	5.78 ± 0.80	0.10 ± 0.03	1.59 ± 0.68	250 ± 91	9.1 ± 5.44	309 ± 74
Great Nicobar	5.08 ± 0.35	0.05 ± 0.04	2.65 ± 0.83	346 ± 61	9.1 ± 1.99	228 ± 36
Critical limit (Medium fertility)	6.5-8.5	< 0.8	0.5 - 0.75	280 - 560	11 - 22	110 - 280

Soil depth: 0-20 cm; Statistical Parameter: Mean ± SD; Source: Velmurugan *et al*., 2016

Soil properties in natural condition influence the crop distribution and yield which in turn get influenced by the types of vegetation. Due to soil condition, the major land use in Car Nicobar and Nancowry group of Islands are plantations (coconut and arecanut) and homestead gardens where tuber crops, fruits and vegetables are grown. In Great Nicobar rice, pulses are grown in coastal plains and plantations in upper slopes. In the acidic soils of Katchal, rubber is grown.

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Chapter 5

Hydrogeology

5.1 Oceanic Island Hydrogeological Setup

In oceanic islands, groundwater commonly occurs as freshwater lens over saline water at bottom. This freshwater lens in the islands is formed due to the radial movement of the freshwater from center of the island towards the coast, as a dynamic system in hydraulic continuity with seawater. The occurrence of freshwater lens over saline water in island conditions was independently studied by Ghyben (1888-89) and Herzberg (1901) (Ghassemi *et al.* 1990). The works established the relation between the freshwater head above mean sea level and the depth to freshwater - saltwater interface in unconfined aquifer system and is popularly known as the Ghyben-Herzberg (GH) relationship (**Fig. 6.1**).

Thickness of the freshwater zone above sea level is represented as h and that below sea level is represented as z. The two thicknesses h and z, are related by ρ*f* and ρ*s*, where ρ*f* is the density of freshwater and ρ*s* is the density of saltwater.

$$z = \frac{\rho f}{(\rho f - \rho s)} \times h$$

With the assumption of freshwater has a density of about 1.000 g/cm^3 at 20 °C, and that of seawater is about 1.025 g/cm^3, the equation can be further simplified to

$$z = 40\,h$$

Hence, Ghyben–Herzberg ratio states that, for every meter of fresh water in an unconfined aquifer above sea level, there will be forty meters of fresh water in the aquifer below sea level. The basic assumptions for the applicability of Ghyben-Herzberg relation are a) water table must lie above msl; and b) water-table slope downward towards the ocean.

However, studies in small islands indicate that the ratio of thickness of freshwater above and below msl is highly variable. In the Cayman Islands it is 1: 20 while it is 1: 30 in Tarawa and 1: 20 in Christmas Island (Falkland, 1984). In case of Lakshadweep islands, CGWB studies indicated the same (Najeeb, 2003).

Studies also indicated that a saline water-fresh water interface is not sharp and a transition zone is present through which the salinity increases with depth (Barker, 1984). Water-table fluctuation and change in sea level due to tidal action significantly introduce mixing of water of different salinities, creating the transition zone. Width of the transition zone depends on aquifer properties. However, in general, higher the fluctuation, thicker is the transition zone (**Fig. 5.2**).

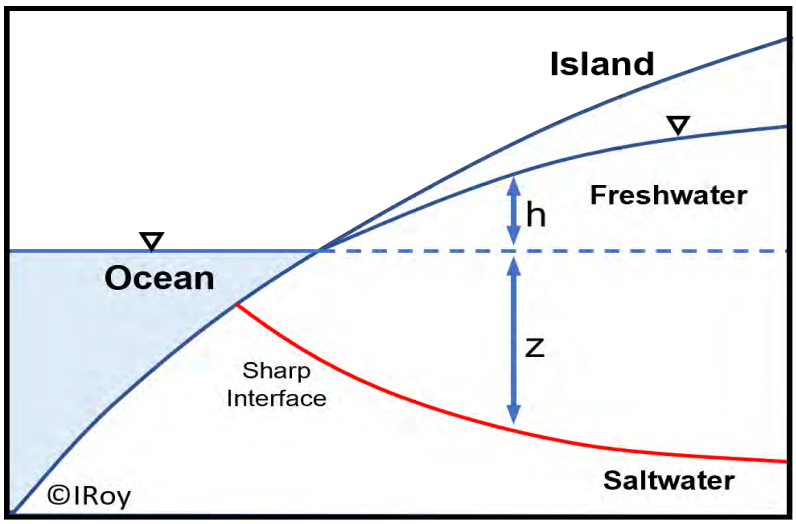


Fig 5.1 Ghyben-Herzberg relationship for oceanic islands

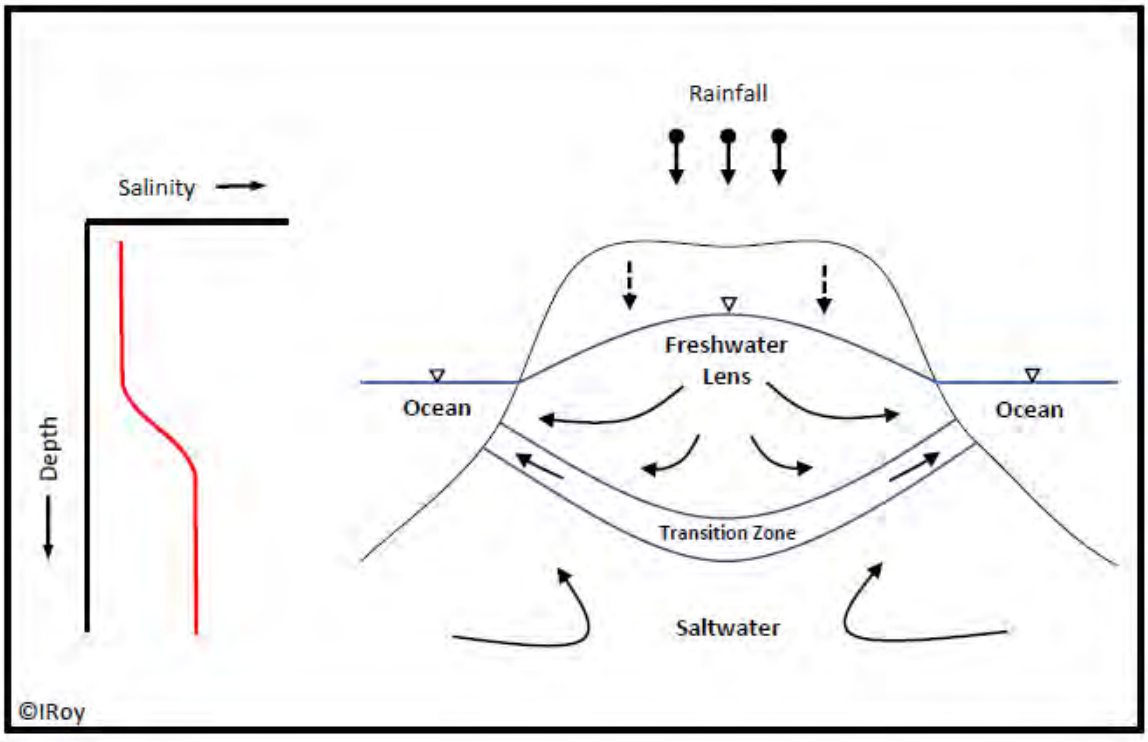


Fig. 5.2 Schematic Diagram of Freshwater lens in Oceanic Islands (after Barker, 1984)

In order to identify the role of the shape of the island in deciding the freshwater lens, aspect ratio parameter of the islands is used. The method has been advocated by several workers (Najeeb, 2003). In general, shape of the islands does not conform to any geometric form. Aspect ratio is computed taking into consideration the length and breadth area of the island. The island area is divided by ratio of its length to breadth to get the aspect ratio. This ratio is used to study the stability of the freshwater lens in these islands and the salient features are given in **Table 4.1**. It is observed that Islands with aspect ratio greater than 0.5 have stable fresh water lens, under identical geomorphological settings.

5.2 Exploratory Drilling

Several drillings were carried out by CGWB in Great Nicobar Island during 1987-88. Exploratory wells were constructed to locate potential fresh water aquifer in Tertiary sandstone. Lithologs reveal that Tertiary consolidated formations are mostly composed of argillaceous material devoid of any significant granular zone. Down to maximum explored depth of 101 m. Exploration data is compiled and summarized to understand aquifer disposition (**Table 5.1**). A typical lithological log is given in **Table 5.2**. Individual lithologs are given in **Annexure – 3**. Graphical representation of selected lithologs is given in **Fig 5.4**. Banerjee *et al.* (1988) concluded that as such, the Tertiaries have limited groundwater prospect. However, the results may be somewhat influenced by the limitation that small rotary rig was used for the drilling purpose.



Fig. 5.3 Exploratory well constructed at Powerhouse Campbell Bay during AAP 1987-88 (Photo: March-2023)

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Table 5.1 Exploration details in Campbell Bay Area (AAP 1987-88), Great Nicobar Island

Sl. No	Location	Geo Reference	Geology	Lithology	Depth drilled (in m bgl)	Productive Fracture Zones encountered (in m bgl)	Discharge (m3/hr)	EC	Remarks
1	Yatrik Officers' Mess Campbell Bay (EW)	7°00"00', 93°56"00'	Mithakhari Formation	Medium to fine soft sandstone & shale	60.23	8.5-11, 13-18, 20-23	0.5 (by air compressor)	636	Abandoned due to very poor yield. Converted into Piezometer
2	Powerhouse Campbell Bay (EW) 200 m North of 1st well)	7°00"10', 93°56"00'	Mithakhari Formation	Medium to fine soft sandstone & shale	60.6	15-29, 31-40	0.4 (by air compressor) Less than 400 lph	4503	Abandoned due to very poor yield. Converted into Piezometer
3	Magarnala	6°09"08', 93°54"00'	Andaman Flysch	Beach sand, Coral rags & sandstone & shale	60.65	-	-	-	Abandoned
4	Govindnagar-I (EW) (12 km from Campbell Bay on E-W Road	7°00"00', 93°54"00'	Andaman Flysch	Sandstone & shale	80.5	-	-	-	Abandoned due to low yield and poor quality
5	Army Land I (EW)	7°01"00', 93°54"05'	Andaman Flysch	Andaman Flysch and Sandstone & shale	101	20-40, 76-81, 86-92	0.2 (by air compressor)	-	Converted into Piezometer
6	Naval Air Strip	7°01"30', 93°54"15'	Mithakhari Formation	Shale & compact Sandstone	63.1	15.6-20.3	Poor Discharge	1200	Abandoned
7	Civil Hospital	7°01"15', 93°55"10'	Mithakhari Formation	Shale & compact Sandstone	63	39-43, 56-60	-	-	Very poor discharge; Converted into piezometer

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Sl. No	Location	Geo Reference	Geology	Lithology	Depth drilled (in m bgl)	Productive Fracture Zones encountered (in m bgl)	Discharge (m3/hr)	EC	Remarks
8	Armyland II	7°01"20', 93°54"45'	Andaman Flysch	Compact fine grained sandstone & shale	59.4	Nil	-Dry-	-	-
9	Govindnagar II	6°58"40', 93°55"05'	Mithakhari Formation	Argillaceous Sandstone, Siltstone and Claystone	27.36	Nil	-Dry-	-	-

Table 5.2 Typical litholog of Campbell Bay Area

Location: Officers' Mess, Yatrik, Campbell Bay Area, G.N.I

Lithology	Simplified Lithology	From	To	Thickness
Coral rags in soil and Silt, dirty white	Coraline Sand	0	3.7	3.7
Coralline limestone, dirty white, unconsolidated, with broken shells of coral in sand and soft, dark grey mudstone	Coraline Limestone	3.7	11	7.3
Shale, dark grey, soft with few fossils	Shale	11	13	2
Sandstone, grey, medium to coarse grained, angular to sub-angular with clastics of ultrabasic rock in an argillaceous matrix	Sandstone	13	17.65	4.65
Shale, dark grey, interbedded with thin sandstone, fine grained	Shale	17.65	20.3	2.65
Sandstone, dark grey, medium to coarse grained compact with ultrabasic rock fragments in the clastics	Sandstone	20.3	22.3	2
Shale-sandstone alternations in thin bedded sequence, Sandstone compact with ultrabasic rock fragments in the clastics	Shale	22.3	60.23	37.93

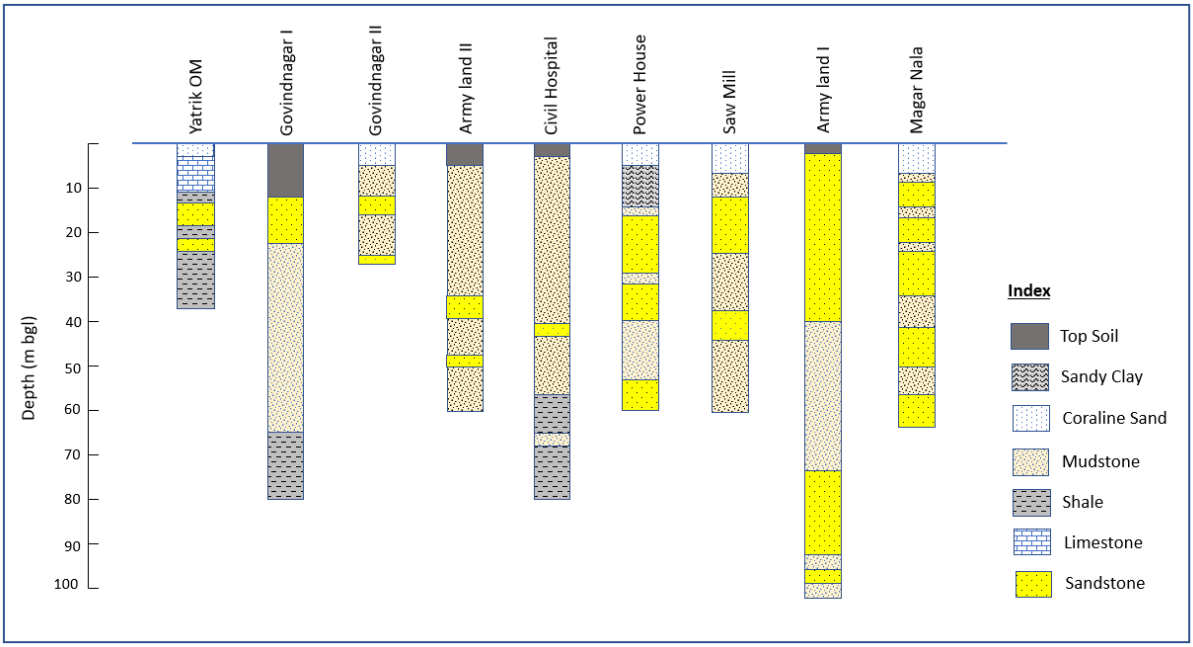


Fig 5.4 Graphical representation of selected lithologs

5.3 Geophysical Investigation

The Surface Geophysical Investigations (VES) were carried out at Great Nicobar Island during May, 2022 and March, 2023. A total of 32 VES were conducted at 32 different locations of the Island. Aim of the geophysical investigation was to determine the lithological variation with depth from sea shore to inland part of the island along with saturated water quality variation at the eastern coast of the island.

Geophysical investigations were conducted with maximum current electrodes spacing (AB) of 200 m deploying resistivity meter CRM-500 (Auto C). The typical resistivity sounding curve for the study area are of 'H' type, 'K' type and 'QH' type. The same were interpreted by 1D inversion technique using IPI2Win® software. Preliminary values of the model parameters are obtained by matching the VES field curves with the theoretical master curves and auxiliary point charts and these model parameters are subsequently used as input /starting model in software for further refinement of results. Resistivity of different layers and corresponding thicknesses are reproduced by a number of iterations until the model parameters of all VES curves are totally resolved with minimum RMS error. The results of VES are interpreted in terms of subsurface geology and aquifer characteristics under prevailing hydrodynamic conditions.

After interpretation of all the VES data it is envisaged that resistivity of the 1st geo-electric layers i.e. top soil of the study area are varied from 0.9 to 1024 ohm-m and thickness varies from 0.60 to 5.71 m. (except Army Land - 2 location where thick clay layer have been observed). The resistivity of the 2nd geo-electric layers of the study area varies from 1.4 to 622.0 ohm-m indicating saturated with brackish formation to gravelly weathered formation. The thickness varies from 1.1 to 19.2 m. The resistivity of the 3rd geo-electric layers of the study area varied from 0.02 ohm-m to 5177 ohm-m indicating saline saturated formation to compact formation. In between fresh saturated formation are identified where resistivity ranges varies from 23.3 to 152 ohm-m. The thicknesses of the 3rd geo-electric layer varied from 2.2 to 33.2 m. The resistivity of the 4th geo-electric layer varied from 0.4 ohm-m to 1898 ohm-m indicating saline saturated formation to compact formation. Again in between fresh saturated formation have been identified where resistivity ranges varied from 21.9 to 71.7 ohm-m and thickness varies from 5.7 to 26.3 m. The resistivity of the 5th layers varies from 0.13 to 33.6 ohm-m indicating saline saturated

formation fresh saturated formation except Jogendernagar- 1 location where compact formation are identified. The thickness of the 4th layer varies from 12.3 to 26.3 m. The resistivity of the last layers are varies from 0.06 to 60.90 ohm-m indicating high saline saturated formation exists at Vijaynagar - 1 location, just below the fresh saturated formation and medium resistivity value is indicating fresh saturated formation identified at Gandhinagar -2 location.

From interpreted results and prepared geo-electric section, potential fresh ground water bearing zones have been identified down to the depth of 50 m at five (05) locations namely 1) Army Land -1, 2) Gobindanagar-2, 3) Laxminagar-1, 4) Gandhinagar-2, and 5) Gandhinagar-4. VES curves obtained in Great Nicobar Island are given in **Fig 5.3**. VES curves obtained in Car Nicobar Island are given in **Fig 5.5**. Based on standardized resistivity values fence diagram is prepared for east coast of Great Nicobar Island (**Fig 5.6**). Detailed Observations are given in **Annexure 9**.

In Car Nicobar Island, geophysical investigation was carried out during 2004-05 (Kar and Adhikari, 2005). A total 34 numbers of Vertical Electrical Sounding (VES) were carried out at different parts of the island to delineate the fresh water pockets. VES survey was carried out by deploying AC resistivity meter and ABEM Terrameter SAS 300 B. During the survey maximum current electrode separation was kept 400 m (AB). The field apparent resistivity values were plotted against half current electrode separation values and thus VES curves were generated for each VES station. The VES curves are found to be HKH, KQ, K, H, QKQ, QH, AA, Q & HK types. These curves were interpreted by partial curve matching technique with the help of standard master curves. Some VES were carried out near the open wells of known lithology and the interpreted resistivity values were standardized (**Table – 5.4**). VES curves obtained in Car Nicobar Island are given in **Fig 5.7**. Based on standardized resistivity values fence diagram and section were prepared at different places of Car Nicobar (**Fig 5.8a to d**). In general, the area is mostly represented by three to five subsurface geo-electric layers. Below the surface soil, freshwater lens is present. This zone continues within weathered zone. Below the weathered saturated fresh formation, brackish and saline water formations are present.

Table 5.3 Standardized Resistivity Values for various geo-electrical layers of Great Nicobar Island

Sl. No.	Formation Characteristics	Resistivity (ohm-m)
I	Top Soil	0.9 - 1024
II	Hard Coralline Limestone	1878 -5177
III	Saturated (Fresh) Semi-Weathered Coralline Limestone/Coralline Sand	146 - 622
IV	Saturated (Fresh) Semi-Weathered Coralline Limestone/ Sandstone or Cavernous Limestone	23 -152
V	Brackish to Fresh Formation in Coralline Limestone or Sand	12 - 20
VI	Brackish Formation	6 - 12
VII	Saline to Brackish Formation	2 - 6
VIII	Saline Formation	< 2

Table 5.4 Standardized Resistivity Values for various geo-electrical layers of Car Nicobar Island

Sl. No.	Formation	Resistivity (Ohm-m)
I	Top soil	5-5600
II	Hard Coralline Limestone	630-2800
III	Saturated (fresh) semi-weathered Coralline limestone/ Coralline sand.	175-8125
IV	Saturated (fresh) weathered Coralline limestone / sandstone or Cavernous limestone.	32-800
V	Nicobar marl	4-17
VI	Brackish to fresh formation in Coralline limestone or sand	18-29
VII	Brackish formation	9-18
VIII	Saline to brackish formation	6-9
IX	Saline	<6

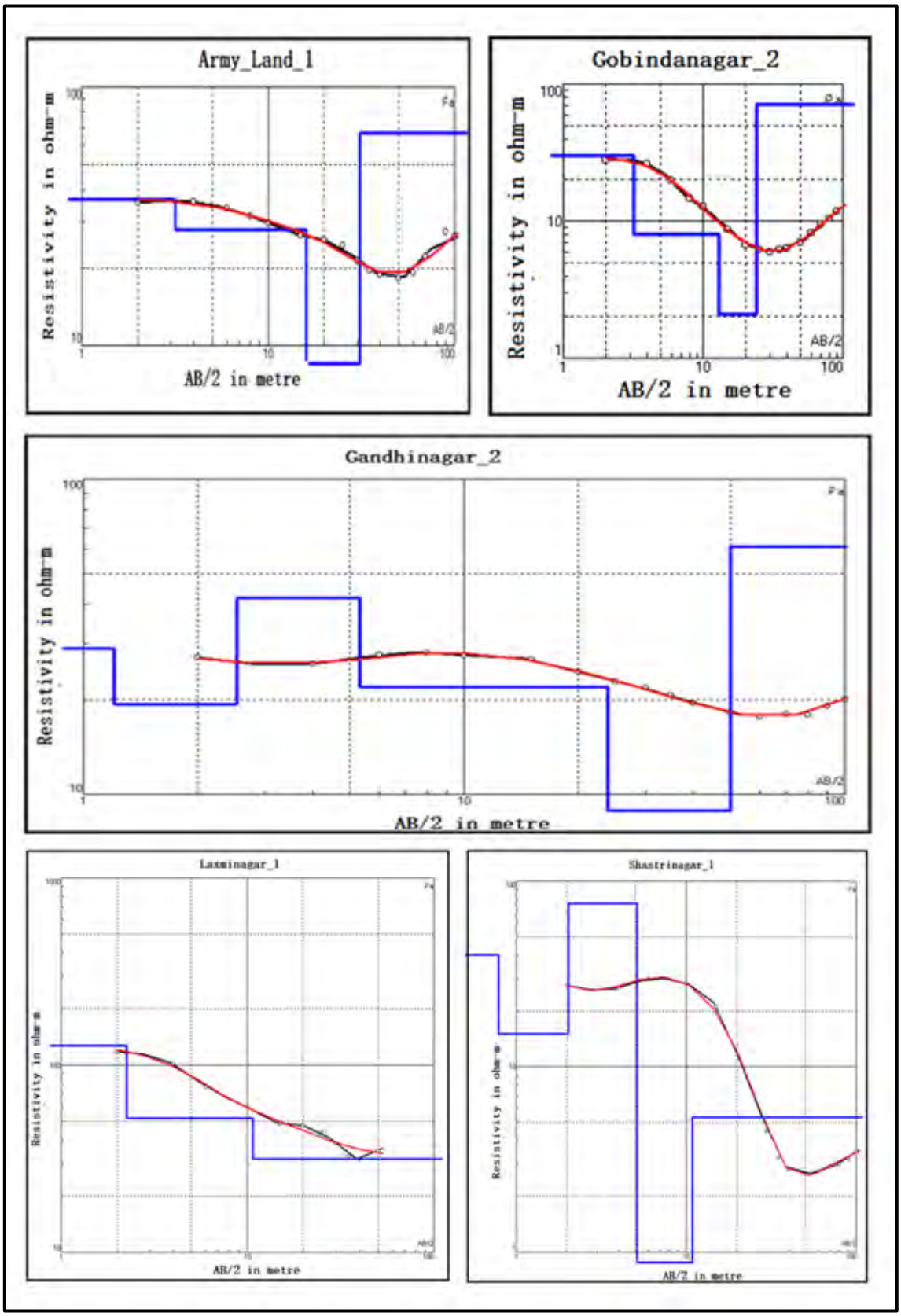


Fig. 5.5 VES curves obtained in Great Nicobar Island

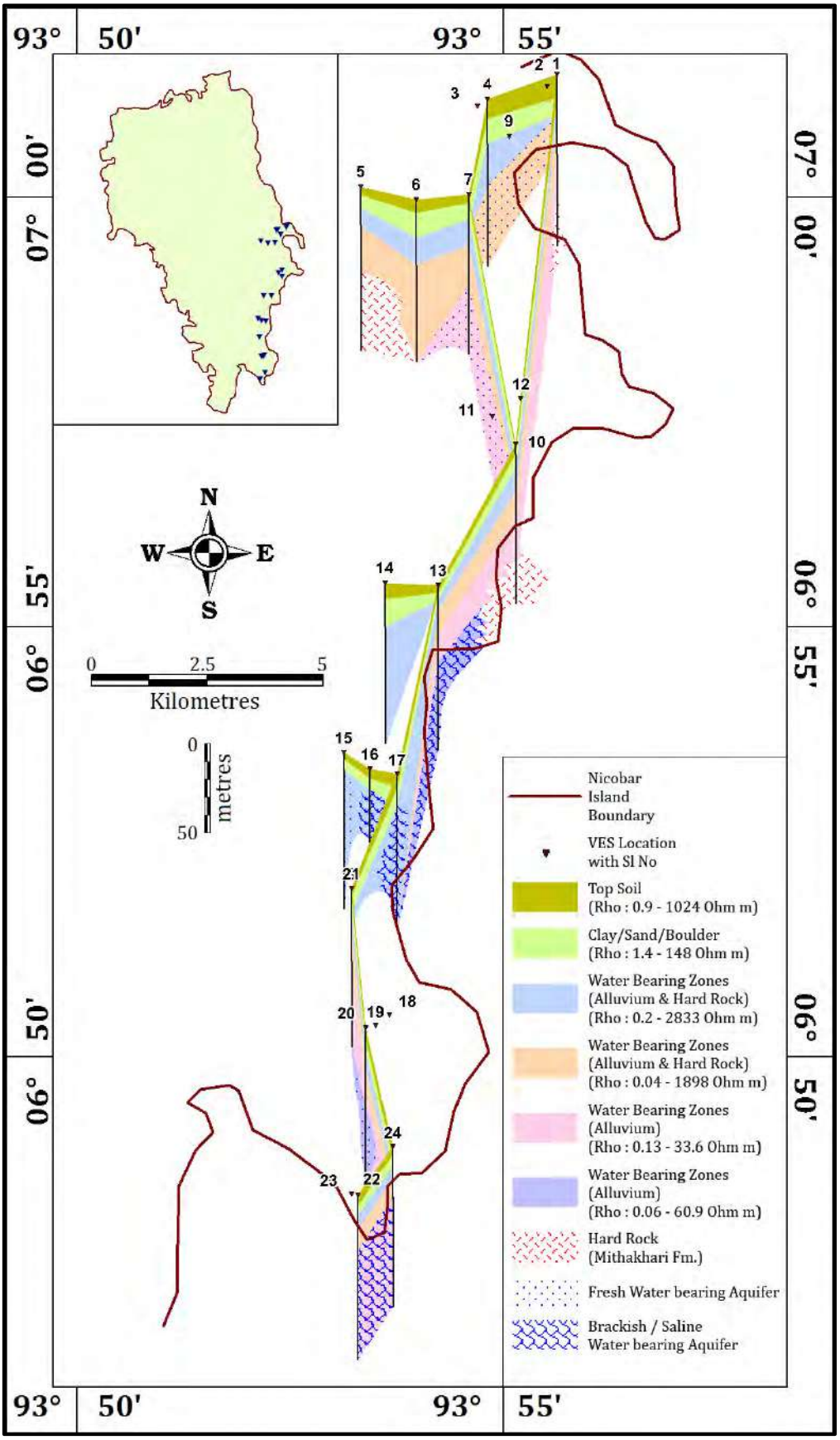


Fig. 5.6 VES based Fence diagram, East Coast, Great Nicobar Island

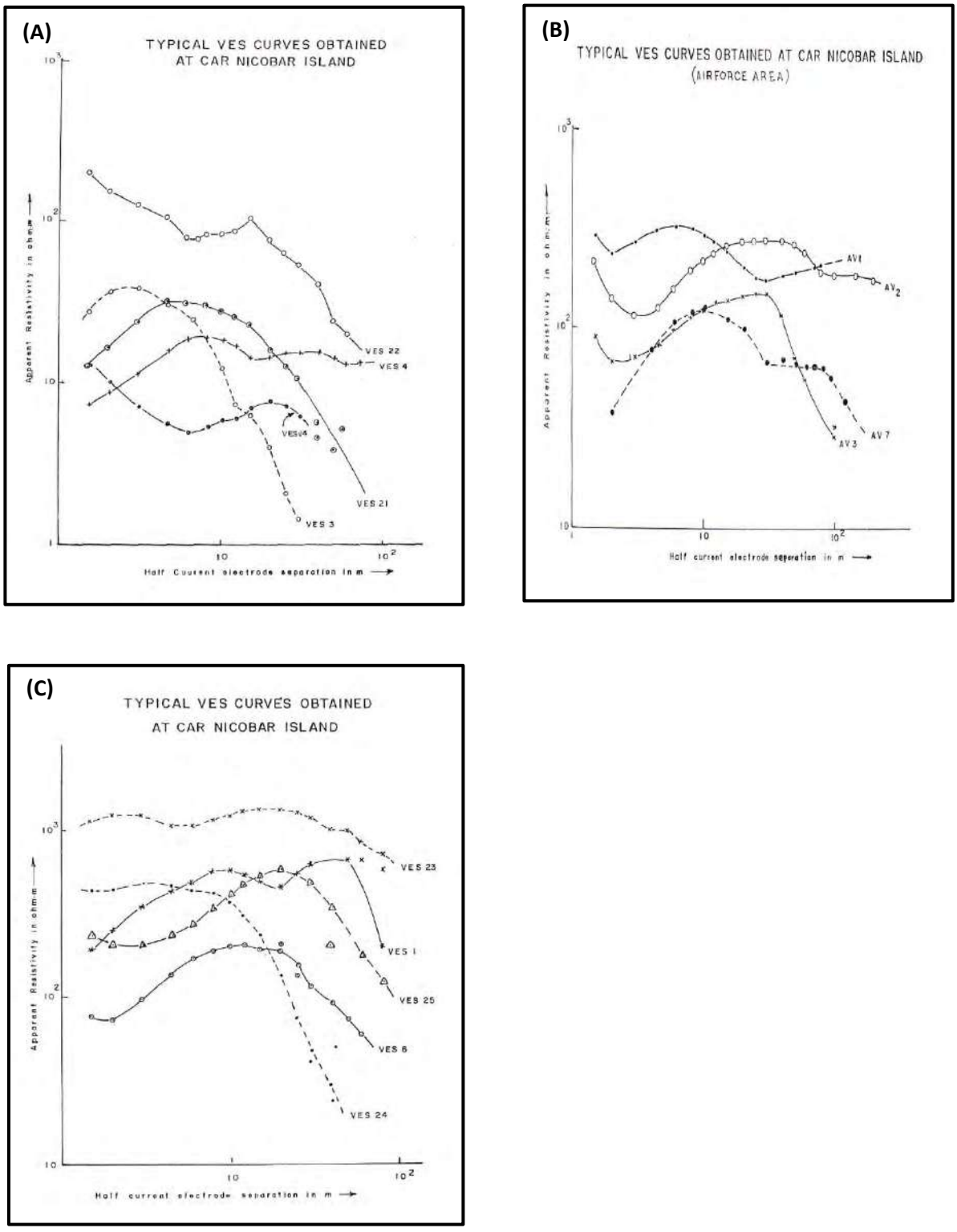


Fig. 5.7 VES curves obtained in Car Nicobar Island (Kar and Adhikari, 2005)

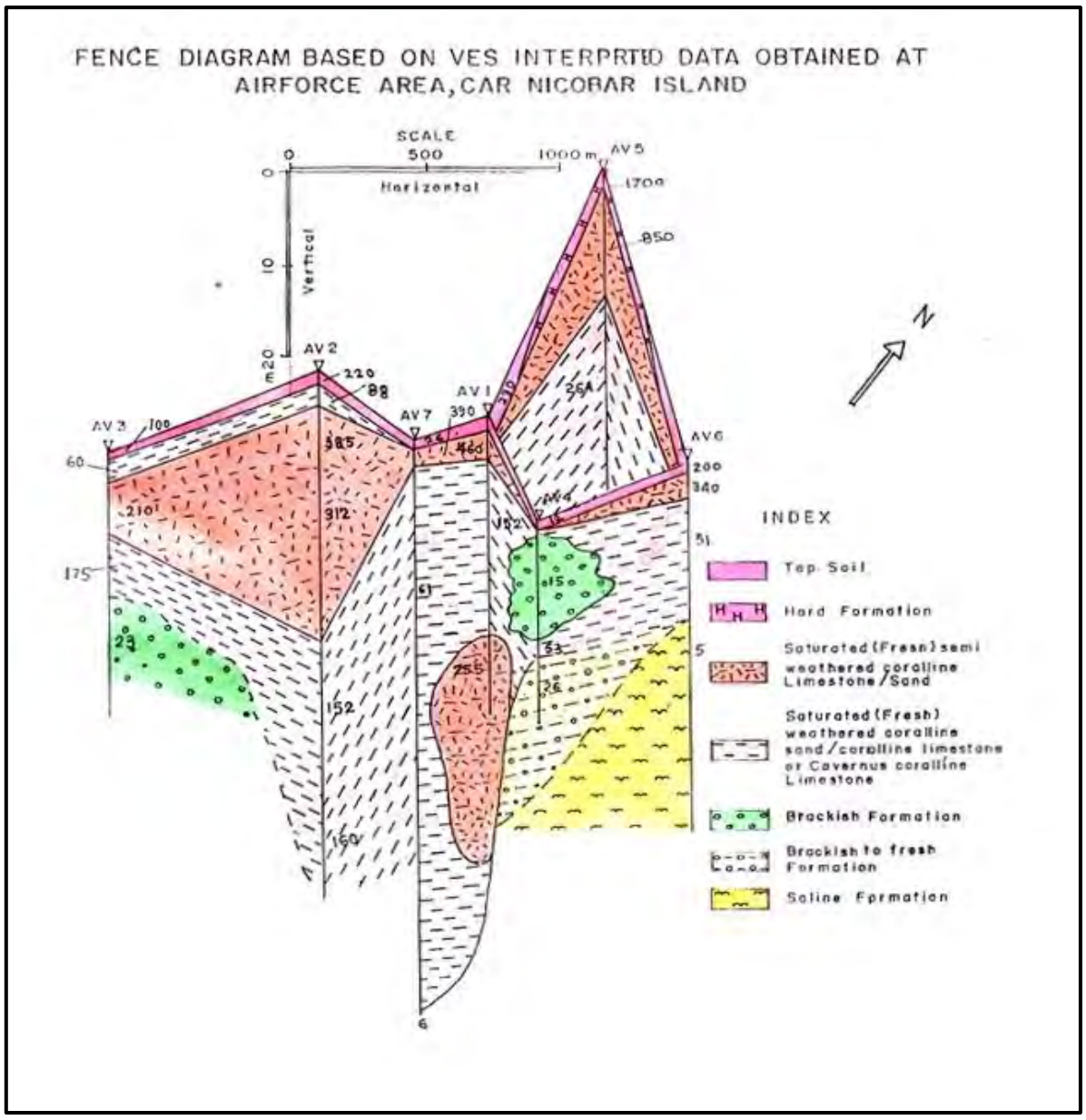


Fig. 5.8a VES based Fence diagram, Air Force Area, Car Nicobar Island (Kar and Adhikari, 2005)

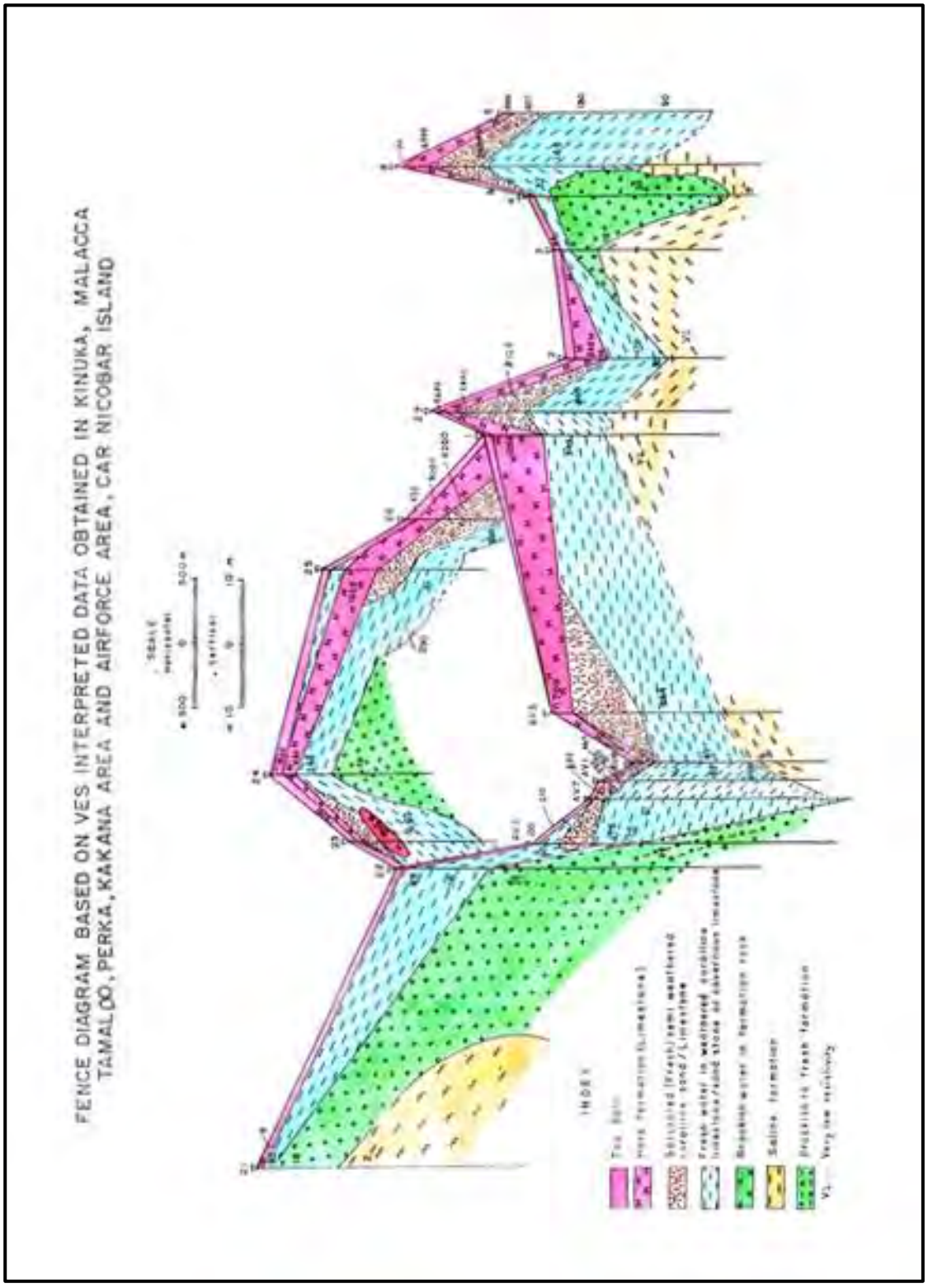


Fig. 5.8b VES based Fence diagram, Kinuka-Kanana, Car Nicobar Island (Kar and Adhikari, 2005)

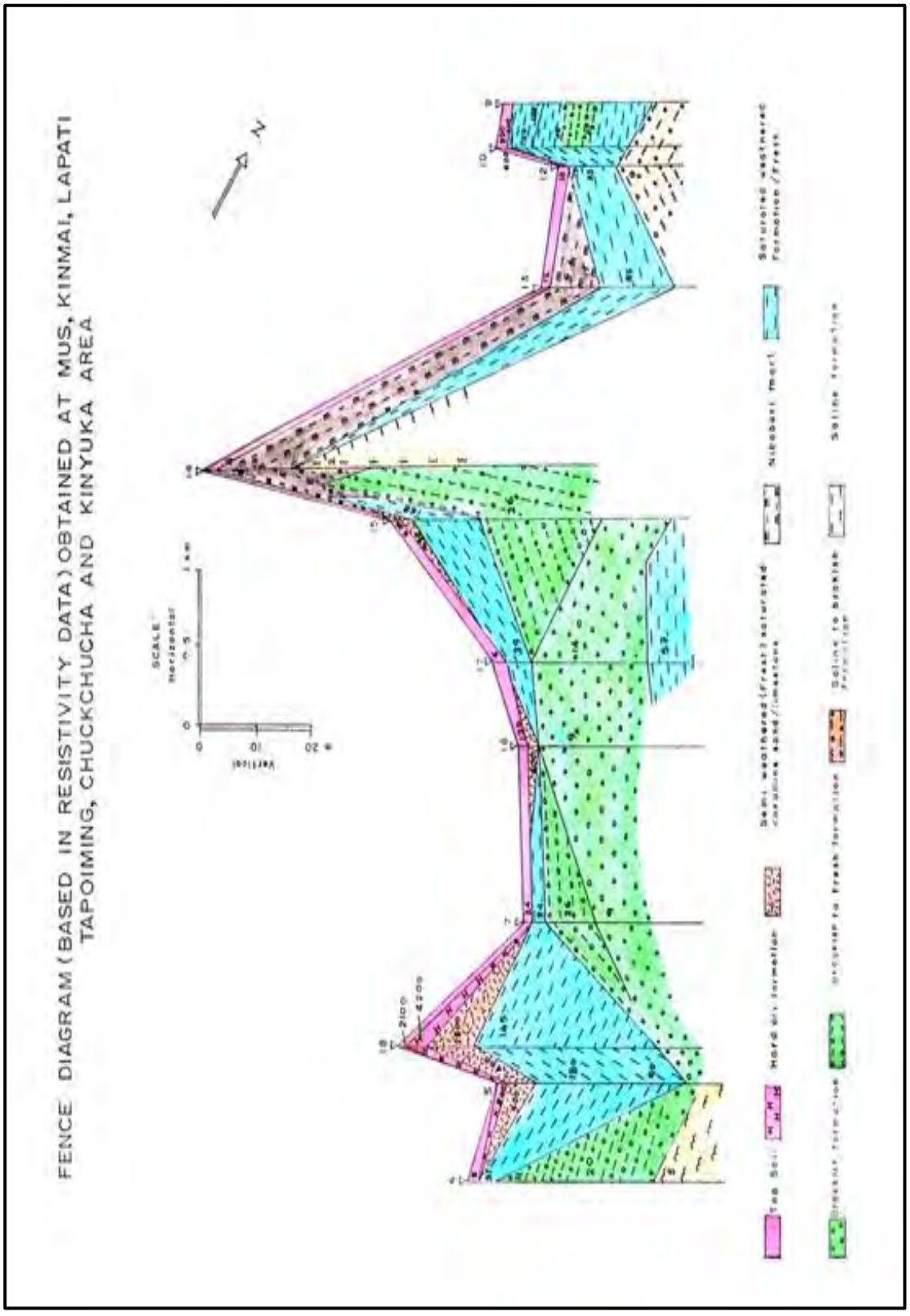


Fig. 5.8c VES based Fence diagram, MUS-Kinuyaka, Car Nicobar Island (Kar and Adhikari, 2005)

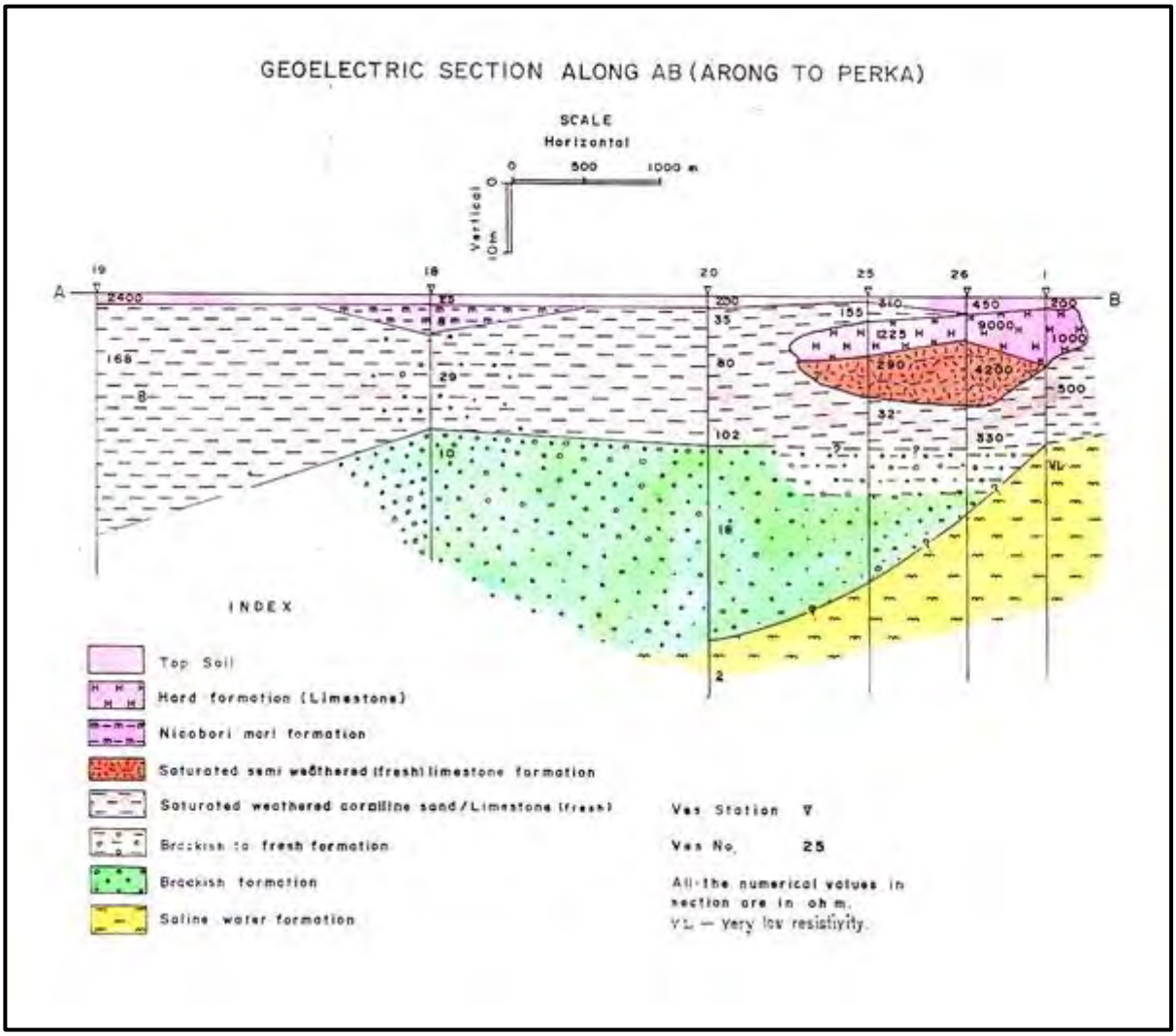


Fig. 5.8d VES based Fence diagram, Arong-Perka, Car Nicobar Island (Kar and Adhikari, 2005)

5.4 Water-Table Behavior

As indicated by climate modeling, the islands receive copious rainfall though out the year touching every month. Hence, in presence of thin freshwater lens, pre-monsoon and post-monsoon season water levels are not distinguishable from each other. Hence groundwater levels are measured across dry spell. Water levels are measured in Great Nicobar Island during May, 2022 and March, 2023. May, 2022 water levels though typically comes under pre-monsoon period shows shallow water level due to copious rainfall in preceding months in 2022. On the other hand, March, 2023 water levels though typically comes under early pre-monsoon season, shows deeper water level due to paucity of rainfall in preceding two months in 2023.

It is also to be noted that water-level monitoring in the Nicobar district is greatly influenced by its habitation distribution. Most of the islands are forested and mostly inaccessible. Groundwater abstraction structures, where water level measurement can be carried out, are only available in coastal region. Hence constructed water table represents only a minor fraction of the entirety.

For water level monitoring purpose, sixty (60) key observation wells are established in Great Nicobar Island in view of its future development prospect. All the key wells are dug well. Depth of these dug wells vary from 2.5 m in Gandhinagar area to 10 m depth in Joginder Nagar and Govind Nagar area. Details of established key observation wells are given in **Annexure – 1 & 2**. Key observation well location map is given in **Fig. 5.9.**

After dry season, observed depth to water level varies from 0.05 m bgl to 3.5 m bgl. Minimum depth to water level of 0.05 m bgl is observed at Govindnagar area and maximum depth to water level of 3.5 m bgl is observed at Shastrinagar area.

After wet season, observed depth to water level varies from 0.2 m bgl to 3.62 m bgl. Minimum depth to water level of 0.2 m bgl is observed at Govindnagar area and maximum depth to water level of 3.62 m bgl is observed at Vijaynagar area.

Prepared Depth-to-Water level maps for Dry- and Wet-seasons are given in **Fig. 5.10a** and **5.10b**.Statistical analysis of the water level data is carried out. Basic Statistics for DTW Variability is given in **Table. 5.5**. Histogram of Dry- Season DTW, Wet- Season DTW and their difference are given in **Fig. 5.11**.

Table 5.5 Basic Statistics for DTW Variability

	Dry Season DTW	Wet Season DTW	Fluctuation in DTW (Dry - Wet)
N of Cases	60	60	60
Minimum	0.05	0.05	-1.87
Maximum	3.5	3.62	1.1
Median	0.9	0.60	0.2
Arithmetic Mean	1.03	0.85	0.18
Standard Deviation	0.69	0.85	0.55

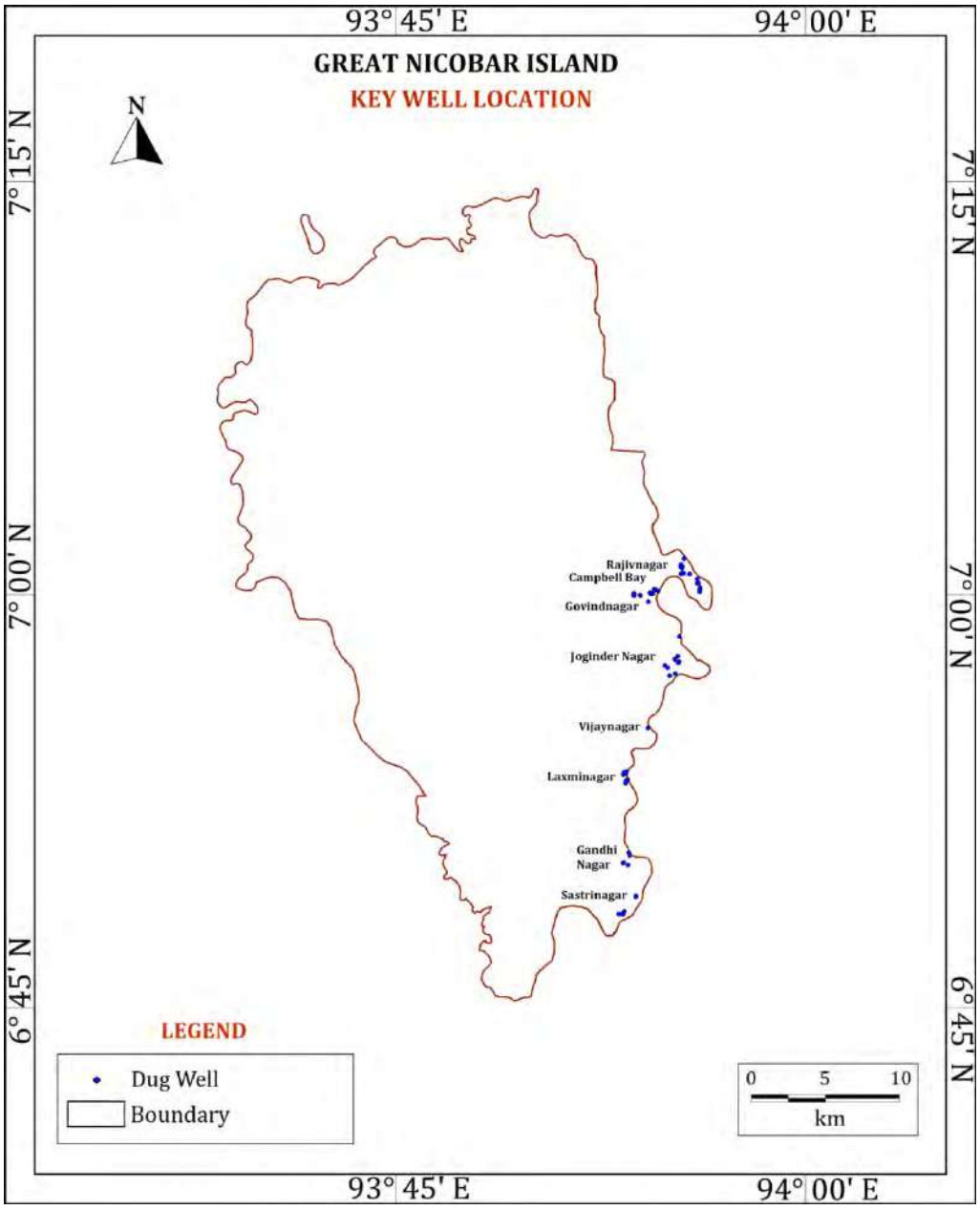


Fig. 5.9 Key-well locations in Great Nicobar Island

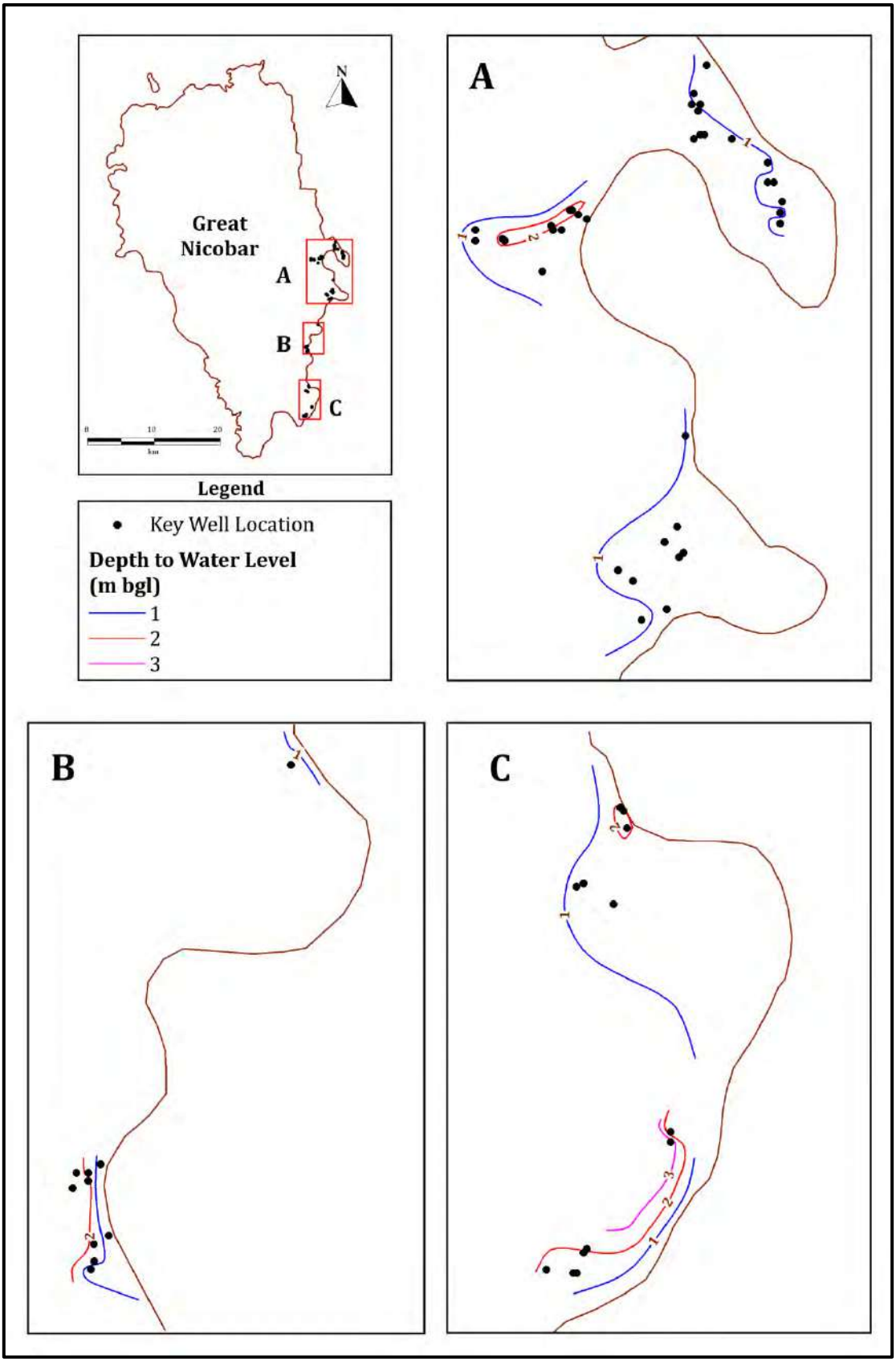


Fig. 5.10a Dry- Season Depth to Water Table Map of Great Nicobar Island

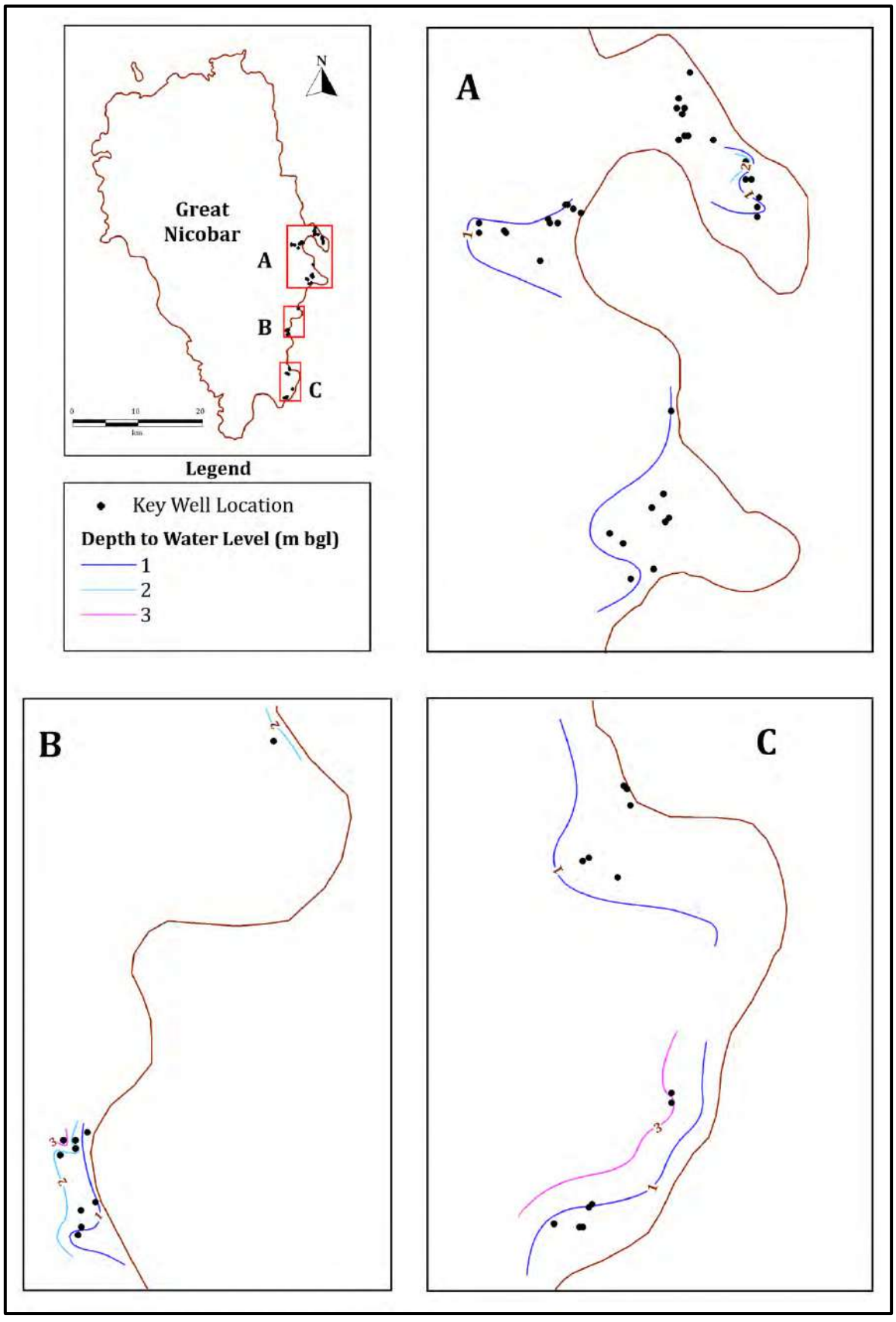


Fig. 5.10b Wet- Season Depth to Water Table Map of Great Nicobar Island

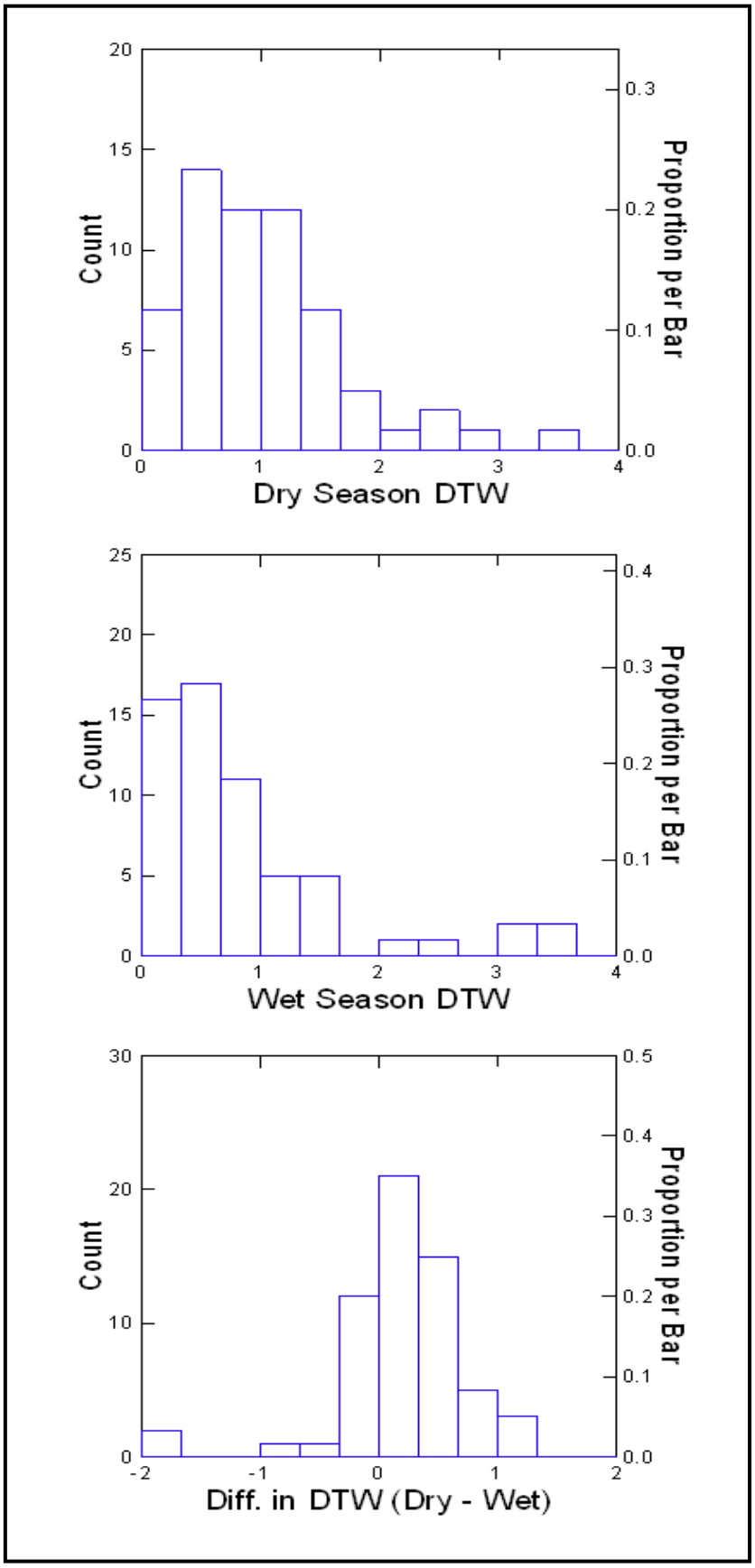


Fig. 5.11 Histogram of Dry-, Wet- Season DTW and their Difference

5.5 Groundwater Recharge Response

Groundwater recharge possibilities are estimated through soil infiltration test. Single ring infiltrometer is used for the purpose. Results and summarized observations are given in **Table 5.6.** Detailed Observations are given in **Annexure 6**. Soil infiltration test graphs of Great Nicobar Island are given in **Fig. 5.12**.

Results show that in Jogindernagar area, over valley-fill deposits in a more or less flat topographic setting, initial infiltration rate was 3.1 cm/hr which finally reduced to 0.4 cm/hr with an average infiltration rate of only 1 cm/hr. On the other hand, in Govindnagar area, over forested mountain slope, initial infiltration rate was 37.8 cm/hr which finally reduced to 2.4 cm/hr with an average infiltration rate of 11.6 cm/hr. This shows that in contrast to popular perception,

Table 5.6 Results and Summarized Observations of Soil Infiltration Test

Measurements Parameters	Unit	Observations	
Site Name	-	**Jogindernagar**	**Govindnagar**
Geo Reference	DD	6.999965° N 93.8901967°E	6.9622768° N 93.9226687°E
RL	m amsl	15m	60m
Geomorphology	-	**Valley-fill plain**	**Hill slope**
Slope	Degree	**1° - 3°**	**10° - 12°**
Soil Type	-	**Clayey soil**	**Forest Brown soil**
Land Use	-	**Coconut Orchard**	**Forest Land**
Vegetation	-	**Grass covered**	**Grass covered**
Nearby Water level	m bgl	**0.45**	**0.5**
Initial Head	cm	34	30
Head after 10 min	cm	33.49	23.7
Head 10 min last measurement	cm	33.11	7.3
Final Head	cm	33.05	6.9
Test duration	min	56	120
Initial Rate (First 10 min)	cm/hr	**3.1**	**37.8**
Final Rate (Last 10 min)	cm/hr	**0.4**	**2.4**
Average Rate	cm/hr	**1.0**	**11.6**

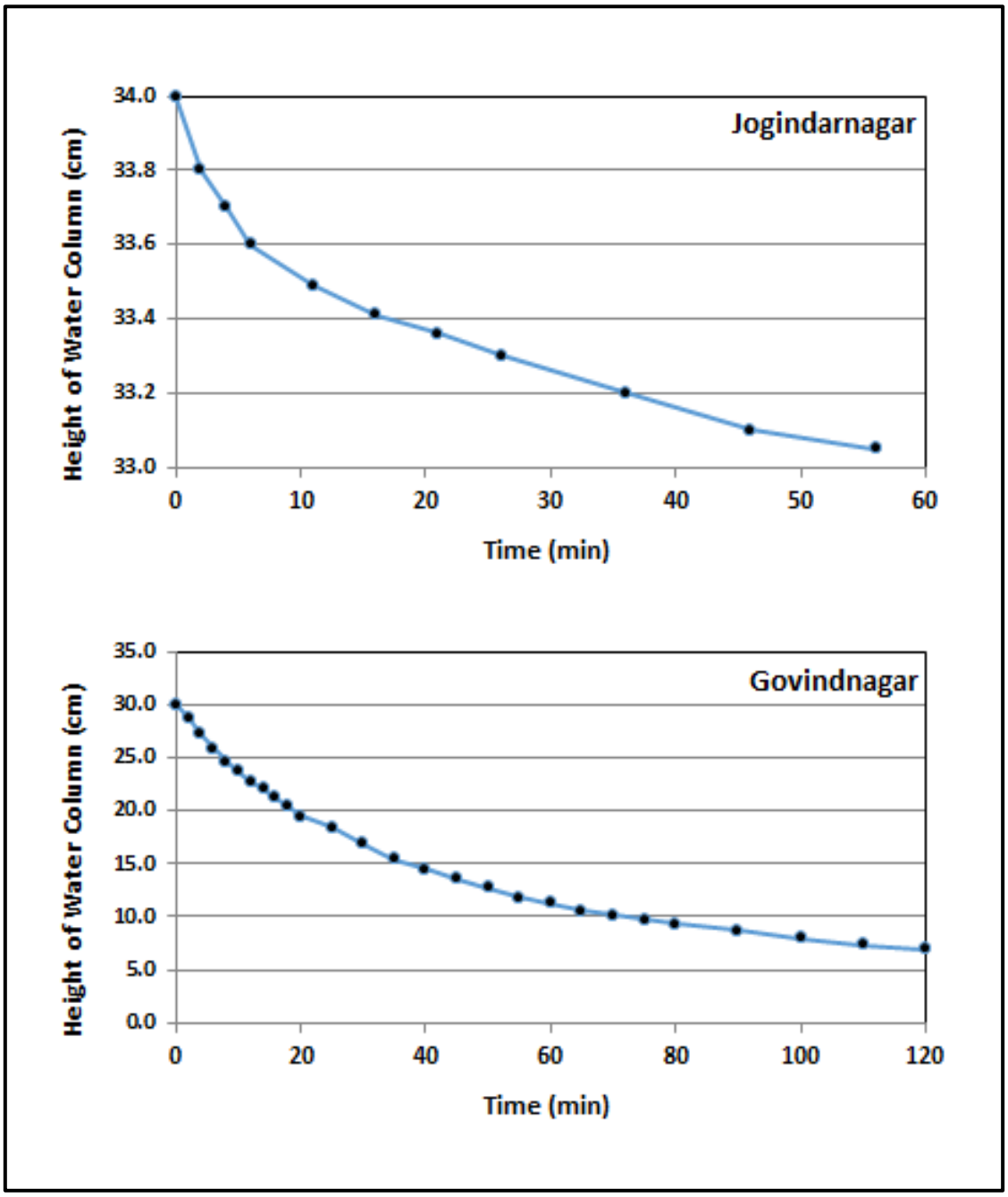


Fig. 5.12 Plots of Soil infiltration tests in Great Nicobar Island

5.6 Groundwater Draft Response

Main Objective of this study is to have an idea about aquifer parameters, well performance and yield characteristics of the wells. The islands do not have any borewell till date except those constructed by CGWB during 1987-88, which are defunct now. Islanders are dependent on large diameter Dugwells or spring/nallah based water supply system. Hence, to understand groundwater withdrawal response, two dugwells are analysed based on their recovery performance. Methods utilized for analyses of the data are summarized below.

Slichter's Method (1906) is used to determine the *Specific Capacity* (C) of the wells.

$$C' = 2.30\frac{A}{t'}\log\frac{S_1}{S_2}$$

Where, C is Specific Capacity; A is Cross sectional Area; S_1 is Drawdown when Pumping stopped and S_2 is Residual draw down at time t' after pumping stops with the assumption that flow is only from the bottom. Based on recovery performance wells are analysed.

Muskat's Method (1937) is used to determine the *Transmissivity* (T) of the aquifer. The method extends the use of Slichter's equation for estimation of Transmissivity by combining Theim's Solution for steady-state flow.

$$T = \frac{C'A}{2\,\pi\,t'}\log_e\frac{S_1}{S_2}$$

$$C' = \log_e\frac{r_0}{r_w}$$

Where, A is cross sectional area; r_0 is distance at which drawdown is negligible at the end of pumping; r_w is radius of the well; S_1 is Drawdown at the time pumping stops and S_2 is residual drawdown at time t' after pumping stops. The underlying assumptions are aquifer is confined with lateral flow into the well under steady-state.

However, the method is valid only for dug wells tapping confined aquifers with the well ending at the bottom of the confining layer. There is also serious practical limitation is to estimate the distance to a point of zero drawdown. Considering the dugwells are tapping the bottom portion of the aquifer horizon, the method is applied; however the aquifer

horizon is essentially unconfined. Hence, this absolutely downgrades the estimation of T. However, no other value of T exists for the area.

Hvorslev Method (1951) is used to determine the *Permeability* (K) of the aquifer. The method is also based on Recovery Data and takes storage into consideration. Concept of Shape Factor is introduced which depends on the radius of the well and the nature of intake area.

$$K = \pi \frac{a^2}{S} \frac{\ln h_1 - \ln h_2}{t_2 - t_1}$$

Where, 'a' is well radius; S is shape factor; K is Permeability; h_1 and h_2 are drawdowns at time t_1 and t_2. If water enters through bottom only, value of *Shape Factor* is twice the diameter of the well.

Romani's Method (1973) is used to determine *Optimum Yield* (Y) of a well. Main aim is to have an idea of the maximum quantity of water which can be pumped out from a dug well either by continuous or intermittent pumping. It also reflects upon the yield characteristics of the aquifer tapped.

$$n = \frac{720 - t_1}{t_2 + t_3}$$

$$Y = Q\,(t_1 + n t_2)$$

Where, t_1 is the time at which the well is dry or the well reaches the optimum lifting capacity of the pump; t_2 is time to empty 50% of the well; t_3 time for 50% recovery of water level; and Y is the Optimum Yield of the well.

Detailed observations are given in **Annexure 7**. Estimated Well parameters, Aquifer parameters and Aquifer Yield are summarized in **Table 5.7**. Graphical plots of Slichter's Method and Romani's Method are given in **Fig. 5.13a to d**. Derived values of T and K agree with each other as expected saturated zone tapped by dugwell is 2m.

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Table 5.7 Estimated Aquifer Parameters and Aquifer Yield

Parameter/Methods	Well 01	Well 02
Well Parameter		
Slichter's Method (1906)		
Diameter	9 m	7.75 m
A	254.6 m^2	188.8 m^2
t'	300 min	100 min
Log (S_1/S_2)	2.6	1.1
Specific Capacity (C)	**5.1 m^2/min**	**4.8 m^2/min**
Aquifer Parameters		
Muskat Method (1937)		
r_0	50 m	50 m
C'	1.71	1.86
S_1/S_2	2.843	1.129
t'	370 min	60 min
Transmissivity (T)	**20 x 10^{-2}**	**11 x 10^{-2}**
Hvorslev Method (1951)		
a	4.5 m	3.875 m
h_1	0.199 m	3.03 m
t_1	65 min	60 min
h_2	0.15 m	2.79 m
t_2	195 min	130 min
S	18 m	15.5 m
Hydraulic Permeability (K)	**11 m/day**	**5 m/day**
Aquifer Yield		
Romani Method (1973)		
t_1	90 min	215 min
t_2	46 min	100 min
t_3	340 min	265 min
Q	0.10 m^3/min	0.06 m^3/min
n	1.63	1.38
Optimum Yield (Y)	**17 m^3/day**	**21 m^3/day**

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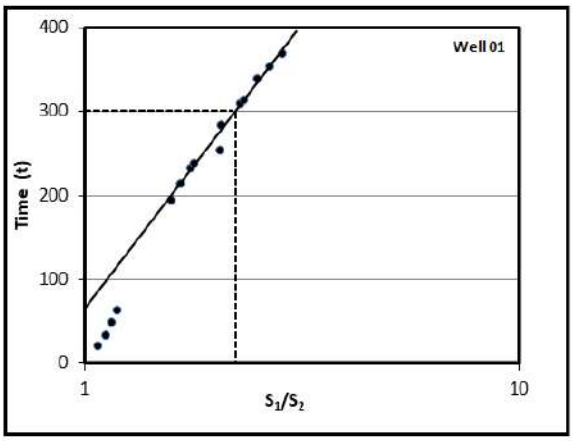


Fig. 5.13a Plot of Log S_1/S_2 vs. t (Slichter's Method)

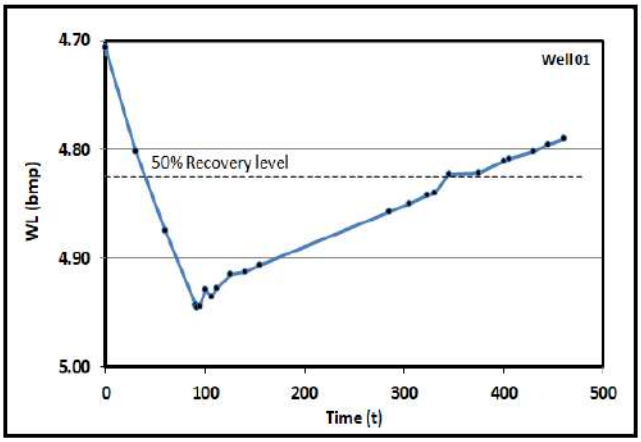


Fig. 5.13b Yield Test of Large Diameter Dugwell using Romani method

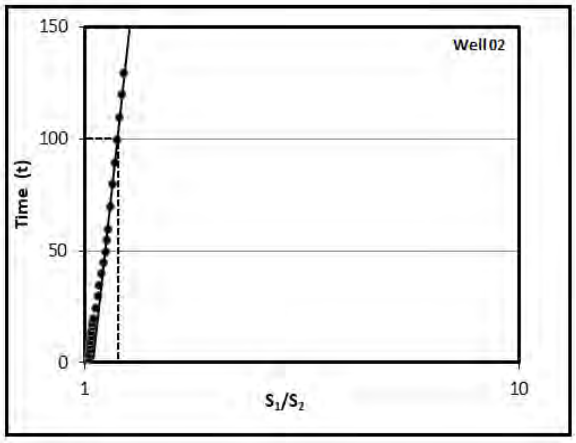


Fig. 5.13c Plot of Log S_1/S_2 vs. t (Slichter's Method)

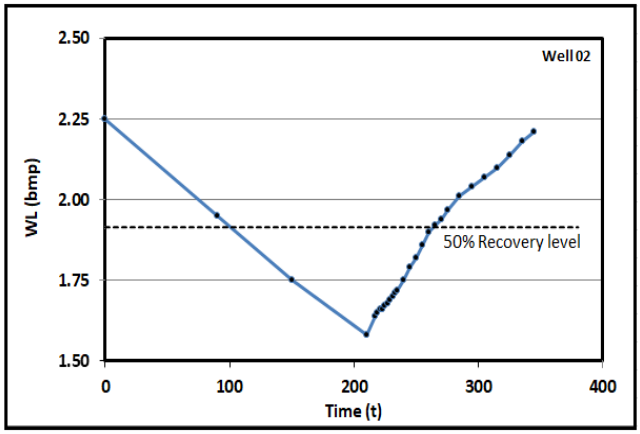


Fig. 5.13d Yield Test of Large Diameter Dugwell using Romani method

5.7 Aquifer Disposition and Properties

Exploratory data and geophysical investigation data are compiled and correlated to understand aquifer disposition. In Nicobar district, mainly two broad hydrogeological units are present. They are

a) Fractured Consolidated Formation

Lithologically, marine sedimentary group of rocks comprising shale, sandstone, grit and conglomerate and extrusive, intrusive igneous rocks (volcanics and ultramafics) and coralline limestone contributes towards this hydrogeological unit. Occurrence and movement of ground water in this formation is controlled mainly by the zone of secondary porosity and along the contact plane of various litho-units. Weathered Mantle and Saprolitic Zone plays important role in recharging the zone of secondary porosity. Because of active tectonism, this group of rocks is highly deformed. However, the nature of deformation is expected to be brittle in nature at shallow depth and ductile at deeper part. In case of coralline limestone, solution cavity forms the main pathway for movement of ground water. However, formation of marl over coralline limestone as weathering product impedes ground water movement.

As per the very limited exploration records, this has limited yield potential of 5 – 10 m^3/day. Exploratory borehole yielded meager discharge. Large diameter (4 – 6 m) dugwells may be constructed down to 4 – 6 m depth. However, several springs across the islands emerge from this unit. This indicates that its actual yield potential may not be properly understood.

b) Unconsolidated formation

Lithologically, mainly Coralline sand horizon constitutes this aquifer. Recent beach sand, coral rags, alluvium, colluvium and valley-fills also contributes to the formation. Weathered mantle and saprolitic zone over consolidated formation is in hydrological continuity with this aquifer system in general. The unit occurs mainly at the coastal parts of the island and thins out towards island interior with increase in elevation.

Present population of the islands mainly depends on this formation for water supply. In every habitation, several dugwells are constructed tapping this one. However the aquifer horizons are isolated and discontinuous in nature and getting their replenishment from

connected weathered mantle at higher elevation. Except in exposed sand horizons, very low infiltration rate due to high clay content of valley-wash at top horizon shows direct rainfall recharge is not significant. This unit has yield potential of 10 – 20 m^3/day. Large diameter (3 – 5 m) dugwells may be constructed down to 3 – 5 m depth.

Aquifer Characteristics are summarized in **Table 5.8**. Summarized dugwell characteristics based on Land Classes are given in **Table 5.9**. Prepared 3-D disposition of aquifer in Campbell Bay Area is given in **Fig 5.14**. Island-wise prepared aquifer maps are given in **Fig 5.15 to 5.20**.

Table 5.8 Aquifer Characteristics

Aquifer			Coastal Coralline Aquifer	Fractured Meta - Sedimentaries	Fractured Volcanics	Coralline Limestone
Explored Depth ranges		m bgl	0-8	4-101	–	–
Fracture Occurrence		m bgl	-NA-	8-10, 15-20, 23-28, 35-43, 56-60, 76-81, 86-92	30 – 50 (expected)	–
Optimal Yield Range		m^3/day	15-20	5-10	–	–
Fresh-Saline Interface		m bgl	6-8	20-30 (Deeper at island interior)	20-30 (Deeper at island interior)	6-8 (Deeper at island interior)
Aquifer parameter	***Transmissivity (T)***	m^2/day	10 to 20 x 10^{-2}	–	–	–
	Permeability (K)	m/day	5 to 11	–	–	–
Suitability for Drinking			Potable	Potable (Brackish at depth)	Potable (Brackish at depth)	Potable in Stored Reserve

Table 5.9 Summarized Dugwell Characteristics based on Land Class

Land Class	Depth of Well	Depth to water Table	Seasonal Fluctuation
Coastal Area	~ 2 m bgl	0.5 - 1 m bgl	~ 0.5 m bgl
Slope Area	2 - 3 m bgl	1 – 1.5 m bgl	~ 0.5 m bgl
Upland Area	~ 4 m bgl	1 – 1.5 m bgl	~ 0.5 m bgl

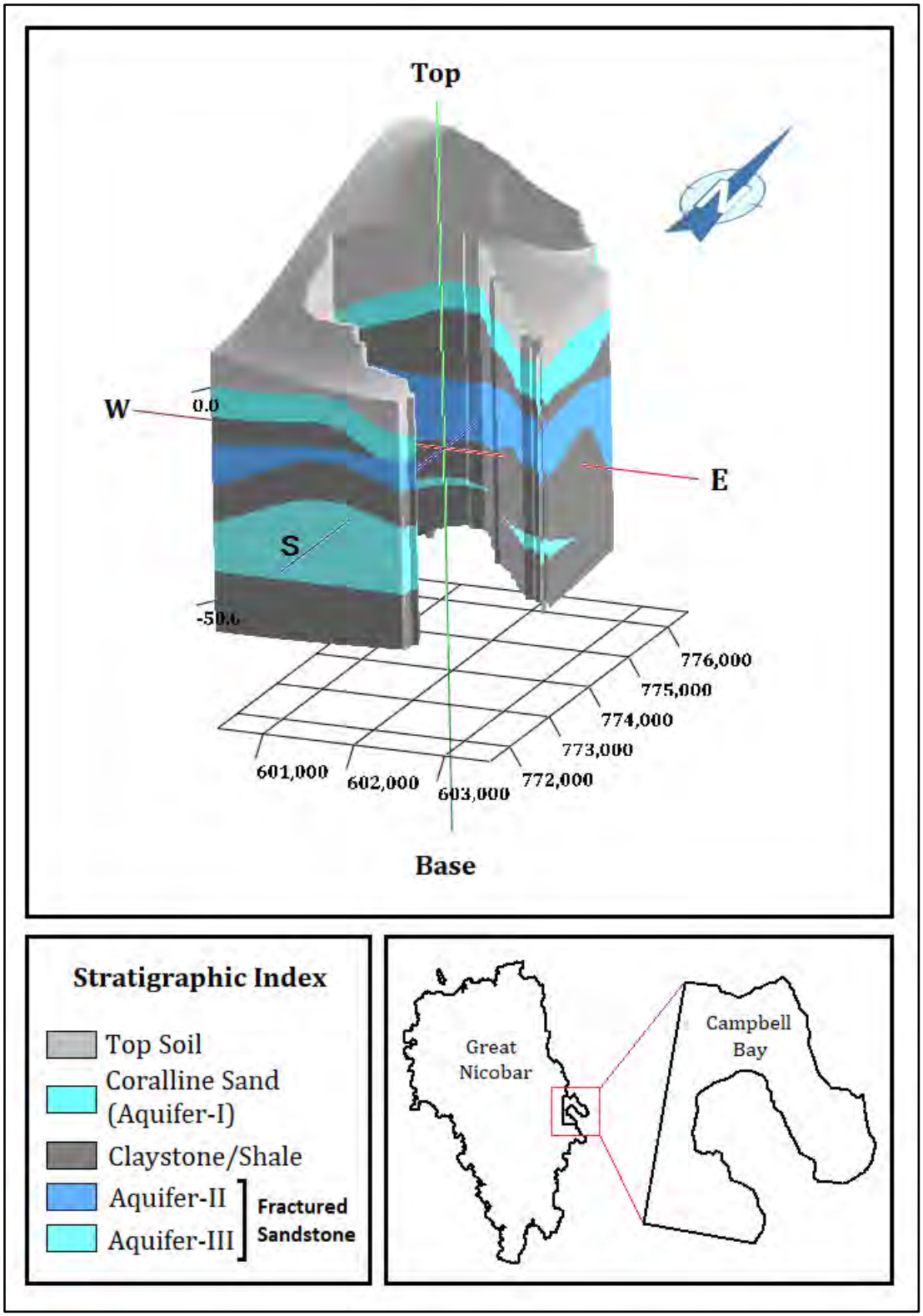


Fig 5.14 3-D Aquifer Disposition in Campbell Bay Area, Great Nicobar Island

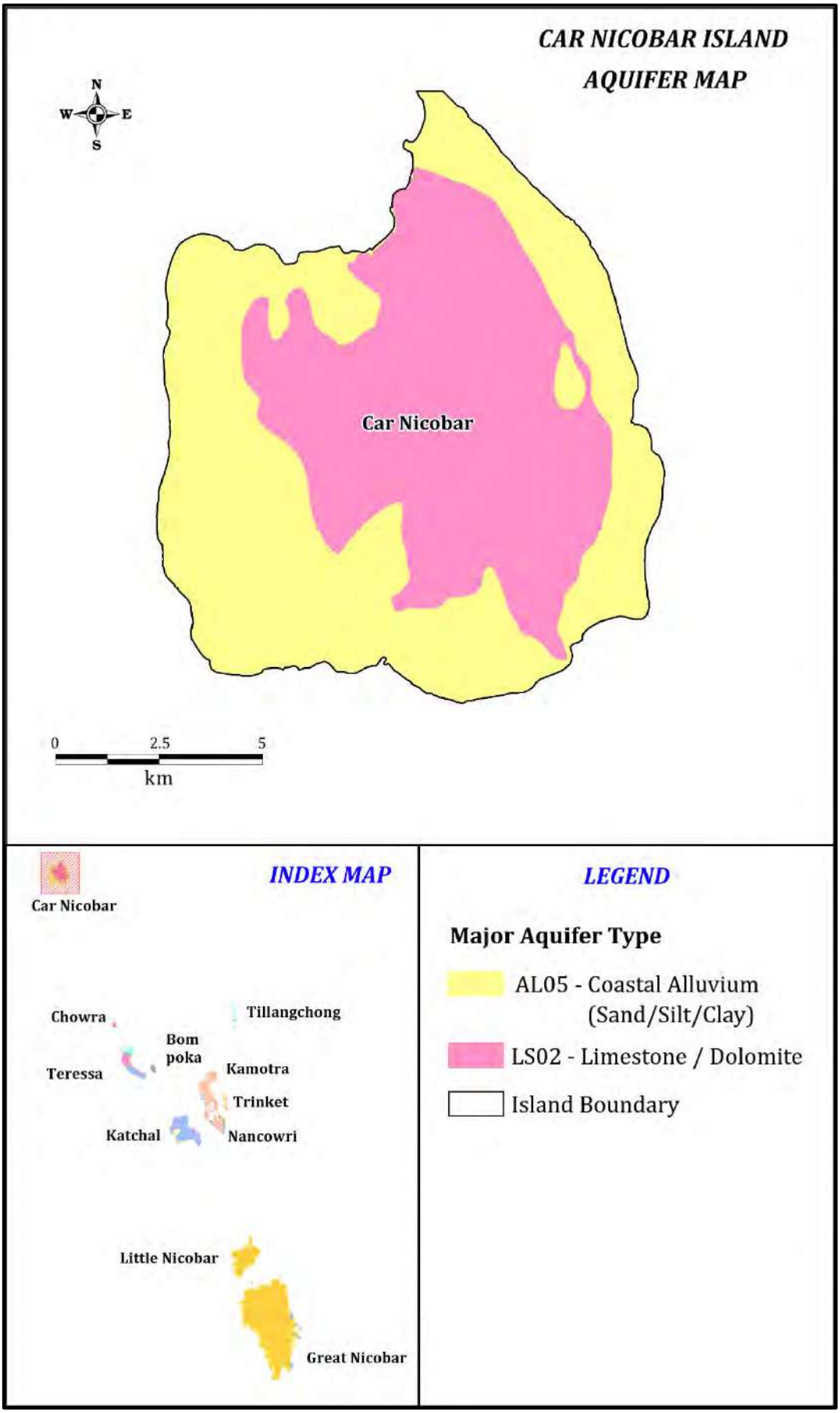


Fig 5.15 Aquifer Map of Car Nicobar Island

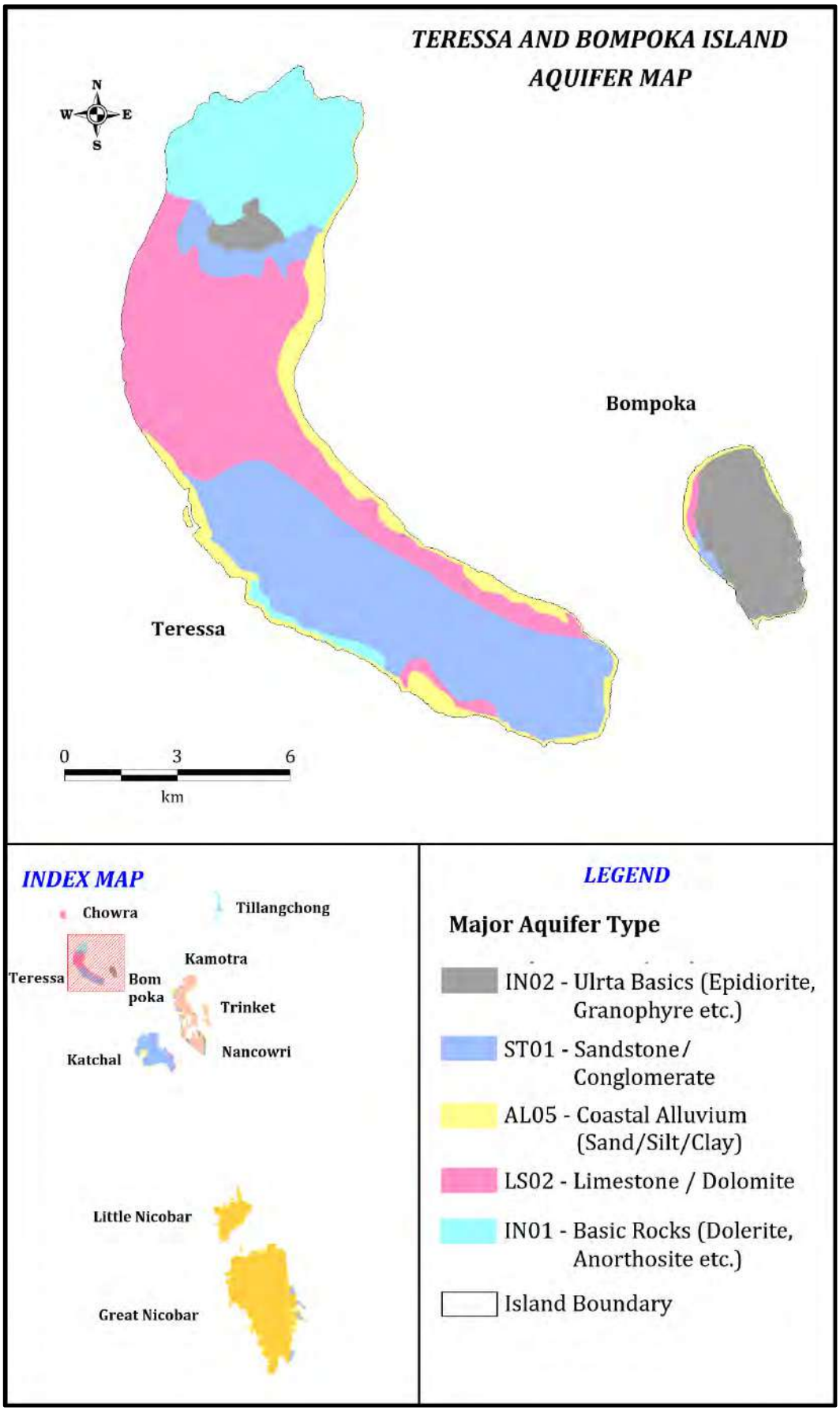


Fig 5.16 Aquifer Map of Chowra, Teressa and Bampooka Island

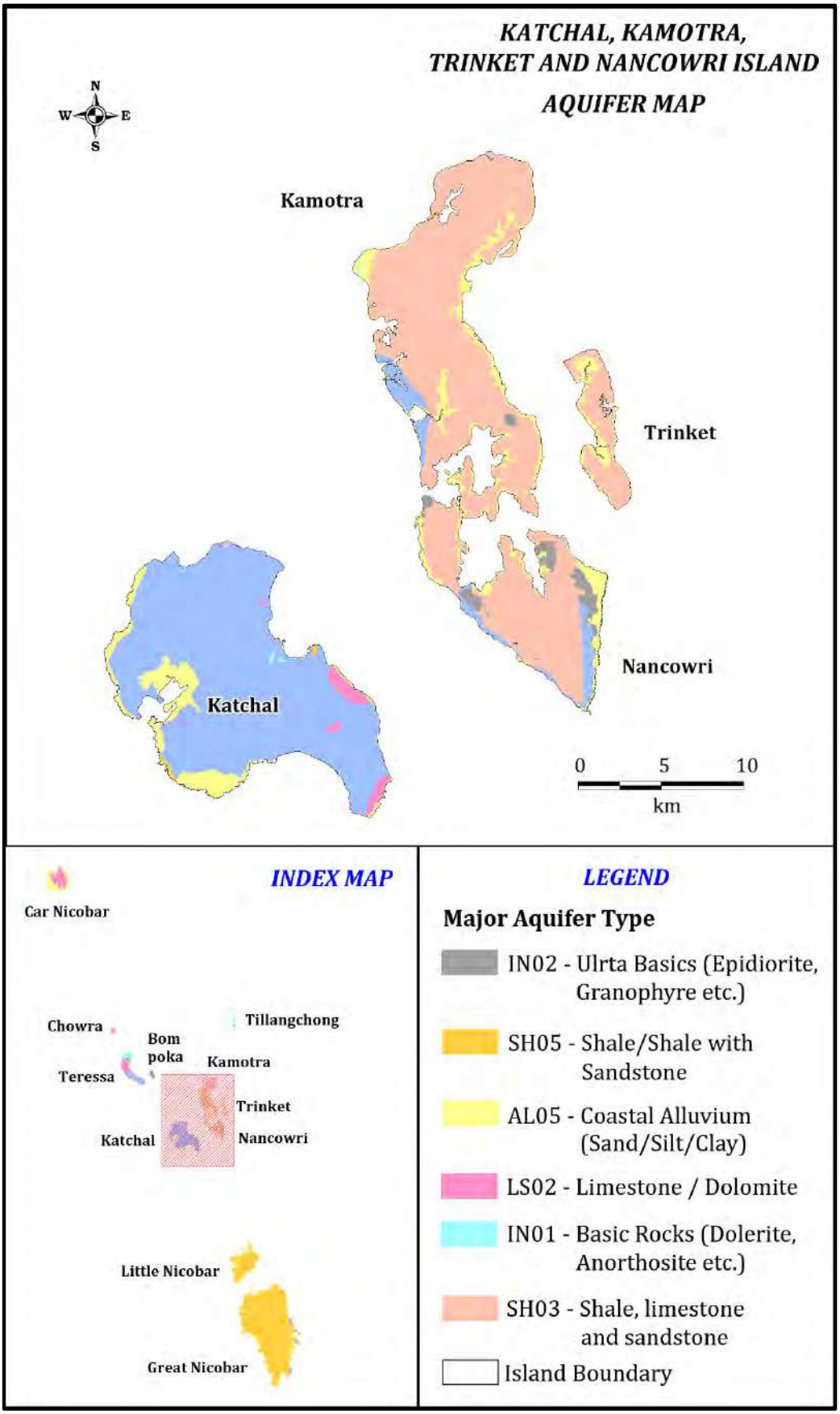


Fig 5.17 Aquifer Map of Katchal, Kamorta, Nancowri, and Trinket Island

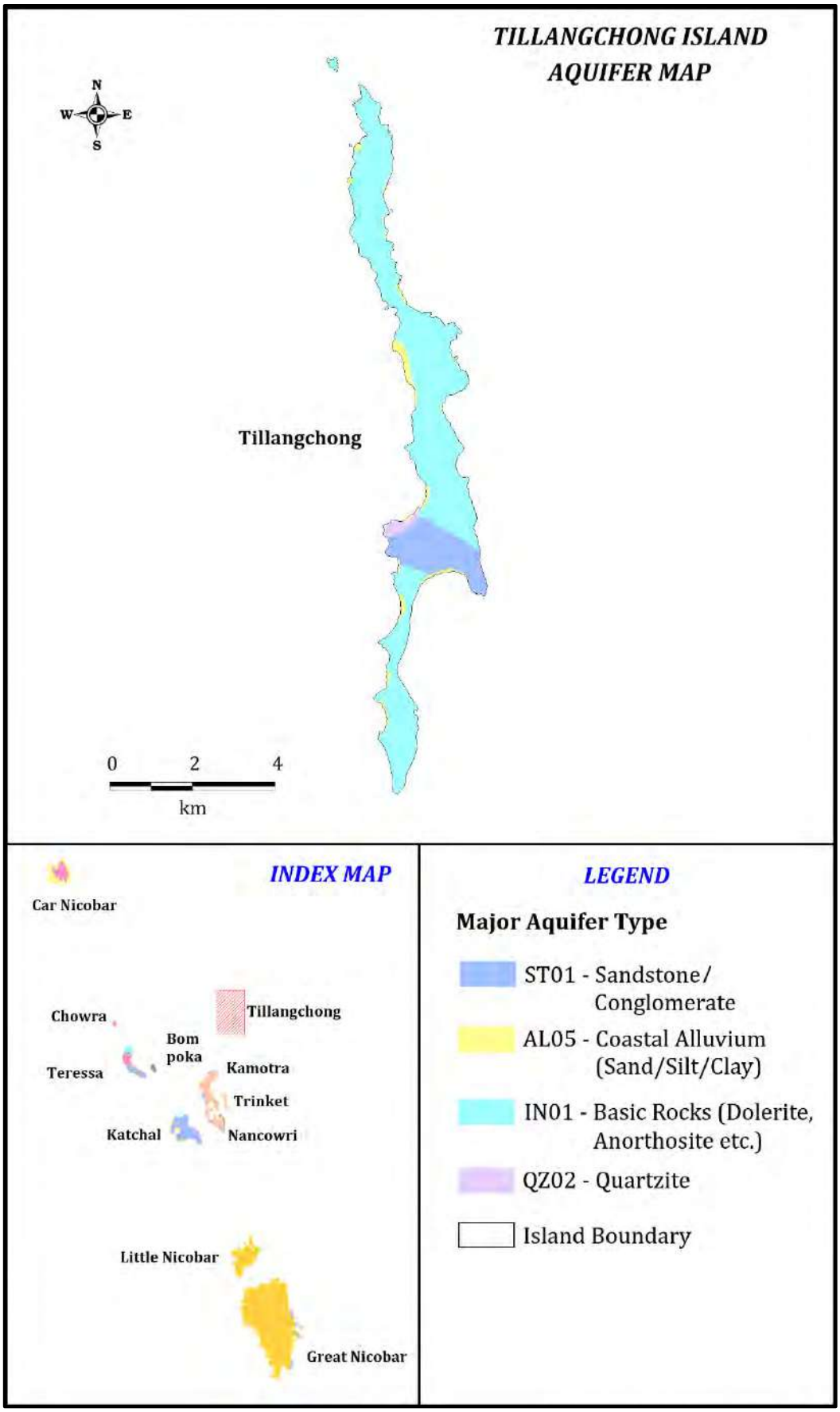


Fig 5.18 Aquifer Map of Tillangchong Island

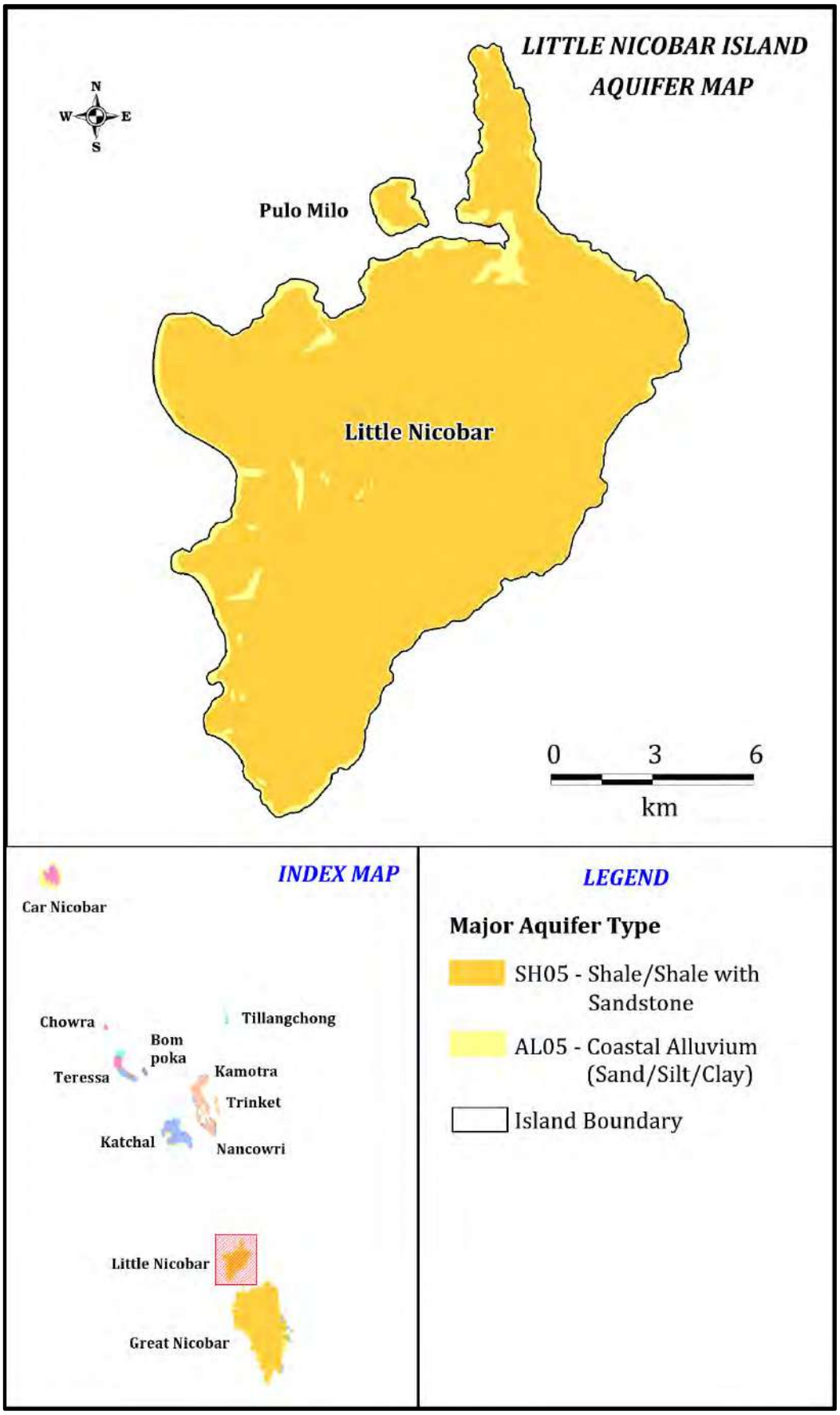


Fig 5.19 Aquifer Map of Little Nicobar Island

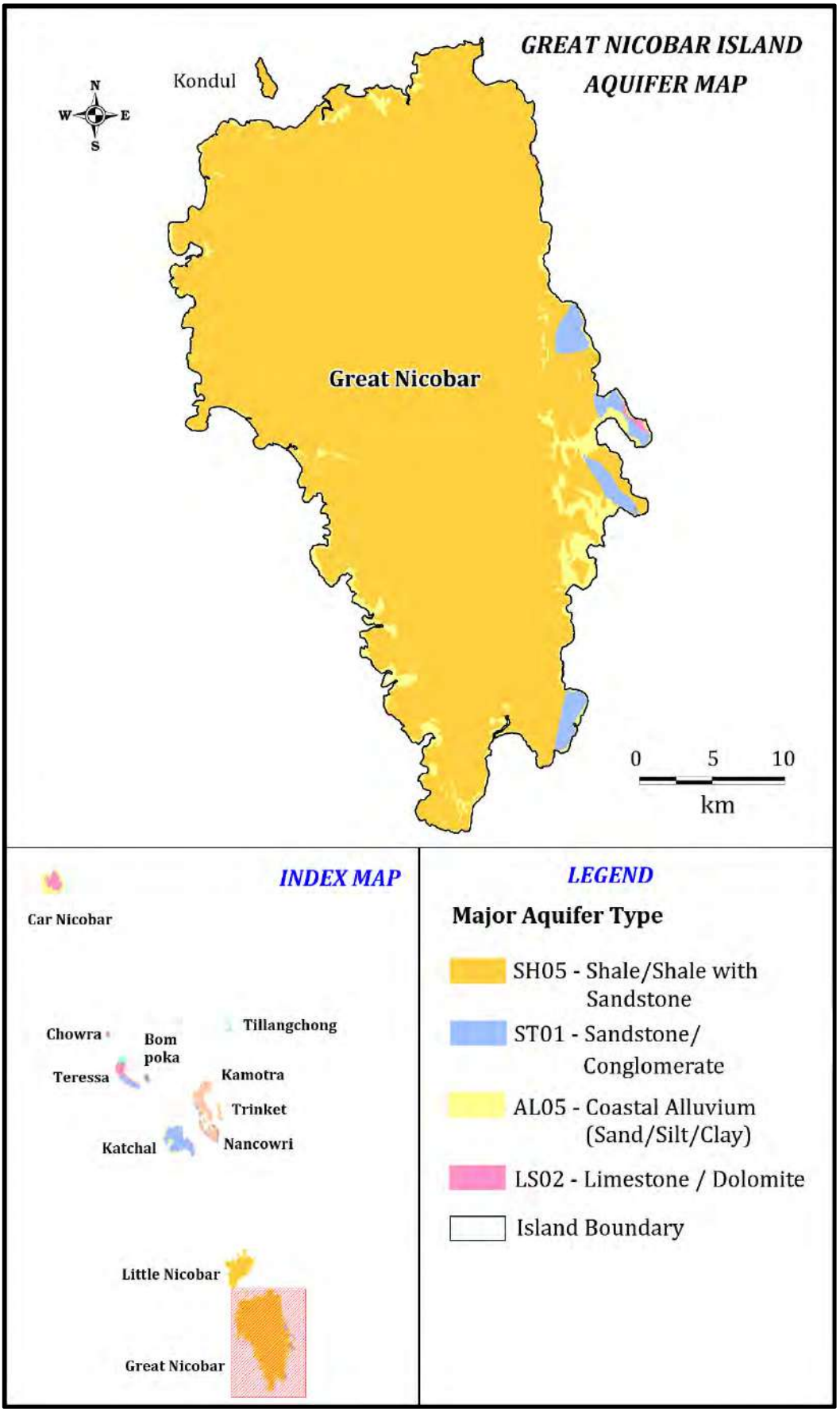


Fig 5.20 Aquifer Map of Great Nicobar Island

5.8 Groundwater Potential of Islands

Study reveals that individual islands show significant variability in groundwater potential based on their topography, ruggedness, shape factor, lithology and aquifer inter-connectivity. These factors in combination control thickness of freshwater lens, groundwater flow pattern and formation of springs. Groundwater prospect of individual Islands are summarized below based on present study and previous works (Kar, 2004; Kar and Adhikari, 2005; Banerjee *et al.*, 1988). Compilation of data clearly indicates that most of the tribal villages in the islands are came up beside perennial springs except where forcefully shifted due to natural calamity *e.g.* tsunami. Hence, it highlights importance of securing perennial water source for the village in traditional knowledge.

Bambooka Island: The Island is underlain by the volcanics and the coastal parts are occupied by Coralline formation. Number of springs oozes out from these volcanic rocks. In coastal areas coralline formation supports construction of open dug wells.

Chowra Island: The Island is underlain by Coralline and Foraminiferal limestone. Numerous caves are present in south-eastern elevated portion of the island. Sands overlie the limestone throughout the Island. Sand horizon is thicker along the coast than the central part. At places silty calcareous marl are developed through weathering of limestone. Sand being more porous and permeable than underlying limestone, percolating rain water flows laterally following topographic slope. This results insignificant groundwater recharge. Isolated fresh water lens thickness varies between 5 and 80 cm seasonally. During high tide the thickness of fresh water may increase further depending on location of well (Kar, 2004).

Great Nicobar Island: Being the largest, the Island is underlain by The Island is underlain by marine sedimentaries, volcanics and Coralline formations. Exploratory drilling carried out by CGWB in 1984-86 (Banerjee *et al.*, 1988) indicated poor ground water potential of sedimentaries. However, several perennial springs, spring-fed streams and rivers formed in this island. This is the only island where true river system exists. Galathea is most important river in the island which created its own flood plain. Coastal coralline formation supports construction of open large diameter dug wells.

Katchal Island: The Island is underlain by Sedimentaries and Coralline formations. There are number of perennial springs present in the island mainly located in the central part of the island, which may from sustainable sources. Spring sources at Mildera, Bichdera, Lalmuna,

Lambabalu are perennial. In coastal areas coralline formation supports construction of open dug wells.

Kamorta Island: The Island is underlain by mostly marine sedimentary group of rocks barring small patches near Changua, Al-u-kheak, Ramjau and Munak villages. The coastal tracts are formed by potential coralline formation. Potential springs are present in the volcanic formation. Spring sources at Changua, Al-u-kheak, New Laful, new Pilpillow new Kakana Munak, Ramjaw and Payhiu Bunderkhari Bada Enak Chhota Enak are perennial in nature. In coastal areas coralline formation supports construction of open dug wells.

Kondul and Pulo Millo Islands: The islands are underlain by Mud Stone and Silt Stone formations flanked by coralline formations, which use to facilitate construction of water yielding wells.

Little Nicobar Island: The island is underlain by sedimentaries (*i.e.* Mud stone, Silt stone and Clay stone) and the coastal parts are occupied by Coralline formation. Number of springs oozes out at higher elevations. In coastal areas coralline formation supports construction of open dugwells.

Nancowry Island: The Island is mostly underlain by marine sedimentaries. In southern part volcanics are exposed. Akin to other islands the coast is underlain by coralline formation. There are several springs present in the island. Spring sources at Tapong, Altheak are perennial in nature. Spring sources at Champin, Hitui village area are non-perennial in nature. In coastal areas coralline formation supports construction of open dugwells.

Trinket Island: The Island is mainly underlain by sedimentaries (*i.e.* Mud stone, Silt stone and Clay stone). Sedimentaries have low groundwater potential while coastal coralline formation supports construction of open dugwells.

Teressa Island: The Island is underlain by volcanic pillow lava and Marine sedimentary flanked by Coralline formation. There are several springs present in the island. Spring sources at Bengali Village, Pipe Nala in the Ponda area, Alurong, Chukmachi, Luxi, Enam are perennial. In coastal areas coralline formation supports construction of open dug wells.

5.9 Tidal influence on Groundwater Regime

Geometric relationship of moon and Sun relative to Earth results in creation of different types of tides. In parts of the northern Gulf of Mexico and Southeast Asia, tides have one high and one low water per tidal day. These tides are called 'diurnal tides'. Groundwater in the islands is in hydraulic continuity with surrounding seawater. Hence, groundwater regime is highly influenced by the diurnal tidal fluctuations of the sea. The magnitude of the tidal fluctuation is dependent on several factors amongst which the permeability of the aquifer material, the proximity of the site to the sea and the magnitude of tidal variation in the sea play significant roles. The above factors may also impart a time lag between tidal fluctuation in the sea and observation variable.

A dug-well in coastal area of Campbell Bay, Great Nicobar Island is measured for its water level, temperature and electrical conductivity over a period of six (06) hours with sampling interval of 30 minutes. The results show strong correlation between tidal fluctuation in the sea and observation variable. Details of observations are given in **Table – 5.10a and 5.10b**. The results are given in **Fig. 5.21**. The graph shows a time-lag of 60 min between peak tide level and highest groundwater water table, however this is sampling frequency dependent and a higher resolution sampling will provide a precise estimate. EC and groundwater temperature maximizes and minimizes respectively with a time-lag of 90 min. However, these two maxima and minima coincide clearly indicating a mixing phenomenon related delay.

Hence, it's evident that in coastal areas, groundwater regime is tide dependent. It is observed that the fresh water area expands during high tide whereas it shrinks during low tide. This can be effectively used for scheduling of pumping of water wells, as high tide effectively creating groundwater mound in coastal areas.

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Table 5.10a Site Details of Tidal Influence Test

Parameters	Well Details
Site Name / Date	Vijaynagar (Old) / 17-03-2023
Geo Reference / RL	06.93184° N; 93.9077517 °E / 5 m
Geomorphology / Slope	Coastal Plain / 1° - 3°
Well type	Dug well
Depth / MP / Dia.	2 m / 0.35 m / 0.54 m
Distance from Ocean	180 m

Table 5.10b Observational Details of Tidal Influence Test

Time	Time Interval Since Start	Depth to Water level	Water Table	EC	Temp	Tide level
IST	**Min**	**m bgl**	**m amsl**	**µS/cm**	**°C**	**m amsl**
13:10	0	1.75	1.25	525	28.3	0.79
13:40	30	1.72	1.28	526	28.3	0.86
14:10	60	1.67	1.33	527	28.3	0.92
14:40	90	1.64	1.36	527	27.9	0.97
15:10	120	1.63	1.37	529	27.9	1.01
15:40	150	1.55	1.45	531	27.4	1.04
16:10	180	1.49	1.51	542	27.2	**1.05**
16:40	210	1.35	1.65	550	27.3	1.04
17:10	240	1.33	**1.67**	555	27.3	1.03
17:40	270	1.34	1.66	**560**	**27.0**	1.00
18:10	300	1.4	1.6	550	27.2	0.95
18:40	330	1.42	1.58	546	27.2	0.90
19:10	360	1.46	1.54	540	27.3	0.85

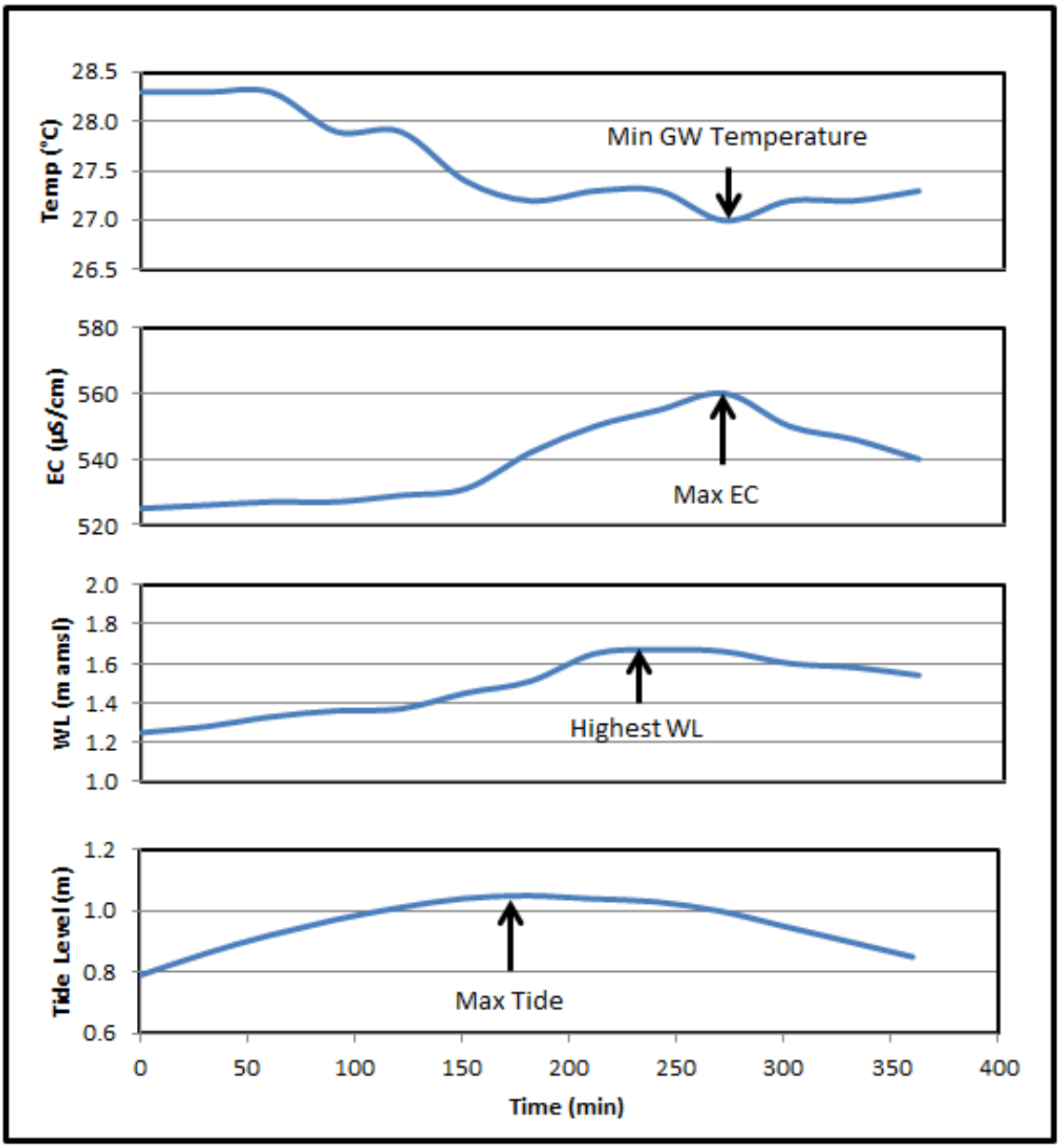


Fig. 5.21 Tidal influence on Groundwater Regime in Great Nicobar Island

Chapter 6

Groundwater Quality

To determine ground water quality and its suitability for various uses namely, domestic, industrial and irrigation purposes, groundwater samples are collected from different wells in Great Nicobar Island and natural springs located in the area during the study. Water samples are collected from 46 key wells for chemical analysis. Field values of EC and pH is also measured for all key wells. Collected samples are analyzed in the Regional Chemical Laboratory of Central Ground Water Board, Kolkata. Groundwater analysis data of other islands are compiled from previous studies of CGWB and ICAR.

6.1 Major Ion Chemistry

In Great Nicobar Island, ground water in general is alkaline with pH value ranging from 7.2 to 8.1 with an average of 7.8. Electrical Conductivity, which is a function of amount of total dissolved solids in ground water, as observed in dug well samples, ranges between 142 and 1081 µ mhos/cm (laboratory values) in ground water of the area. On the other hand Electrical Conductivity, of spring water samples ranges between 144 and 289 µ mhos/cm. This clearly indicates that springs being located at inner part of the island are less affected by salinity than coastal dug wells. Total hardness (as $CaCO_3$) of ground water in the area varies from 80 and 300 mg/l with an average of 178, which shows moderately hard nature of ground water. **Table 6.1** summarises the overall range and average values of common chemical constituents of ground water of the area. Major chemical constituents of ground water of the area from Dugwell samples are broadly described as below:

Cations: Calcium (Ca^{+2}), Magnesium (Mg^{+2}), Sodium (Na^{+}), and Potassium (K^{+}) are major cations present in ground water of the area. Calcium and Magnesium contents range from 10 to 66 mg/l and 2.4 to 37.6 mg/l, respectively. Sodium and Potassium contents range from 7.1 to 83.6 mg/l and 0.2 to 12.6 mg/l, respectively. Iron ($Fe^{+2/+3}$) content of ground water of the area is commonly lower than the permissible limit of 1 ppm but in places it may reach up to 2.25 mg/l.

Anions: Chloride (Cl^{-}), Sulphate (SO_4^{-2}), Nitrate (NO_3^{-}), and Bicarbonates (HCO_3^{-}) are major anions in ground water. Analysis results show that Chloride content varies between 14.2

and 99.3 mg/l, Bicarbonates between 122 and 366 mg/l, Sulphate between below detection limit and 53 mg/l, and Nitrates between below detection limit and 21.3 mg/l in the study area. Another important anion species is Fluoride (F^-), which ranges up to 0.89 mg/l.

Table 6.1 Range and average values of chemical constituents of ground water of Great Nicobar Island

		Dug well			Spring		
Parameters	**Unit**	**Max**	**Min**	**Average**	**Max**	**Min**	**Average**
pH (lab)	-	8.1	7.2	7.8	8.0	7.8	7.9
EC (lab)	µ mhos/cm	1081	142	462	289	144	217
TH	ppm (as $CaCO_3$)	300	80	178	210	85	136
Ca	mg/l	66	10	37	36	16	26
Mg	mg/l	37.6	2.4	20.6	30.3	10.9	17.6
Na	mg/l	83.6	7.1	33.1	29.8	10.0	16.0
K	mg/l	12.6	0.2	3.3	2.1	1.7	1.9
HCO_3	mg/l	366.0	122.0	219.4	189.1	103.7	144.9
Cl	mg/l	99.3	14.2	41.1	31.9	17.7	23.9
SO_4	mg/l	53	-BDL-	12	23	-BDL-	10
NO_3	mg/l	21.3	-BDL-	5.5	9.0	-BDL-	4.7
F	mg/l	0.89	-BDL-	0.16	0.53	-BDL-	0.14
Fe	mg/l	2.25	0.03	0.52	1.43	0.60	0.91
TDS	-	467	180	301	261	133	197

Groundwater chemistry of Great Nicobar island are analysed using Schoeller Diagram (**Fig. 6.1a**), Piper Plot (**Fig. 6.1b**), and Durov Plot (**Fig. 6.1c**). Piper Plot and Durov Plot suggest a mixing mechanism in place (Lloyd and Heathcote, 1985) which is shifting groundwater composition from island interior to coastal part from Mg^+ dominance to Na^+ dominance. Map showing EC variation of Great Nicobar Island is given in **Fig. 6.1e**. Detailed analysis results are given in **Annexure 4**.

Out of 09 wells drilled in Great Nicobar (during 1987-88) only four produced water, one with two zones. When plotted in Piper diagram (**Fig. 6.1d**), of these, one well (Near Power house) (sample E2) plots in extreme Cl^- zone and indicates primary salinity from sea water. One Well plots in opposite end and indicates free from primary salinity. Other three are in various stage of mixing with saline water.

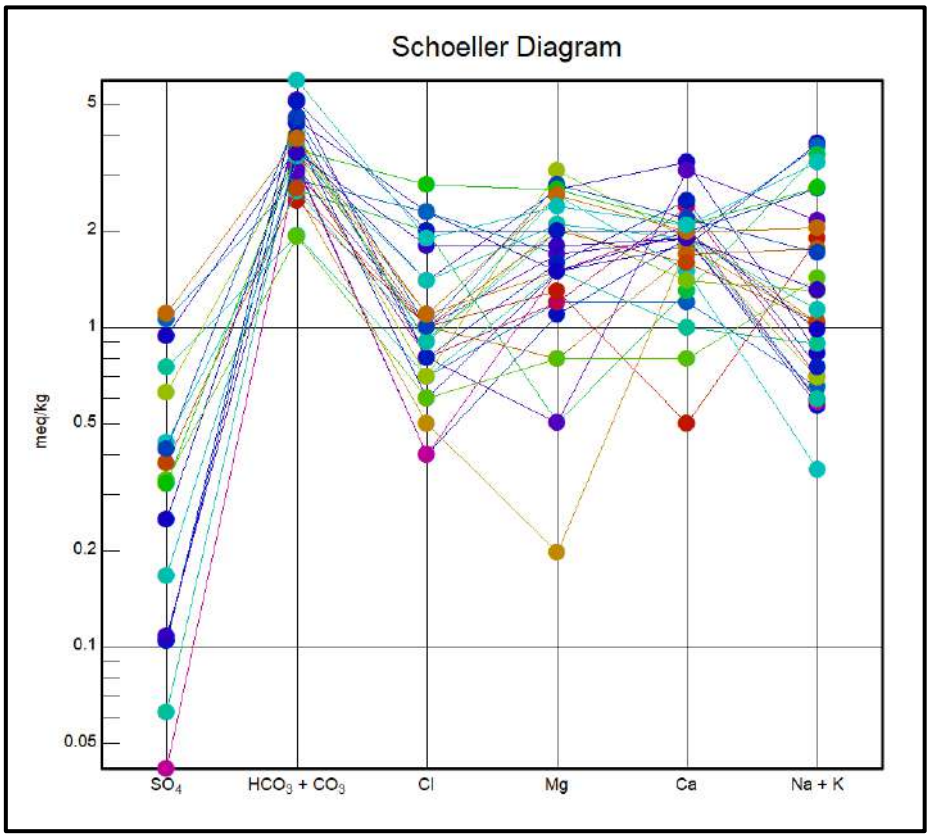


Fig. 6.1a Schoeller Diagram showing Great Nicobar GW chemistry

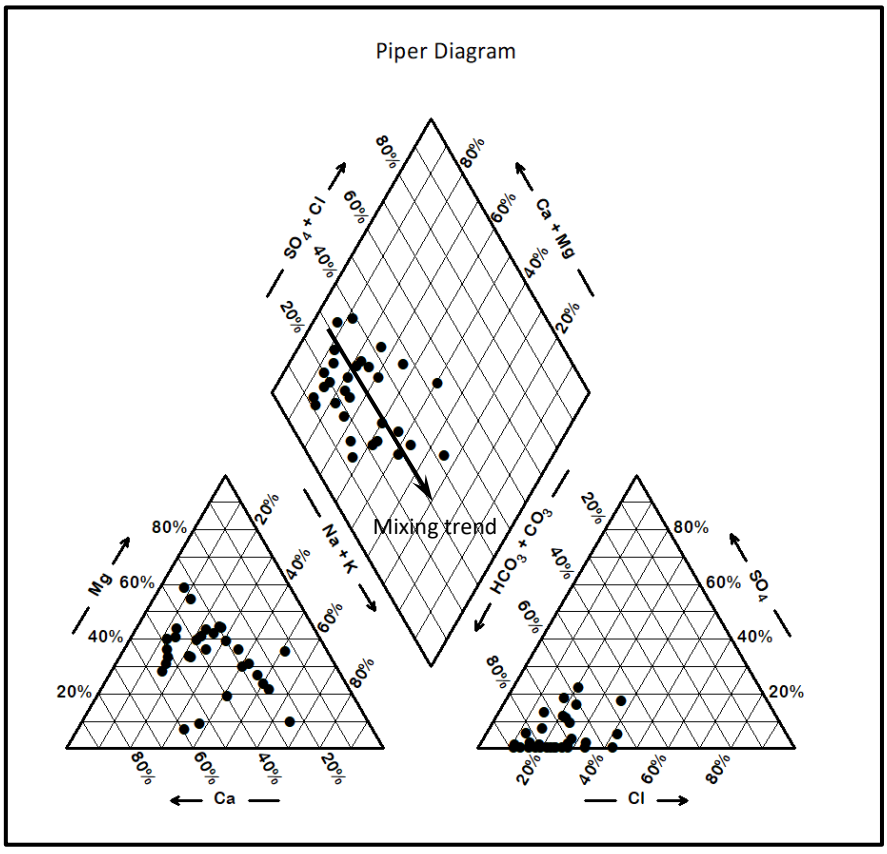


Fig. 6.1b Piper Diagram showing Great Nicobar GW chemistry

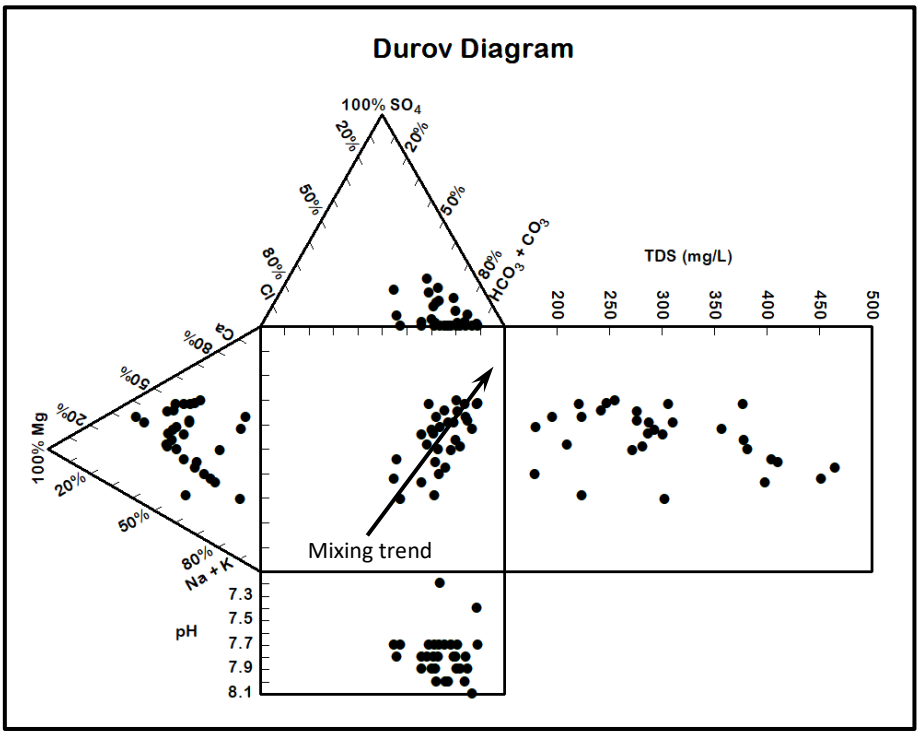


Fig. 6.1c Durov Diagram showing Great Nicobar GW chemistry

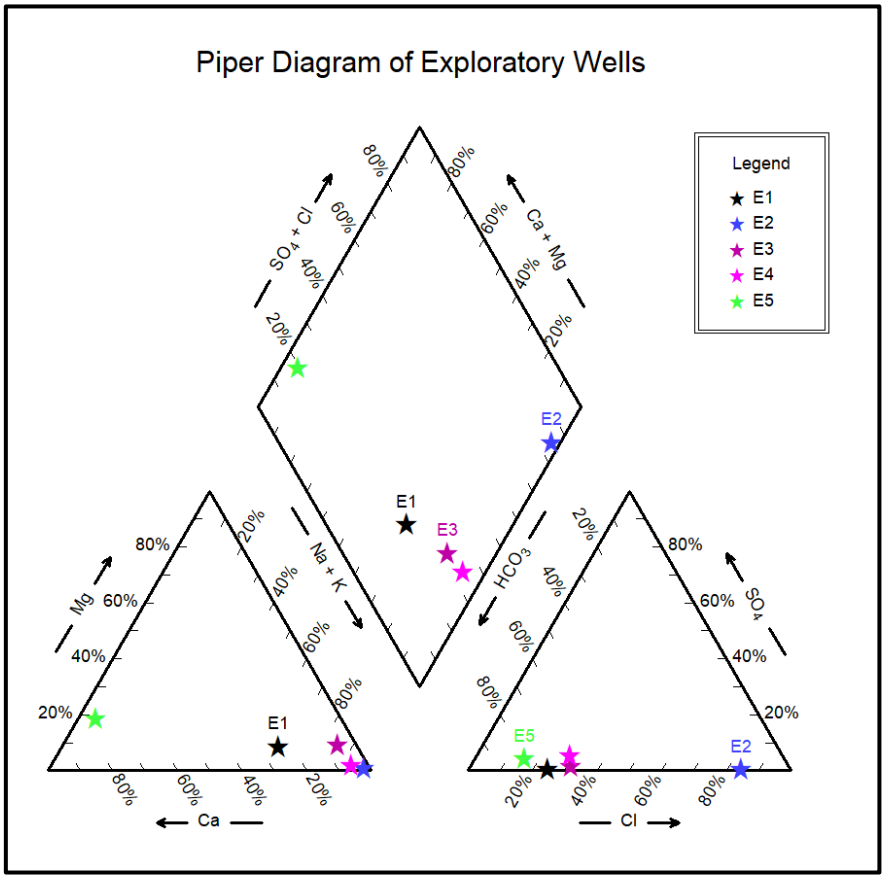


Fig. 6.1d Piper Diagram showing exploratory well water chemistry

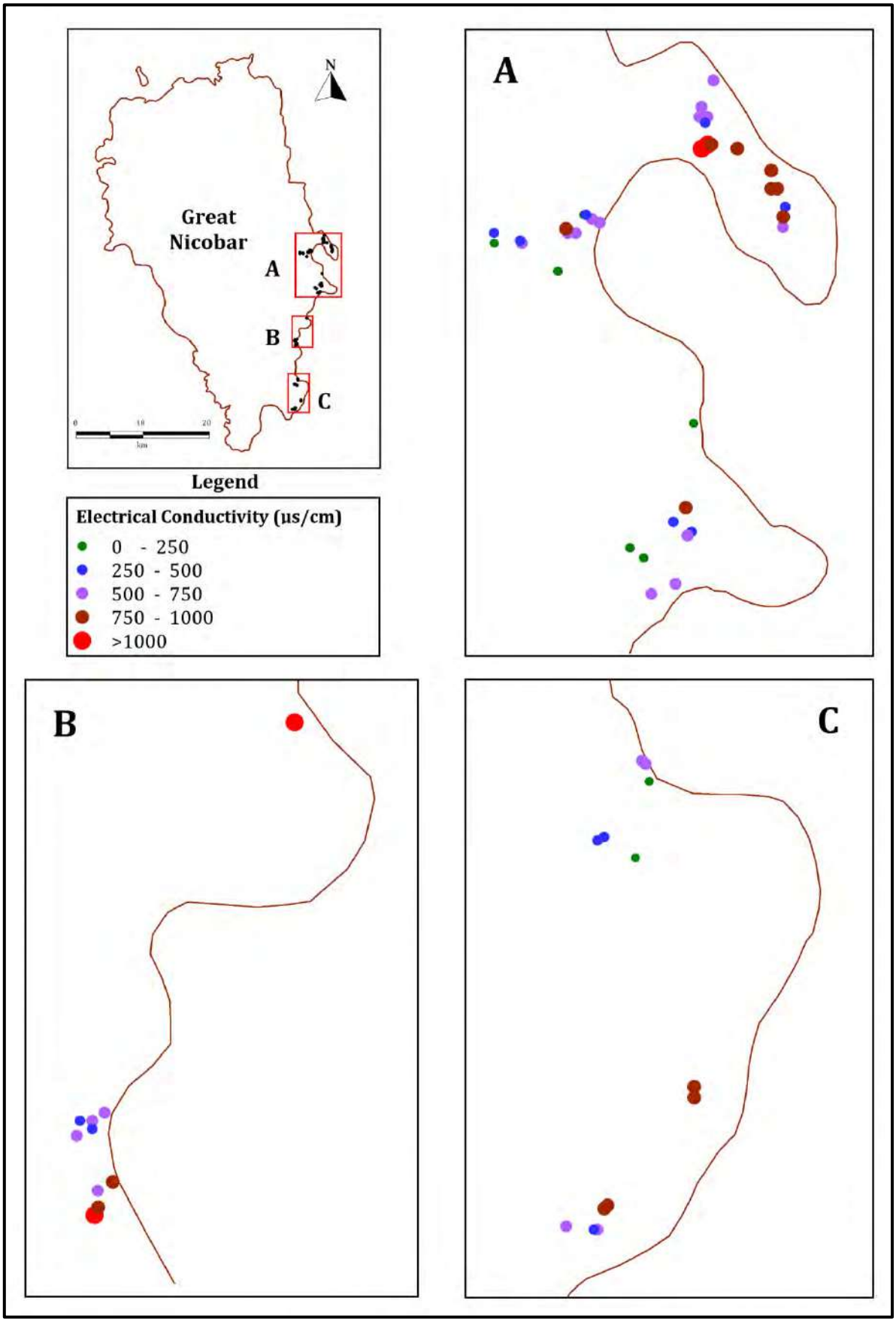


Fig. 6.1e Map showing EC variation in Great Nicobar Island

6.2. Seasonal fluctuation of Groundwater Quality

Seasonal fluctuation of groundwater quality is tested through EC variation and water sample analysis. Field measured Dry-season and Wet-Season EC are plotted as binary plot (**Fig. 6.2a**). The graph shows that wet season impart slight dilution in EC values. Statistical analysis results are given in **Table – 6.2** and histogram in **Fig. 6.2b.** Statistical analysis shows that except some outliers. It shows the EC values are more controlled by well draft *i.e.* directly related to fresh-saline interface depth.

Seasonal variations in average groundwater chemistry of Great Nicobar Island are compared using Schoeller Diagram (**Fig. 6.3a**) and Piper Plot (**Fig. 6.3b**). The plots also indicate that no significant change takes place in groundwater chemistry with the advent of rainy season.

Table 6.2 Basic Statistics for EC Variability

N of Cases	60
Minimum	-890
Maximum	932
Median	-7
Arithmetic Mean	16.55
Standard Deviation	267.75

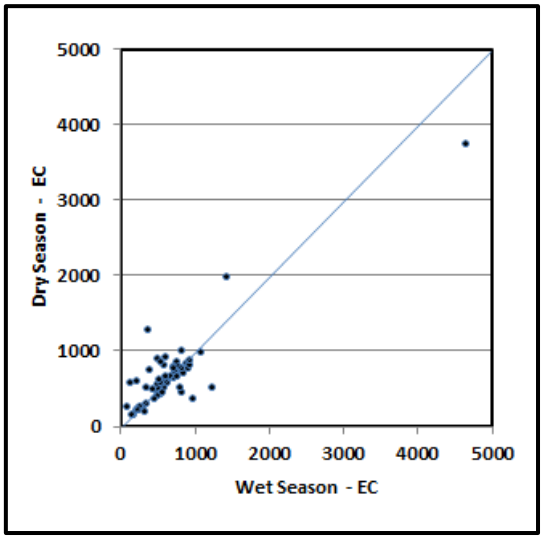


Fig. 6.2.a Binary plot of Dry-season vs. Wet-Season EC

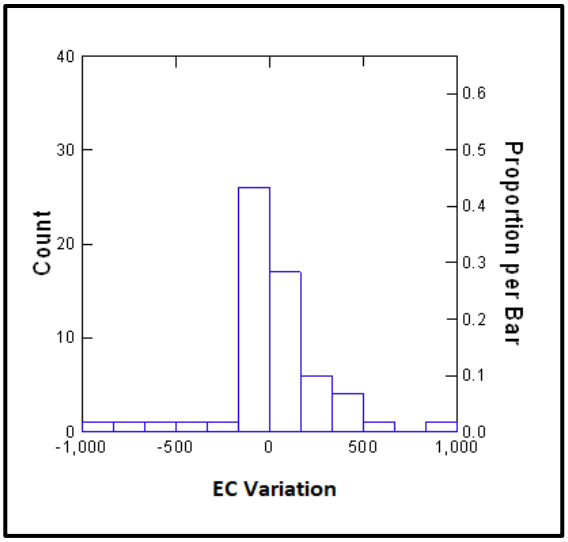


Fig. 6.2.b Histogram of EC variation

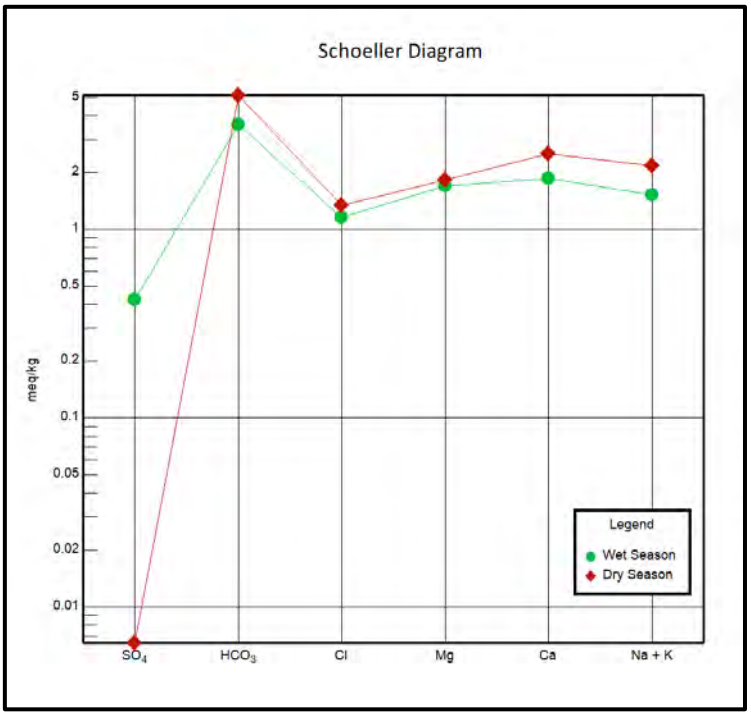


Fig. 6.3a Schoeller Diagram for major ions showing Season-wise Comparison

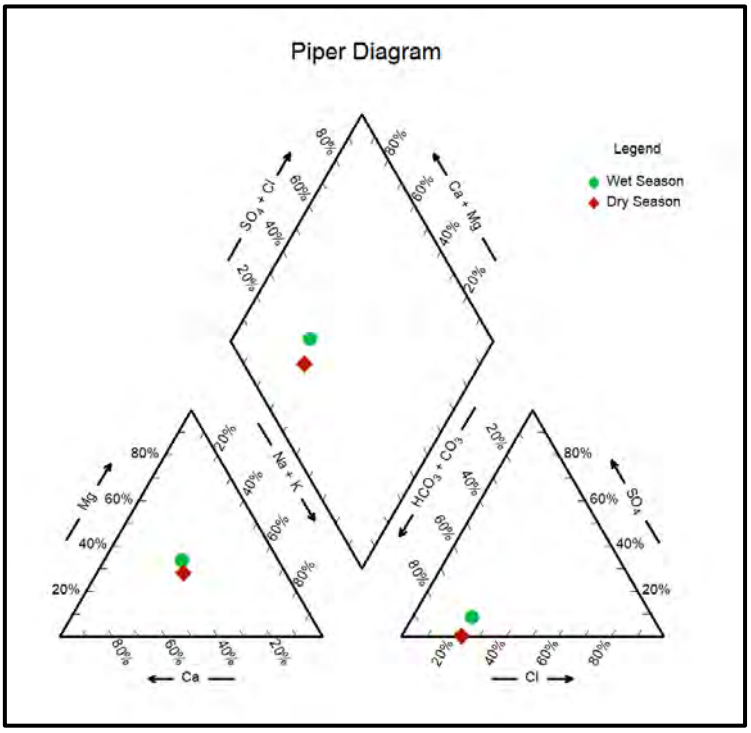


Fig. 6.3b Piper Diagram showing Season-wise Comparison

6.3 Island-wise Comparison of Groundwater Quality

Average major ion concentrations of groundwater from previous work of CIARI-ICAR in different Islands are presented in **Table 6.3**. The pH of the water samples varies from 7.3 to 7.9 with mean value of 7.6. Average EC value of various islands varies from 400 to 640 µS/cm. Average TDS value ranges from 256 to 409 ppm. Among the dissolved ions, Ca^{2+} and Mg^{2+} predominates the cation, while HCO_3^- and Cl^- dominates the anion concentration.

Average groundwater chemistry of various islands are compared using Schoeller Diagram (**Fig. 6.4a**), Piper Plot (**Fig. 6.4b**), and Durov Plot (**Fig. 6.4c**). EC and TH variation is plotted in **Fig. 6.4d**. Schoeller Diagram for major ions shows overall similarity in water chemistry for the all the islands. Departure in SO_4 values in Great Nicobar Island may be due to higher agricultural activity in Great Nicobar Island compared to other islands. The diagram also indicates similar type of geological material is responsible for water chemistry evolution. Comparison of TH and EC indicates that in Katchal Island in addition to calcium and magnesium other divalent cations are contributing to TH.

On the other hand, prepared Piper diagram and Durov diagram shows time dependent evolution of groundwater chemistry. Based on cationic composition islands are not much differentiated. On the other hand, in anionic composition, islands show a clear variability with Cl^- imparting strong variability. However, this may be result of sampling bias as Great Nicobar being the largest island has habitation more inland compared to other island where habitation is more concentrated in coastal area. Sampling points are restricted within the habitation. Over all, Piper diagram shows a saline water mixing trend with Great Nicobar showing least mixing and Katchal the most with other island in between. In term of TDS, Durov diagram shows Car Nicobar having highest average and Kamorta-Katchal the least.

Table 6.3 Status of Groundwater Quality of few Nicobar Group of Islands

Island	Average Ionic Concentration (ppm)												
	pH	EC	TDS	Ca^{2+}	Mg^{2+}	Na^+	K^+	CO_3^{2-}	HCO_3^-	SO_4^{2-}	Cl^-	NO_3^{2-}	TH ppm
Car Nicobar	7.9	640	409	37.0	18.2	14.2	7.1	0.4	85.8	2.1	74.2	1.8	165
Katchal	7.9	430	256	53.0	30.3	10.0	15.3	1.4	84.6	2.6	166.8	0.6	253
Kamorta	7.4	400	256	51.3	13.2	7.5	6.9	0.0	104.5	1.5	32.8	2.2	181
Nancowry	7.9	500	320	39.4	18.7	16.8	7.4	2.4	133.2	1.2	137.8	2.2	173

(Source: CIARI-ICAR) (Note: EC in µS /cm, TDS: Total Dissolved salts; TH: Total Hardness as $CaCO_3$)

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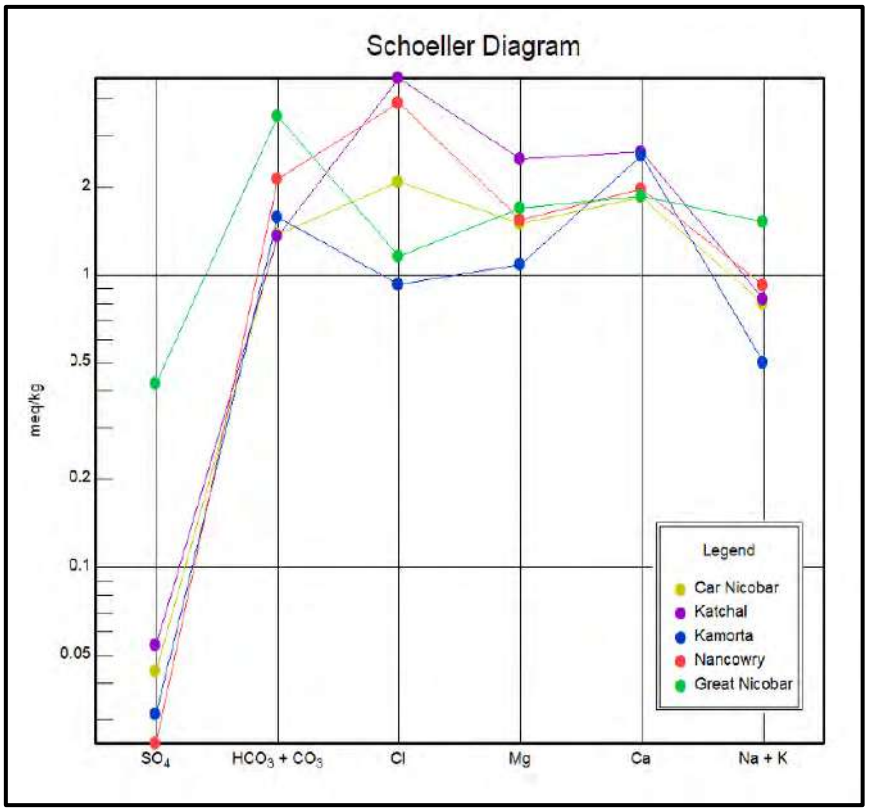


Fig. 6.4a Schoeller Diagram for major ions showing Island-wise Comparison

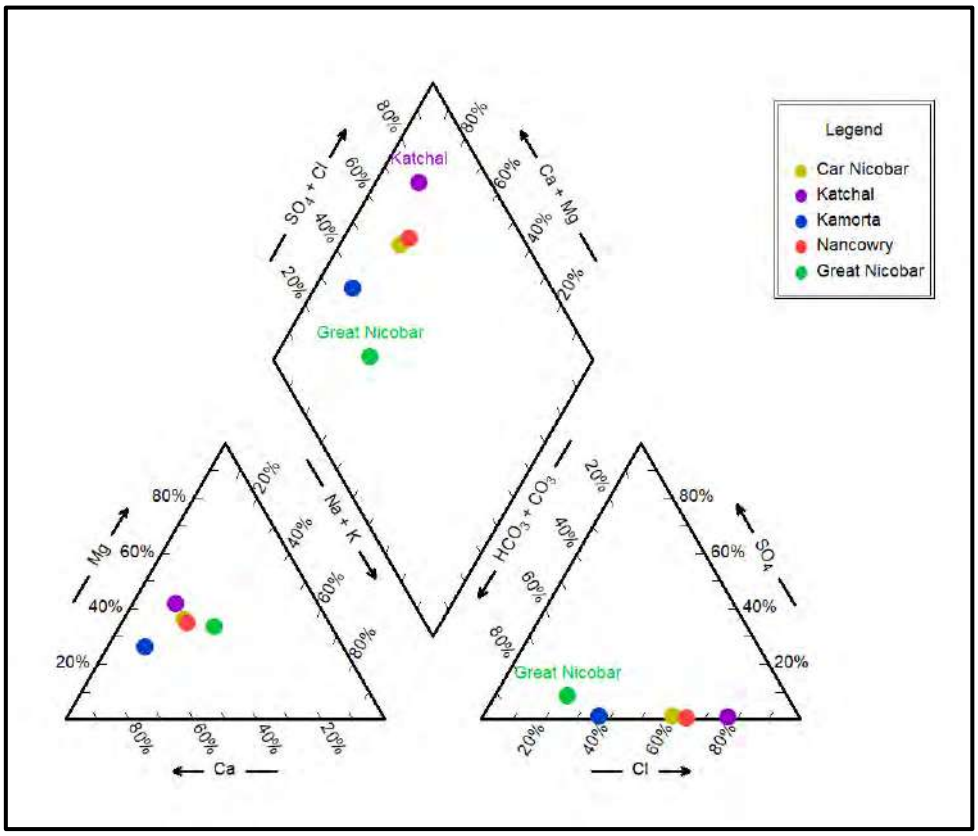


Fig. 6.4b Piper Diagram showing Island-wise Comparison

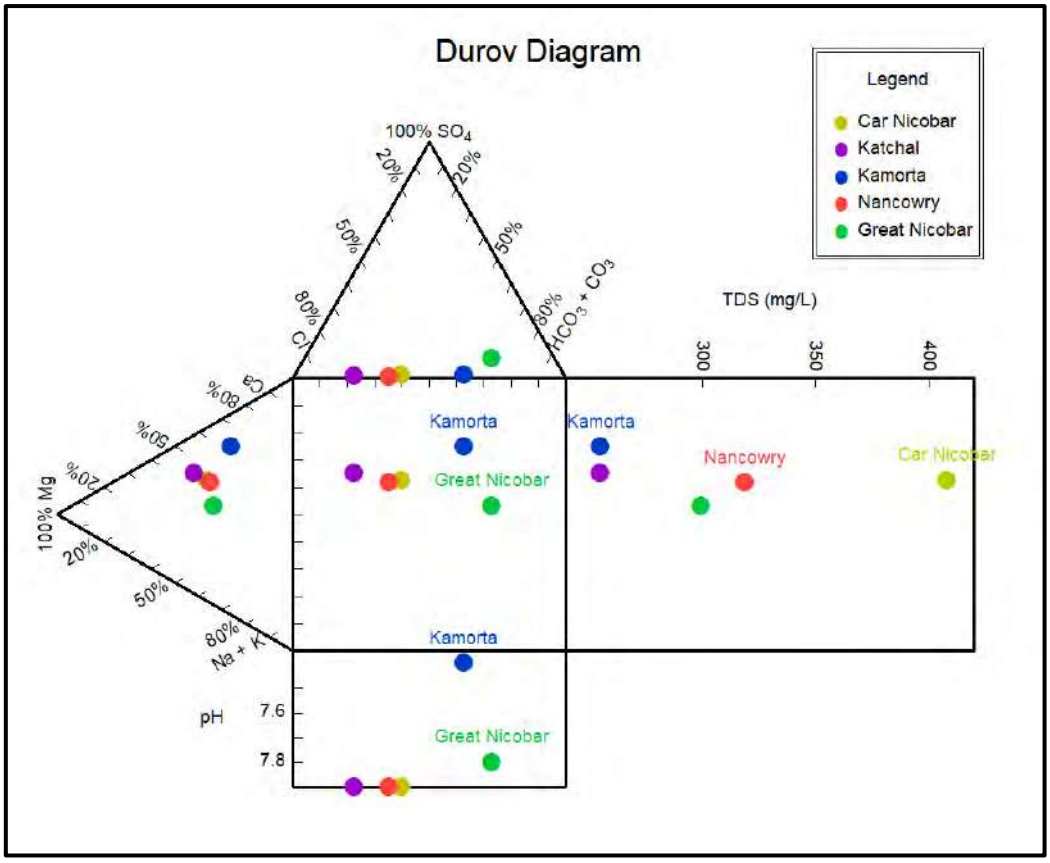


Fig. 6.4c Durov Diagram showing Island-wise Comparison

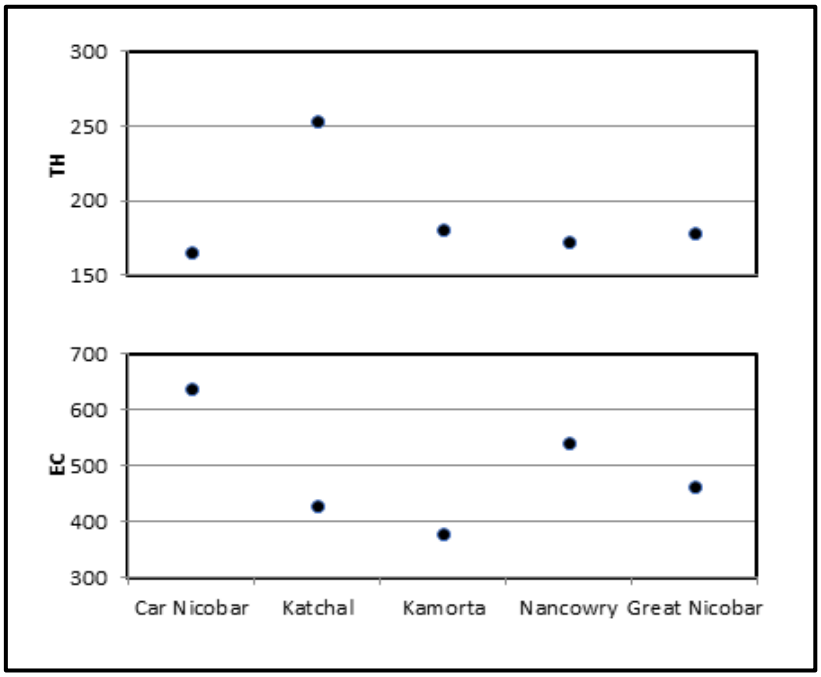


Fig. 6.4d Island-wise EC and TH variation

6.4 Hydro-geochemical Facies

Geochemical character of groundwater through hydro-geochemical facies analysis is done by plotting the concentrations of major cations and anions in Piper tri-linear diagram (Piper, 1954).

Island-wise average groundwater compositions plot in different areas of Piper diagram. The Piper diagram for island averages (**Fig. 6.4b**) for phreatic aquifer shows that Magnesium (Mg^{+}) is dominant the cation type. On the other hand, In Great Nicobar and Kamorta Islands, HCO_3^- is the dominant anionic species, whereas in Katchal, Car Nicobar, and Nancowri Islands, Cl^- is the dominant anionic species. Hence on an average, in Great Nicobar and Kamorta Islands, groundwater is **Ca-Mg-HCO_3** type and in Katchal, Car Nicobar, and Nancowri Islands, groundwater is **Ca-Mg-SO_4-Cl** type.

For Great Nicobar Island, well specific groundwater compositions plot little differently than average composition in Piper diagram. There is no single dominant cation type. All three types, Mg^+ -dominant, Ca^+ -dominant, and alkali ($Na^+ + K^+$) –dominant type, are present. In the cation facies, about 40% of the samples plot into the Magnesium type, about 30% samples in Sodium and Potassium type about 25% samples in No dominant type and 05% in Calcium type. On the other hand, HCO_3 emerged as single dominant anionic species. Hence, groundwater facies is varying between **Ca-Mg-HCO_3** type and **Na-HCO_3** type.

This shows that in Great Nicobar and Kamorta Islands, groundwater is more influenced by rock composition where as in in Katchal, Car Nicobar, and Nancowri Islands, groundwater is more influenced by saline water mixing. Within island, as in case Great Nicobar, water composition is modified through saline water interaction and gets more Na^+ dominated near coastal areas.

6.5 Evolution of Groundwater Quality

Comparison of groundwater samples from dug wells and natural springs clearly indicates that gradual evolution of groundwater and mixing process with saline water. Rock-water interaction is also assessed using Gibbs Diagram (Gibbs, 1970), which now-a-days a widely used method to establish the relationship of water composition and evolutionary mechanism. The diagram has three distinct fields of precipitation dominance, evaporation

dominance and rock-water interaction dominance. However this diagram was initially developed for surface water and hence has some limitations (Marandi and Shand, 2018).

Analytical results for Island-average and for individual wells in Great Nicobar Island are plotted in Gibbs Diagram (**Fig. 6.5**). Distribution of samples in the rock dominance region of the plot in the Gibbs diagram suggests that the major ion chemistry of groundwater is controlled by chemical weathering of rock forming minerals.

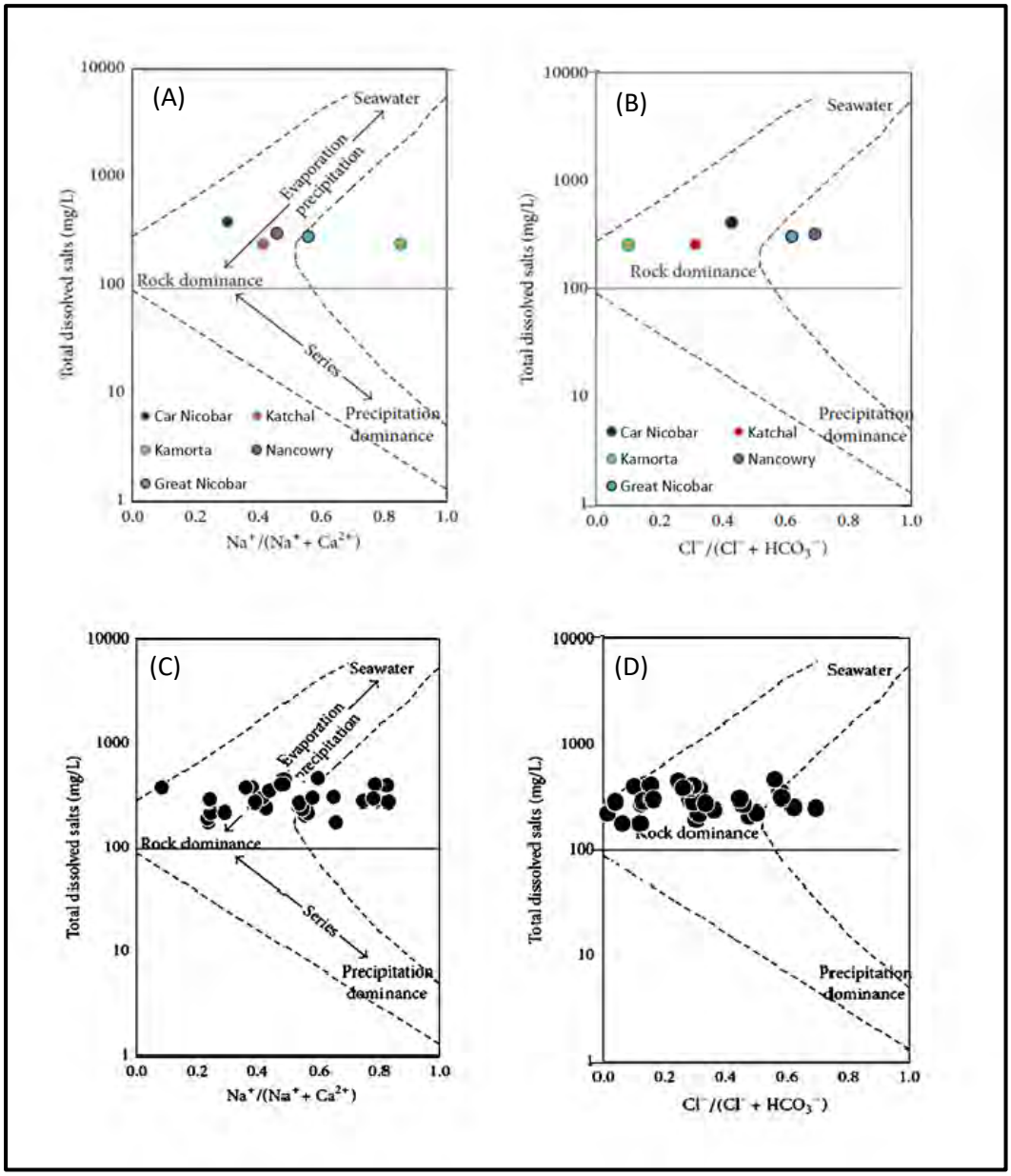


Fig. 6.5 Gibbs Diagram for Island-average (A & B) and for individual wells in Great Nicobar Island (C & D)

6.6 Suitability of Groundwater for various Uses

Each water use has specific quality need. Therefore, to set the quality standard, it is essential to identify the uses of water. Further, the quality of water required for a particular use depends on the specific application. Three main usage of groundwater is discussed below.

A. Domestic Use

The analytical results of physical and chemical parameters of groundwater were compared with the standard guideline values as recommended by Bureau of Indian Standard (BIS, 2012) for drinking and public health purposes (**Table 6.4**). It shows that on an average groundwater quality of various islands are way under ***acceptable*** limits of BIS, 2012 except iron, which is under ***permissible*** limits. Hence, groundwater quality of various islands is suitable for domestic use as per BIS standards and ***potable*** in nature.

Table 6.4 Comparison of Island Groundwater Quality with BIS Standard (2012)

Parameters	Units	BIS 2012 Limits		Island Average				
		Acceptable	Permissible	Car Nicobar	Katchal	Kamorta	Nancowry	Great Nicobar
pH		6.5 to 8.5		7.9	7.9	7.4	7.9	7.8
Total Hardness		300	600	165	253	181	173	178
Dissolved Solids	mg/l	500	2000	409	256	256	320	300.7
Calcium (as Ca)	mg/l	75	200	37	53	51.3	39.4	37.2
Magnesium (as Mg)	mg/l	30	100	18.2	30.3	13.2	18.7	20.6
Iron (as Fe)	mg/l	0.3	1.0	-	-	-	-	**0.5**
Chloride (as Cl)	mg/l	250	1000	74.2	166.8	32.8	137.8	41.1
Fluoride	mg/l	1.0	1.5	-	-	-	-	0.2
Sulphate	mg/l	200	400	2.1	2.6	1.5	1.2	20.4
Nitrate	mg/l	45	45	1.8	0.6	2.2	2.2	8.3

B. Irrigational Use

Knowledge of irrigation water quality is critical in understanding management for long-term productivity. Water for irrigation should be free of harmful contaminants and have a low salt content. In India, the Central Pollution Control Board (CPCB) has developed a concept of designated best use (CPCB, 2019). As per CPCB norm, irrigation water should have pH between 6.0 and 8.5; Electrical Conductivity at 25°C micro mhos/cm must be below 2250; Sodium absorption Ratio should be maximum 26 and maximum Boron content should be 2mg/l. As per this criteria, groundwater quality of various islands are suitable for irrigational use.

Island-wise average irrigation groundwater quality parameters and individual wells in Great Nicobar Island irrigation groundwater quality ranges are summarized in **Table 6.5** and **Table 6.6** respectively.

Table 6.5 Status of Average Irrigation Groundwater Quality of Islands

Name of the Island	pH	EC	Salinity Hazard	Sodium Adsorption Ratio	Exchangeable Sodium Ratio	Magnesium Hazard
		(µS /cm)	SH	SAR	ESR	MH
Car Nicobar	7.9	640	Medium	0.48	0.19	44.8
Katchal	7.9	430	Medium	0.27	0.09	48.5
Kamorta	7.4	400	Medium	0.24	0.09	29.8
Nancowry	7.9	500	Medium	0.55	0.21	43.9
Great Nicobar	7.9	640	Medium	1.08	0.41	47.7

Analytical results for Island-average and for individual wells in Great Nicobar Island are plotted in Wilcox Diagram and USSL Salinity diagram (**Fig. 6.6 a-d**). Island-averages behave very similarly and plot ***Excellent to Good*** class in Wilcox Diagram and ***C2-S1*** class representing **Medium salinity hazard - Low sodium hazard** in USSL diagram. On the other hand, individual wells in Great Nicobar Island, plot ***Excellent to Good*** class in Wilcox Diagram except only one sample and ***C1-S1*** to ***C3-S1*** class in. However, in USSL diagram modal class is ***C2-S1*** matching with island average. Further, observed nitrate concentration is very low as there is no contamination from agricultural sources as only natural farming is practiced without any chemical inputs. Hence, groundwater of the islands are suitable for irrigational purposes.

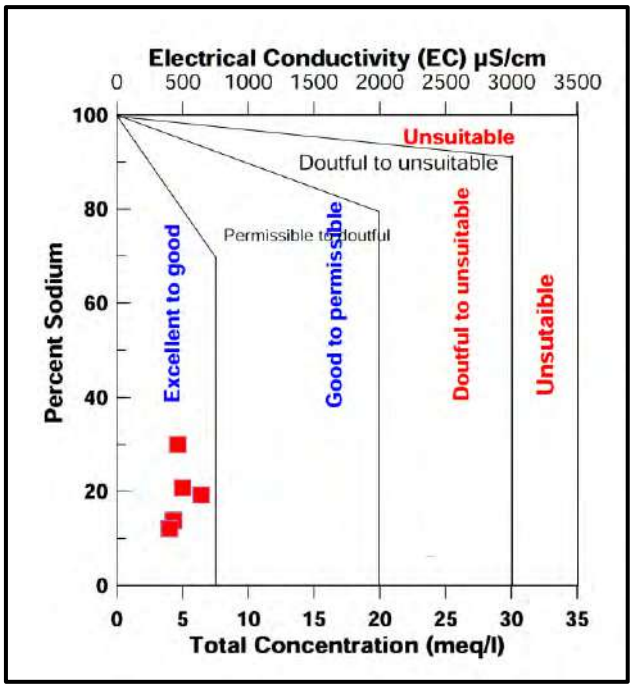


Fig. 6.6a Wilcox Diagram for Island – wise average

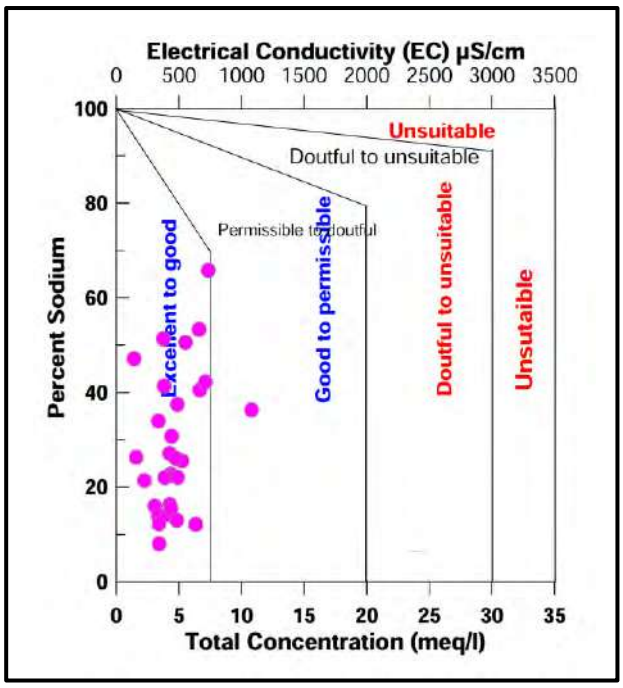


Fig. 6.6b Wilcox Diagram of for individual wells in Great Nicobar Island

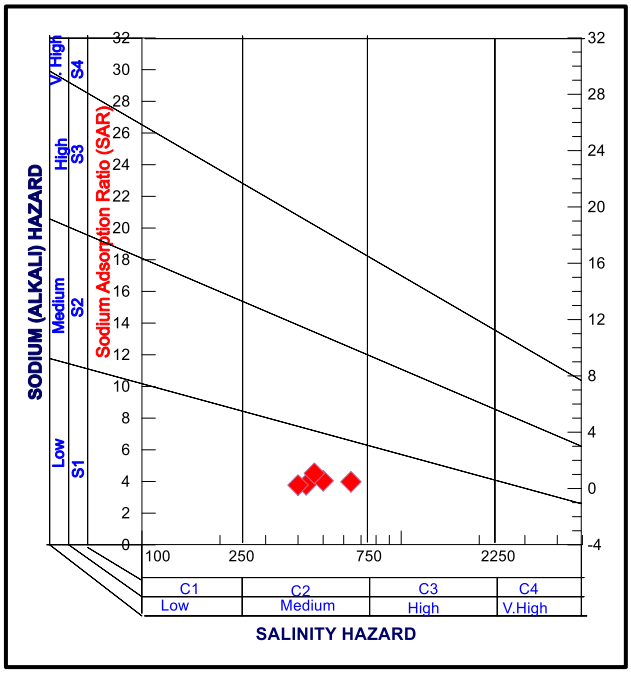


Fig. 6.6c USSL Salinity Diagram for Island – wise average

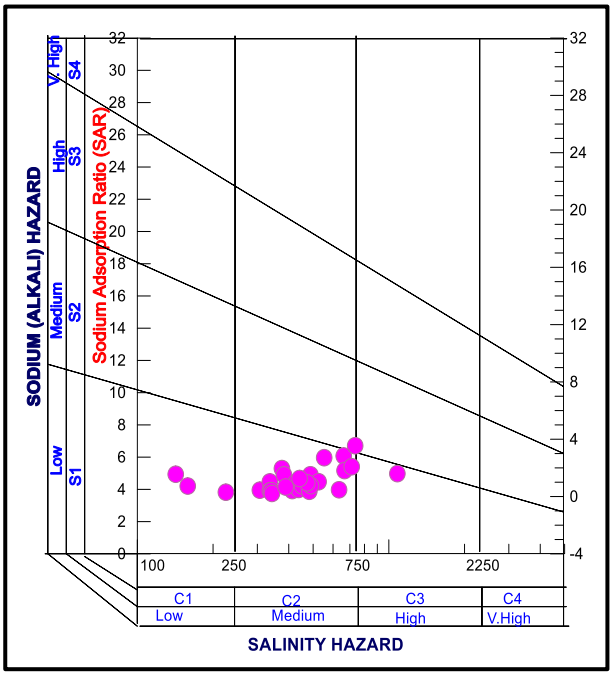


Fig. 6.6d USSL Salinity Diagram of for individual wells in Great Nicobar Island

Table 6.6 Status of Irrigation Groundwater Quality of Great Nicobar Islands

Parameters	Min	Max	Avg.	Std. Dev.
Sodium Adsorption Ratio (SAR)	0.2	3.5	1.1	0.8
Soluble Sodium Percentage (% Na)	8.0	65.8	29.0	14.8
Magnesium Hazards (MH)	9.9	72.3	46.7	13.6
Kelly's Index (KI)	0.1	1.9	0.5	0.4
Permeability Index (PI)	40.6	97.6	67.3	14.7

C. Industrial Use

Water used in manufacturing and other industrial processes should be free of contaminants that could damage equipment or affect the quality of the final product. The pH level and mineral content of the water should meet specific manufacturing requirements. In Nicobar district Island-wise average total hardness ranged from 165 to 253 ppm and classified as ***Hard*** to ***Very hard*****.** However, total hardness values are within BIS prescribed limit of 300 ppm. In industrial use, this may cause scale formation in pipes and boilers.

Table 6.7 Total Hardness Classification of groundwater

Classification	Total hardness ($CaCO_3$ ppm)	Island Average
Soft	0 – 60	–
Moderately hard	61 – 120	–
Hard	121 – 180	Car Nicobar, Nancowry, Great Nicobar
Very hard	≥ 181	Katchal, Kamorta

(As per USGS, 2018 Classification)

6.7 Surface water Quality

Present study has not covered surface water quality. However, Pre-Feasibility Report (2021) of survey carried out by AECOM for Niti Aayog incorporates summary of surface water quality. As per the said report analytical results indicate that pH is within 6.38 to 7.28, which is well within the specified BIS standard 6.5-8.5. Observed TDS is within 69 mg/l to 35400 mg/l with higher side values near ocean. Dissolved oxygen ranges between 5.6 mg/l and 6.2 mg/l. The chloride and sulphate are in the range of 18 mg/l to 16300 mg/l and 4.8 mg/l to 2150 mg/l respectively. Bacteriological load varies between 580 MPN/100ML and 910 MPN/100ML.

Chapter 7

Groundwater Resource Estimation

Estimation of ground water resources on scientific basis for different States of India was made for the first time following the guidelines prescribed by 'Ground Water Over-exploitation Committee' – 1979, constituted by Agricultural Refinance and Development Corporation (ARDC) headed by the Chairman, CGWB. CGWB and State Ground Water Departments computed the gross water availability by ARDC norms. To make the methodology more realistic, Govt. of India constituted a new committee on ground water estimation (GEC) in 1982 headed by the Chairman, CGWB. The Committee prescribed guidelines for estimation, which was known as GEC' 1984 Methodology. Later estimation methodology is modified and became known as GEC' 1997 Methodology. Ground water estimation methodology is further modified in 2015 namely, GEC 2015 Methodology. As per GEC' 2015 Methodology island-wise groundwater resource availability are calculated as part of a separate exercise in 2022.

7.1 Principal Attributes of GEC' 2015 Methodology

The methodology recommends aquifer-wise ground water resource assessment of both the Groundwater resources components*, i.e.*, Replenishable Ground Water Resources or Dynamic Ground Water Resources and In-storage Resources or Static Resources. Wherever the aquifer geometry is not firmly established for the unconfined aquifer, the in-storage ground water resources is to be assessed in the alluvial areas down to the depth of bed rock or 300 m, whichever is less. In case of hard rock aquifers, the depth of assessment would be limited to 100 m. In case of confined aquifers, if it is known that groundwater extraction is being done from this aquifer, the dynamic as well as in-storage resources are to be estimated. If it is firmly established that there is no ground water extraction from this confined aquifer, then only in-storage resources of that aquifer is to be estimated. Until aquifer geometry is established on appropriate scale, the existing practice of using watershed in hard rock areas and blocks/ mandals/ firkas in soft rock areas may be continued.

7.2 Parameters Considered

In contrast to standard methodology, where C.D. Blocks are considered as assessment unit, here inhabited islands form the assessment units. In an island, the inter-montané valley and relatively flat topographical areas are considered as its recharge areas. The hilly areas having slope more than 20% are deducted from the geographical area of the islands. Since water level data for Nicobar group of Islands are not available, only rainfall infiltration method is adopted for computation of ground water resource. Considering, variation in lithology, rainfall infiltration factor is applied island-wise and range from 0.04 to 0.22. Total annual rainfall in Nicobar district is taken as 2805 mm.

In absence of major intervention structures, only pond recharge is considered as additional source of recharge. At present, all the ponds constructed by irrigation department / APWD are of similar size and are of 30m × 22m × 3m dimension. For recharge by ponds, 1.44 mm/ha/day recharge rate is considered. In these islands rainfall takes place for about 8 months *i.e.* 240 days and the rest *i.e.* 125 days are non-rainfall days. It is considered that the ponds contain water for 60 days out of 125 non- rainfall days.

As these islands show high slope areas, Natural Ground Water Discharge of 10% of Annual Replenishable Ground Water Resources is considered. Per capita per day ground water draft is considered as 55 litres as per APWD norm. Projected Census (2011) population figures are utilized to arrive at total groundwater draft.

7.3 Assessment Tools

Ground Water Resource Assessment (2022) for Nicobar district is carried out as per GEC 2015 guidelines through 'IN-GRES' tool. IN-GRES is a software/web-based application developed by Central Ground Water Board (CGWB) in collaboration with Indian Institute of Technology-Hyderabad for assessment of ground water resources.

The IN-GRES tool provides common and standardized platform for Ground Water Resource Assessment for the entire country based on Ground Water Resource Estimation Committee-2015 (GEC-2015) methodology. It also helps in Pan-India operationalization for Joint assessment by CGWB and State Ground Water Departments. Visibility dashboards allow users to view the data/map and download reports along with GIS based thematic map of assessment units.

7.4 Groundwater Resource Position

Reassessment of Dynamic Ground Water Resource (2022) is carried out as a joint exercise of CGWB and APWD. The State Level Committee (SLC) supervised the entire work. The estimation was completed and placed before the empowered SLC on 30.08.2022, wherein it was approved and adopted. Island-wise groundwater resource position is given in **Table 7.1**. Graphical representation of island-wide variation in Annual Extractable Ground Water Resource as per GWRE – 2022 in Nicobar District is given in **Fig. 7.1.** Total Annual Extractable Ground Water Resource in Nicobar district is 0.31 bcm as per GWRE – 2022

As such all the islands are under ***Safe*** category with overall Stage of Groundwater Extraction (SGWE) of the district 0.28% with the exception of Chowra Island, which has been categorized as ***Saline.*** Graphical representation of island-wide variation in stage of groundwater extraction as per GWRE – 2022 in Nicobar District is given in **Fig. 7.2.** It shows that groundwater regime of Nicobar district is till-date quite pristine.

7.5 Comparison with Earlier Estimation

The District had also been assessed for its' groundwater resource during 2020. As such there is no change in categorization of any island. However, depending on rainfall pattern of assessment year (2022) and demographic variation over time, a minor change in Recharge-Draft scenario is observed. Based on that, overall Stage of Groundwater Extraction (SGWE) of the district is improved from 0.61% to 0.28% in terms of fresh groundwater resource. District-level comparison of groundwater resource position during 2020 and 2022 are given in **Table 7.2**.

7.6 Future of Groundwater Resource Position

In view of modeled rainfall pattern, the northern group of islands will experience diminishing quantity of rainfall, the southern group of islands will experience increased quantity of rainfall with middle group of islands will not experience much change in quantity of rainfall. As earlier exercises indicated that rainfall is directly proportional to groundwater resource, the northern group of islands will deplete in groundwater resource, the southern group of islands will enrich in groundwater resource with middle group of islands will not experience much change.

Table 7.1 Island-wise GW Resource Position as per GWRE – 2022 in Nicobar District

Sl. No	Assessment Unit Name / Island Name	Recharge from Rainfall (M)	Recharge from Other Sources (M)	Recharge from Rainfall (NM)	Recharge from Other Sources (NM)	Total Annual Ground Water Recharge	Total Natural Discharges	Annual Extractable Ground Water Resource	Irrigation Use	Industrial Use	Domestic Use	Total Extraction	Annual GW Allocation for Domestic Use as on 2025	Net Ground Water Availability for future use	Stage of Ground Water Extraction (%)	Categorization
1	TERESSA	161.7	0.0	214.0	0.0	375.7	37.6	338.1	0.0	0.2	6.4	6.6	6.8	331.1	1.9	*Safe*
2	CAR NICOBAR	1014.2	0.1	1342.5	0.0	2356.9	235.7	2121.2	0.2	0.2	42.5	42.9	45.5	2075.3	2.0	*Safe*
3	TRINKET	87.6	0.0	116.0	0.0	203.7	20.4	183.3	0.0	0.0	0.0	0.0	0.0	183.3	0.0	*Safe*
4	GREAT NICOBAR	11397.3	0.7	15086.9	0.2	26485.0	2648.5	23836.5	0.0	0.1	19.2	19.3	20.5	23815.8	0.1	*Safe*
5	KAMORTA	724.4	0.0	959.0	0.0	1683.4	168.3	1515.1	0.0	0.1	8.8	8.9	9.4	1505.5	0.6	*Safe*
6	KATCHAL	776.2	0.0	1027.5	0.0	1803.7	180.4	1623.4	0.0	0.1	4.6	4.7	4.9	1618.3	0.3	*Safe*
7	CHOWRA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	*Saline*
8	TILLANGCHANG	101.7	0.0	134.6	0.0	236.3	23.6	212.7	0.0	0.0	0.1	0.1	0.1	212.6	0.0	*Safe*
9	KONDUL	49.7	0.0	65.8	0.0	115.5	11.6	103.9	0.0	0.0	0.0	0.0	0.0	103.9	0.0	*Safe*
10	NANCOWRIE	142.7	0.0	188.9	0.0	331.6	33.2	298.4	0.0	0.1	2.4	2.6	2.6	295.7	0.9	*Safe*
11	BAMPOOKA	73.3	0.0	97.0	0.0	170.3	17.0	153.3	0.0	0.0	0.0	0.0	0.0	153.3	0.0	*Safe*
12	LITTLE NICOBAR	374.5	0.0	495.7	0.0	870.2	87.0	783.2	0.0	0.0	0.7	0.7	0.8	782.4	0.1	*Safe*
13	PULO MILO	13.8	0.0	18.2	0.0	32.0	3.2	28.8	0.0	0.0	0.0	0.1	0.1	28.7	0.2	*Safe*

(M: Monsoon; NM: Non-Monsoon; All figs except SGWE are in ha-m)

Table 7.2 Comparison of GWRE'2022 and GWRE'2020, Nicobar District

GW Type	Year	Annual Replenishable Recharge			Environmental Flow	Annual Extractable Recharge	GW Extraction				Stage of GW Extraction (%)
		Rainfall	Other sources	Total			Domestic	Industrial	Irrigation	Gross	
Fresh	**2022**	34663.16	1	34664.16	3466.4	31197.75	84.67	0.94	0.25	85.84	0.28
	2020	15184.09	1	15185.09	1518.51	13666.58	82.26	0.94	0.44	83.63	0.61
Saline	**2022**	348.40	0.00	348.40	34.84	313.56	3.02	0.00	0.00	3.03	0.97
	2020	299.74	0.00	299.74	29.97	269.77	2.94	0.00	0.00	2.94	1.09

(All figs except SGWE are in ha-m)

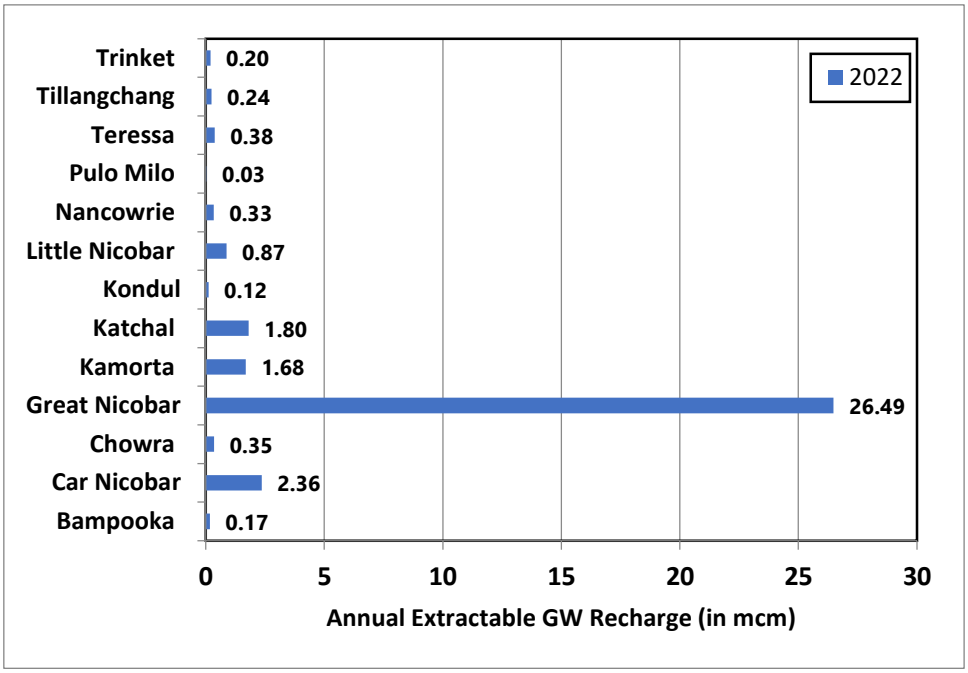


Fig 7.1 Island-wise Annual Extractable Ground Water Resource as per GWRE – 2022 in Nicobar District

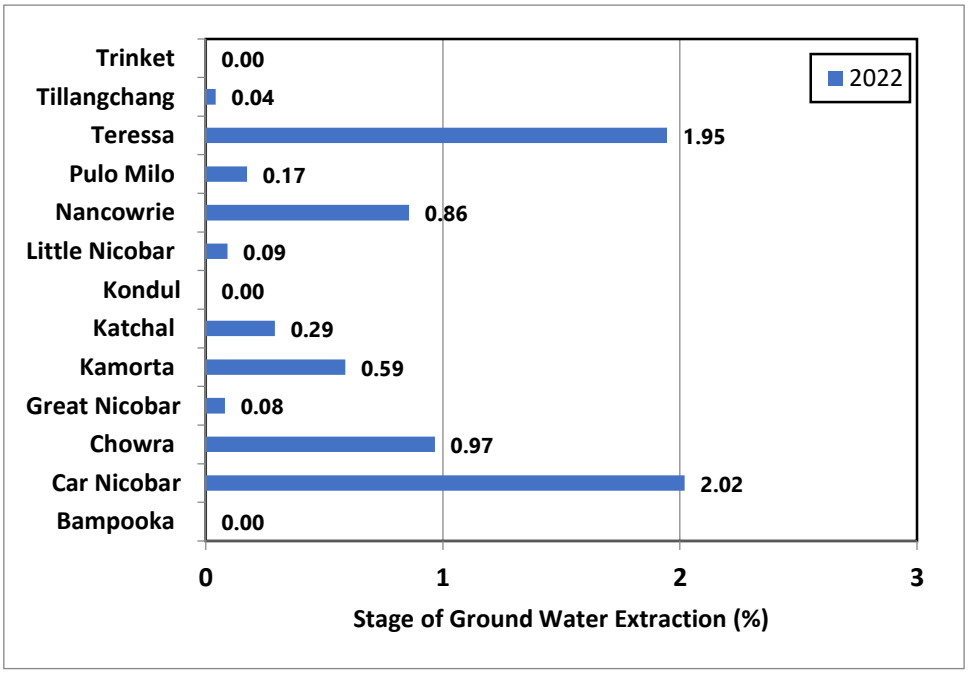


Fig 7.2 Island-wise Stage of Ground Water Extraction (%) as per GWRE – 2022 in Nicobar District

Chapter 8

Groundwater Management Strategy

Groundwater development of an area is the net result of groundwater use by various sectors including domestic, agricultural, industrial, *etc*. It's already discussed in previous Chapter-7 that all the islands of Nicobar District are under *Safe* category with overall Stage of Groundwater Extraction (SGWE) of the district 0.28 % only. This indicates that groundwater regime of Nicobar district is till-date quite untouched. However, this also indicates limited availability and restricted occurrence of groundwater in the unfavorable hydrogeological setting. Whatever groundwater resource is available in these islands is not open to standard groundwater extraction methodology. Being oceanic islands, fresh groundwater commonly occurs as freshwater lens over saline water at bottom. This freshwater lens in the islands is formed due to the radial movement of the freshwater from center of the island towards the coast, as a dynamic system in hydraulic continuity with seawater. Any extraction from the freshwater lens leads to upconing of saline water from bottom. Under such circumstances strategic management of groundwater resource is essentially needed for its sustainability as well as socio-economic development of the region.

Essentially with the setup of Nicobar group of islands, there are two basic aspect of water requirement, A) Drinking and Domestic need; and B) Economic need in terms of Agricultural-Industrial activities. With growth in population, in drinking and domestic need for water is surely to be increased. Demand for food production and allied activities are also to be increased. A rough estimate of per capita fresh water resource availability in the island is carried out considering average groundwater resource of 0.25 bcm and average surface water resource of 0.003 bcm. Srivastava and Ambast (2009) attempted water resource estimation of the island, however in that attempt entire rainwater received by the islands was considered as water resource, hence not used in the present study. Surface water resource of these islands is not estimated in recent surface water resource estimate of India by CWC (2019). Hence, surface water resource is estimated considering 2500 mm rainfall, 99% runoff in view of island profiles, absence of major perennial rivers and large water bodies, 90% evapotranspiration loss and 40% groundwater recharge along with reserve in

perennial river Galathea and Alexandrea. Results are given in **Table 8.1** and graphically presented in **Fig. 8.1**. Results show that, per-capita Fresh Water Resource availability declined from about 39000 m^3 in 1901 to 6800 m^3 in 2011 and approaching water scarcity. In view of proposed development of Great Nicobar Island with proposed 6.5 lakh population it will further dwindle to a meager 392 m^3 and reach "absolute" water scarcity (< 500 m^3 per year per capita, as per FAO classification). Climate change related rainfall variation will lead to further woos.

Table 8.1 Per-capita Fresh Water Resource Availability

Year	Population	Per capita Groundwater Resource	Per capita Surface Water Resource	Per capita Total Water Resource
1901	6511	38397	731	39128
1911	8818	28351	540	28891
1921	9272	26963	514	27477
1931	10240	24414	465	24879
1941	12452	20077	382	20459
1951	12009	20818	396	21214
1961	14563	17167	327	17494
1971	21665	11539	220	11759
1981	30454	8209	156	8365
1991	39208	6376	121	6497
2001	42068	5943	113	6056
2011	36842	6786	129	6915
2050 (P)	650000	385	7	392

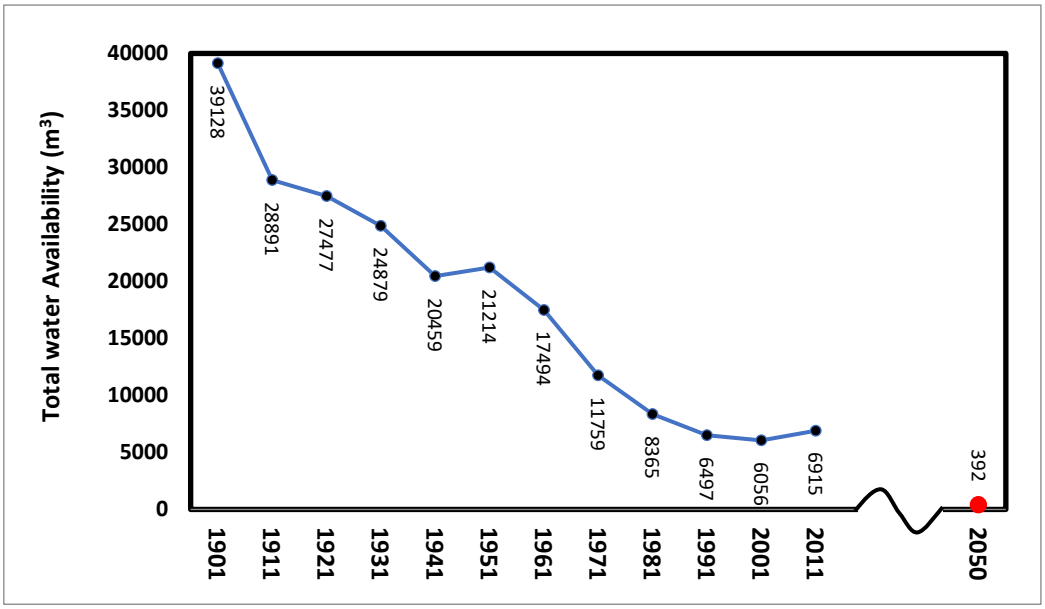


Fig. 8.1 Per-capita Fresh Water Resource Availability in Nicobar

8.1 Demand Projection

For any management present and future demand for the resource should be understood. This is needed to understand and predict resource availability – exploitation under various scenarios so that proper planning may be done.

A) Drinking and Domestic Demand

Nicobar district as a whole show very low population density of 19.52 persons /sq. km, though with strong island-wise variation. Maximum population density is observed in Car Nicobar and Chowra Island as per Census (2011) population. In general small islands show low population density. Anomalously, Great Nicobar Island on the other hand is the largest island show one of the lowest population density. This resulted in to island-wise variation in water demand for drinking and domestic purposes.

For Nicobar group of islands, considering Census (2011) population and as per APWD norm for water supply, *i.e.* 55 litres per capita per day, annual water demand for drinking and domestic purpose is 0.74 mcm. Details of computation are given in **Table 8.2**. As discussed earlier (Sec 1.4), groundwater is the main source of drinking water supply being 89.9% of all structures. Surface water contributes in 8.6% structures and rain water in 1.5% structures.

Table 8.2 Present Domestic Demands

	Island	Population Density	Population	Daily Domestic Water Need	Annual Domestic Water Need
		Persons/ Sq. km	(Census 2011)	(lt/day)	(lt/yr)
1	Car Nicobar	140.58	17841	981255	358158075
2	Great Nicobar	7.70	8046	442530	161523450
3	Chowra	153.38	1270	69850	25495250
4	Teressa	19.10	1934	106370	38825050
5	Katchal	15.40	2685	147675	53901375
6	Nancowry	15.25	1019	56045	20456425
7	Kamorta	19.61	3688	202840	74036600
8	Pilo millo	15.50	20	1100	401500
9	Little Nicobar	1.89	301	16555	6042575
10	Tillang chong	2.26	38	2090	762850
	Total =	**19.52**	**36842**	**2026310**	**739603150**
					0.74 mcm

With current decline in population, expected population in 2050 will about 25000 i.e. 1970-80's level, which will result in a water demand of 0.58 mcm of water. However, in view of proposed development of Great Nicobar Island, the island will harbor a total population of 6.5 lakh by the year 2050. Pre-Feasibility Report (2021) of survey carried out by AECOM for Niti Aayog estimated that this population translates to a water demand of 160 MLD which translates to 58.4 mcm of water demand annually. Of this 58.4 mcm water, potable water need is 32.9 mcm. Historical and Projected domestic water demands are given in **Fig. 8.2**.

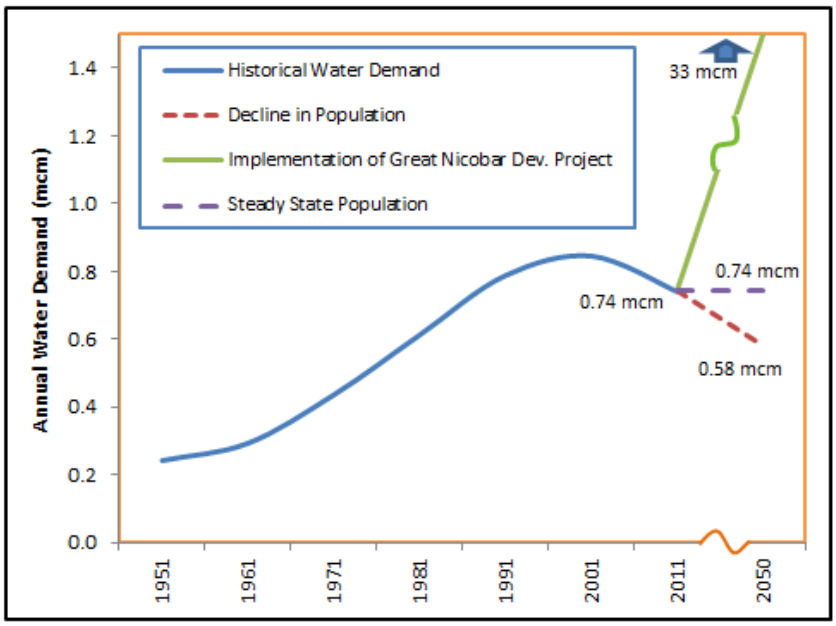


Fig. 8.2 Historical and Projected domestic water demands

B) Industrial and Infrastructural Demand

As such there is no significant industry in the district. The area is industrially backward area and classified as category 'A' (MSME, 2015). Fishing is the main economy of the area along with minor agricultural produces. This resulted in to development of very few food and fish processing units. Except this minor tailoring units, carpentry units, coir processing units and port and vehicle maintenance related units exists. All these units belong to micro and small enterprises (MSE) category.

Ground Water Resource Assessment (2022) for Nicobar district estimated about 0.94 ha-m of groundwater draft based upon industrial demand (**Table 8.3**). With current economic scenario, growth in industrial demand for water is expected only in Great Nicobar Island in the context of proposed development plan. Pre-Feasibility Report (2021) of survey carried out by AECOM for Niti Aayog estimated that industrial and infrastructural water demand of 70 MLD in Great Nicobar Island which translates to 25.6 mcm of water demand annually in 2050. Hence, altogether the district will have a water demand of 26.5 mcm annually.

Table 8.3 Island-wise Industrial Demands (Present)

Island Name	Estimated Industrial Draft (ha-m)		Total Draft
	Monsoon	Non-Monsoon	(ha-m)
Car Nicobar Island	0.065	0.133	0.20
Great Nicobar Island	0.010	0.133	0.14
Kamorta Island	0.003	0.133	0.14
Katchal Island	0.002	0.133	0.14
Nancowri Island	0.003	0.133	0.14
Teressa Island	0.061	0.133	0.19
Total =			**0.94**

(Source: A & N GWRE, 2022)

C) Irrigational Demand

As per land-use data, about 97% of reported area of these islands is under forest cover and the remaining only 3% is available for other land uses including agriculture. In Nicobar district, net sown area is only 267.9 ha. Most of the farmers in these islands are allotted with 02 ha of hilly land and 02 ha of paddy land. The hilly lands are utilized for cultivation of plantation and horticulture crops. Agricultural system is mostly rain-fed with support irrigation from ponds and dug wells. Ground Water Resource Assessment (2022) for Nicobar district estimated about 0.44 ha-m of groundwater draft based upon agricultural demand (**Table 8.4**).

In view of current trend in population growth and water scarcity not much growth in agricultural sector can be expected. Coconut and Arecanut being cash crop, is expected to grow their share in total produce. However, in the context of proposed development plan of Great Nicobar Island, vegetable produce will surely increase by many fold and will become

cash crop in presence of high demand and low supply (due to remoteness of the island) scenario. This will also impact the nearby islands. Expecting 300% growth in agricultural area with 150% to 200% cropping intensity, annual agricultural water demand in 2050, will be in the tune of 2.63 mcm.

Table 8.4 Island-wise Irrigational Demands

Island Name	Estimated Irrigation Unit Draft (ha-m)			No of Abstraction Structure*	Total Draft (ha-m)
	Monsoon	Non-Monsoon	Annual		
Katchal Island	0.0002	0.0004	0.0006	10	0.006
Kamorta Island	0.0002	0.0004	0.0006	15	0.009
Nancowrie Island	0.0002	0.0004	0.0006	17	0.0102
Teressa Island	0.0002	0.006	0.0062	30	0.186
Car Nicobar Island	0.0002	0.006	0.0062	32	0.1984
Great Nicobar Island	0.0002	0.0004	0.0006	49	0.0294
Total =					**0.44**

*Cumulative representative (Source: A & N GWRE, 2022)

8.2 Demand Management

With the present and projected demand figures at hand, proper management may take suitable measures to diminish the future demand retaining the socio-economic development potentials. These steps taken at present time will pave the way towards optimal resource allocation in future.

A) Drinking and Domestic Demand Management

It's evident that Drinking and Domestic demand is the most important sector as it contributes 98.2 % of total fresh water demand. As per estimate (**Fig 8.1**), though there is a population de-growth observed in 2011, water demand expected to hover around present level of 0.74 mcm annually. However, in view of proposed development plan of Great Nicobar Island, the demand may increase to about 33 mcm annually.

As such, the district has a total water resource of 31473 ha-m (315 mcm) with groundwater component of 31197 ha-m and surface water component of 476 ha-m which is sufficient to handle the demand for water with Stage of Ground Water Extraction (SGWE) going up to only about 11%. However, considering the water table fluctuation of 1 – 1.5 m between Pre- and post- monsoon level, and saline – fresh water boundary at 10 - 20 m bgl,

water table can only be lowered by maximum of 1.5 m in post- monsoon without significantly disturbing the interface. Dynamic groundwater resource by definition is groundwater present within the fluctuation zone. With such condition, no water can be withdrawn during pre-monsoon season, if anthropogenic upconing of interface is to be avoided. However, water supply systems are commonly designed for a sustained development of groundwater resources without distinction between pre-monsoon / post-monsoon scenario. In such condition, main water supply scheme should be surface water based with augmentation by groundwater based schemes.

A.1. Surface water based Water Supply

Estimated surface water resource is only 476 ha-m, which is a hindrance for the designing surface water based main water supply scheme. With such situation at hand augmentation of surface water resource is the prime need. However, a good amount of water is flowing off the island as surface run off. In absence of river gauzing data, surface run-off is estimated at 65% of rainfall after ET loss as estimated earlier. The results are summarized in **Table 8.5**. Considering run-off coefficient of 0.1 with 22 mm/hr rainfall intensity, 2200 m^3/hr peak run-off is expected per square kilometer area.

Table 8.5 Estimation of Surface Run-off

Island Name	Area	Surface Runoff
	Sq. km.	mcm
Car Nicobar	126.9	210.3
Chowra	8.2	13.6
Teressa	101.4	168.1
Katchal	174.4	289.1
Kamorta	188.2	311.9
Nancowry	66.9	110.9
Little Nicobar	159.1	263.7
Great Nicobar	1045.1	1732.3
Tillang Chong Island	16.84	27.9
Pulomillow Island	1.3	2.2
Battimaly	2.01	3.3
Meroe	0.52	0.9
Treis	0.26	0.4
Menchal	1.3	2.2
Trak	0.26	0.4
Cubra	0.52	0.9

Island Name	Area	Surface Runoff
	Sq. km.	mcm
Bompuka	13.3	22.0
Kondul	4.6	7.6
Trinket	86.3	143.0
Total	**-**	**3310.7**

Hence about 3.3 bcm of rain water gets wasted through surface run-off of which Great Nicobar island itself contributes 1.7 bcm. Several perennial river based reservoirs are needed to be constructed for the purpose of surface water based water supply scheme. Proposed artificial recharge structures specially Check Dams is expected to supplement the reservoirs.

A.2. Ground water based Water Supply

Ground water based Water Supply should be in low-key considering fragility of groundwater system in these islands. During pumping of freshwater from an aquifer having both fresh and brackish/saline water, the pressure head in the vicinity of well is lowered which ultimately leads to the rise of brackish/saline water.

Total Annual Extractable Ground Water Resource in Nicobar district is 310 mcm as per GWRE – 2022. However, estimate is on higher side considering only coastal area observations and extrapolating them to the entire island. Total Annual Extractable Ground Water Resource in Nicobar district may be ball parked at 150 mcm. Moreover, groundwater development should be done only through the suggested structures (**Table 8.6)**.

Table 8.6 Suggested structure for groundwater abstraction

Type of Structure	Depth	Topographic Feature Type	Elevation Class
Skimming Wells	Very Shallow	Coastal plains	3 – 10 m
Large diameter Dug well	Shallow (< 8m)	Foot Slope	10 – 20 m
Shallow Tube well	Moderately Shallow (< 15m)	Upland	20 – 50 m
Deep Tube well	Deep (< 30m)	Highland	> 50 m

Detailed designs of the suggested structures

As observed, water table fluctuation is within 1 – 1.5 m between Pre- and post-monsoon level and saline – fresh water boundary is lying at 10 - 20 m bgl. Based on these, topographic profile of islands and expected behavior of freshwater lens, detailed designs of the suggested structures are given below. **Table 8.7** summarizes the structure design.

A) Skimming Wells: These structures may be built in the coastal plain part of the islands where ground elevation is within 10 m. Groundwater mound is expected to be coinciding with sea level in those areas. However, groundwater from this zone should not tapped as far as possible. Various type of skimming well is possible in these areas, e.g. a) Radial collector well; b) Skimming tube well; and c) Scavenger Wells.

a) Radial collector well consisting of an open well and input radial drains on one or more sides result into shallower penetration (Kamra et al., 2019). As the radial drains collect water from defused source points at shallow depth, up-coning of saline water is greatly prevented.

b) Skimming tube well may be defined as the tube well to extract freshwater from the fresh–brackish/–saline aquifer by specifying the extraction rate so as to limit the rise of fresh–brackish/saline interface to reach effective pumping zone of the well (Vashisht and Shakya, 2016). As in these areas, freshwater zone thickness is less than 30m, multi-bore skimming tube well technique is suggested. A schematic design of multi-bore skimming tube well is given in **Fig. 8.3**.

c) **Scavenger Wells** involve the simultaneous abstraction of fresh and saline water through wells having screens in different quality zones to control the rise of the interface (Kamra *et al.*, 2019). The development of dual discharge heads due to simultaneous pumping of these wells restricts the mixing of freshwater with brackish/saline water. The discharge rates of the two wells may be adjusted in such a way that the up-coning caused by pumping from the production well could be countered by the down-coning of the interface caused by pumping from the scavenger well (Vashisht and Shakya, 2016). A schematic design of Scavenger Well System is given in **Fig. 8.4**.

Manual abstraction is preferable in radial collector well, if unavoidable, fitted pump must not exceed 1 hp. Pumping may be done only for stored water with a limit of ½ of the standing water column. In case of skimming tube wells, well to be constructed at 40% penetration ratio, i.e. only 40% of saturation thickness above fresh-saline water interface may be tapped. In all cases subsurface guard wall (Length should be three times of well depth and down to same depth) may be constructed at seaward side of the well. This will help in maintaining groundwater mound at well point. Skimming wells should not be operated continuously.

B) Large diameter Dug well: These structures may be built in the foot-slope part of the islands where ground elevation is > 10 m. Groundwater mound is expected to be strongly dipping towards coast following elevation profile in those areas. Hence, site must be a plain section within the overall slope. A 6 m diameter dugwell of maximum 8 m depth is expected to suffice the purpose. Fitted pump must not exceed 3 hp. Pumping may be done only for stored water with a limit of ¾th of the standing water column.

C) Shallow Tube well: These structures may be built in the upland part of the islands where ground elevation is > 20 m. Groundwater mound is expected to be start gently dipping towards coast in those areas. A 4" diameter slim hole of maximum 15 m depth with 3 – 5 m casing is expected to suffice the purpose. Study indicates about absence of major water bearing fracture at greater depth. Fitted pump must be below 5 hp.

D) Deep Tube well: These structures may be built in the central part of the islands where groundwater mound height is expected to be at its maximum. A 6" diameter slim hole of maximum 30 m depth with 3 – 5 m casing is expected to suffice the purpose. Hydrogeological study indicates about absence of major water bearing fracture at greater depth. Fitted pump must be below 7.5 hp.

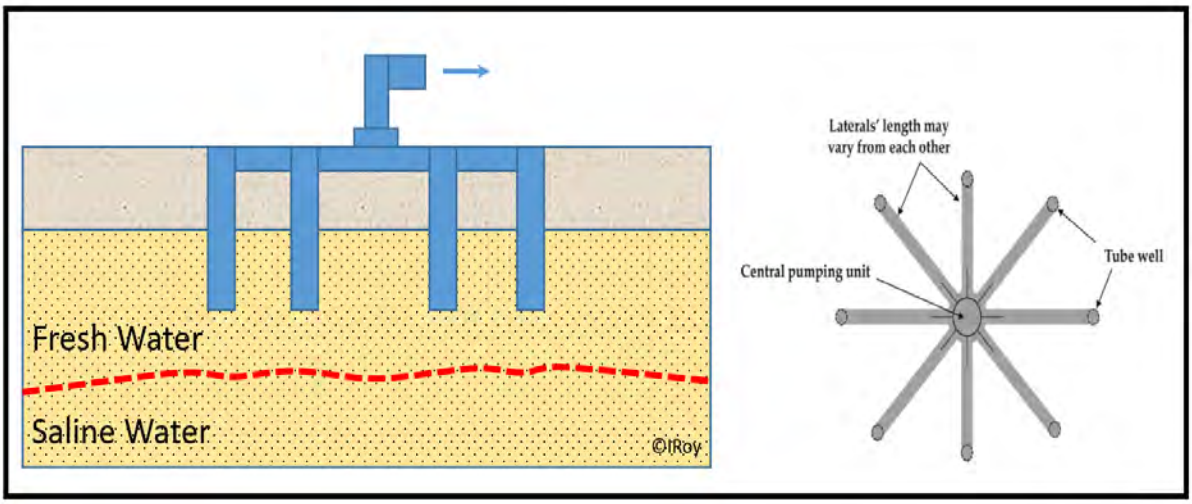


Fig. 8.3 Schematic Design of Multi-Bore Skimming Tube Well

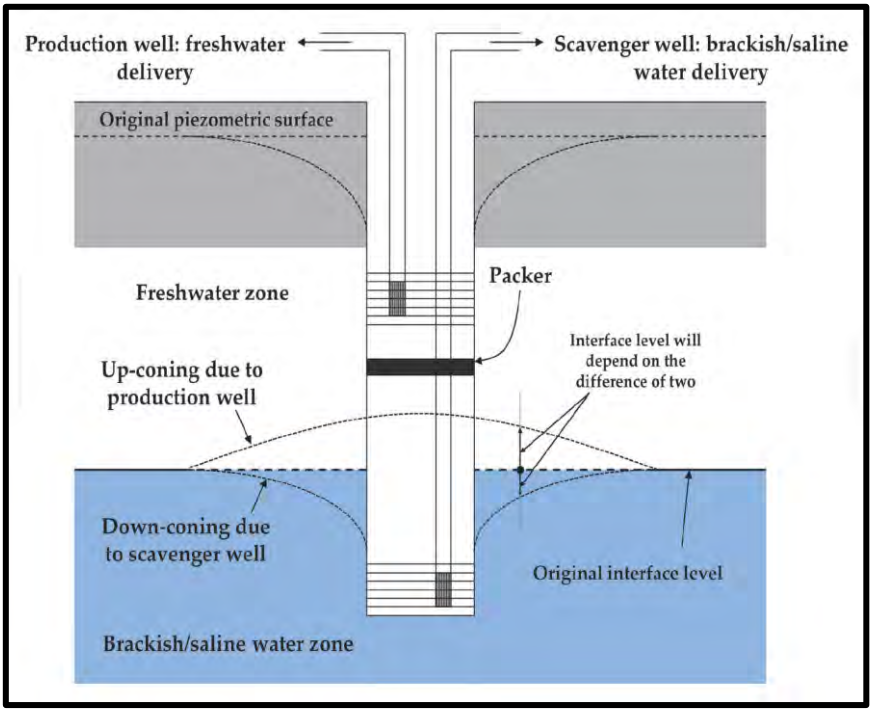


Fig 8.4 Schematic sketch showing scavenger well system installed in a single-bore hole (Vashisht and Shakya, 2016)

Table 8.7 Summary of Structure Design

Type of Structure	Maximum Depth	Diameter	Lining /Casing	Maximum Pump Capacity
Skimming Wells	3m	-	-	1 hp
Large diameter Dug well	8m	6 m	Entire	3 hp
Shallow Tube well	15m	6"	3 – 5 m	5 hp
Deep Tube well	30m	8"	3 – 5 m	7.5 hp

B) Industrial and Infrastructural Demand Management

For industrial – infrastructural demand management, suitable water planning is extremely necessary. Projected major Industrial – Infrastructural Demands in 2050 in Great Nicobar is 11.7 mcm, say 12 mcm (**Table 8.8**). With other decentralized demands, total industrial – infrastructural sector is expected to have a water demand of 26.5 mcm (AECOM, 2021).

In order to harness the water already used in domestic and drinking sector, extensive water recovery through STP and recycling it to industrial need, will lead to maximum utilization of scarce water resource. Expected, sewerage generation is 65 MLD, hence a centralized STP may reclaim about 24 mcm of water. With installation of decentralized STP, additional 3 mcm of water can be reclaimed. Hence, as such, industrial – infrastructural demand may be entirely met with recycled water. However, dual plumbing system for use of recycled water must be installed.

Table 8.8 Projected Industrial – Infrastructural Demands in 2050 in Great Nicobar

Sl.	Industry/ Infrastructure	Daily	Annual
		MLD	MCM
1.	Proposed Industries	5	1.8
2.	Green area/ Open area/ Road - Gutter washing, *etc.*	10	3.7
3.	Sea Port/ Airport, *etc.*	3	1.1
4.	Hospitals/ Medical Center *etc.*	5	1.8
5.	Defense Area/ Eco-tourism Area/ Utilities, *etc.*	7	2.6
6.	Fire Demand @1% of total	2	0.7
	Total =	**32**	**11.7**

C) Irrigational Demand Management

For irrigational demand management, suitable crop planning and intensification is most important step. In order to harness the maximum benefit from existing water resources, water management may be practiced at farm level introducing planning to modify cropping pattern as well as to meet crop-water requirement. This will ensure maximization of crop per drop of water. It can be achieved by introducing modern crop management techniques as well as modern irrigation equipments *e.g.* Drip Irrigation System.

ICAR in the context of Andaman and Nicobar Island suggested introduction of multistoried cropping in the existing coconut and arecanut plantations under organic cultivation (Velmurugan, 2016). This will result in coproduction of vegetables and spices along with coconut and arecanut. This will also help in protecting lower-tier produce from intense precipitation as well as reduce soil erosion. Similarly, introduction of drip irrigation facilities to wide spaced fruit crops like banana and papaya, intercropping with seasonal vegetables will increase water productivity.

Based upon the ICAR suggestions, PMKSY documents, and discussions with agricultural scientists of CIARI-ICAR, suggestive crop alignment with expected cropping intensity suitable for Nicobar district is prepared and given in **Table 8.9**. If implemented along with Drip Irrigation System, this is expected to reduce water consumption by about 40% by reducing area as well as increasing cropping intensity. Hence, annual agricultural water demand in 2050 will be reduce to the tune of 1.58 mcm, thereby reducing a demand of 1.05 mcm of irrigation water need.

8.3 Artificial Recharge Prospect

Considering Island setup, geomorphological context, land-use pattern and relative groundwater potentialities of underground aquifer system, only a few types of artificial recharge / conservation structures are possible for augmentation & conservation of ground water resources.

Table 8.9 Envisioned Crop Alignment and expected Cropping Intensity

Sl.	Existing cropping pattern	Proposed Modifications	Suggested Irrigation Method	Source of Water	Expected Cropping Intensity (%)
1	Coconut	Coconut + Black Pepper + Tree	Tank- Dug well with Drip	SW / GW	150
		Spices + Pineapple or Fodder	Dug well with Drip	GW	
		Coconut + Black Pepper + Vegetables	Lined Pond with Gravity-fed Drip	SW	
2	Arecanut	Arecanut + Black Pepper + Tree	Tank- Dug well with Drip	SW / GW	150
		Spices + Pineapple or Fodder	Dug well with Drip	GW	
3	Banana / Papaya and others	Fruits + Vegetables	Dug well with Drip	GW	150
		Sugarcane + Vegetables	Lined pond with Gravity-fed Drip	RW	
4	Vegetables	Vegetables - High value Crops	Dug-well with Water Pipes / Drip	GW	200
		Protected Cultivation of High Value Vegetables			
5	Waste land / Backyards	Vegetable - Vegetable	Land Shaping - Dug well	GW	200
		Protected Cultivation of High Value Vegetables	Dug well with Drip	GW	
		Floriculture Unit	Dug well	GW	
		Peri-Urban Horticulture	Rainwater Harvesting - Treated Urban Runoff	RH / TW	
6	Backyard	Fruits and Vegetables in the backyard	Dug well - Rainwater Conservation	GW / RH	150
		Community Garden in Tribal Areas			

(SW: Surface Water; GW: Ground Water; RH: Rainwater; TW: Treated Water) (Source: modified after PMKSY, 2016)

Based on topographic criterions (**Table 4.1**) and underlying lithology, individual islands have specific needs. Island specific (for main inhabited islands only) suitable Artificial Recharge Structures are given in **Table 8.10a**. Details of norms adopted for considering various Artificial Recharge Structures are given in **Table 8.10b**.

Table 8.10a Island specific suitable Artificial Recharge Structures

Islands	Gully Plug	Contour Bunding	Nala Bunding	Check Dam	Farm Pond
Car Nicobar	Y	–	Y	–	Y
Chowra	–	–	–	–	Y
Teressa	–	–	Y	–	Y
Katchal	–	Y	–	Y	Y
Kamorta	–	–	–	–	Y
Nancowry	Y	–	Y	–	Y
Little Nicobar	–	Y	–	Y	Y
Great Nicobar	–	Y	–	Y	Y

Y: Feasible

Table 8.10b Suggested norms for various Artificial Recharge Structures

Recharge Structure Type	Recharge %	Storage Capacity (MCM)	Number of Filling	Dimension	Unit Cost (in lakhs) (Approx.)
Gully Plug	60%	0.05	05	6 m x 1 m	0.4
Contour Bunding & Trenching	60%	0.05	05	300 – 400 m	1.0
Check Dam	50%	0.20	02	15 m x 3 m	15.0
Nala Bunding	60%	0.05	05	10 m x 2 m	0.6
Farm Pond	25%	0.05	05	15 m x 10 m x 3 m	2.0

Suggested locations of Check Dams are given in **Fig. 8.5.** Based on Satellite Imagery, prepared digital elevation map, drainage map and aquifer map, seventy (70) sites are selected in Great Nicobar Island. However, final locations are subject to field verification. It is expected that out of these 70 proposed sites, 30-35 site will fulfill engineering criteria. Considering implementation of 30 Check Dams sites, expected groundwater recharge is expected to the tune of 15 mcm annually.

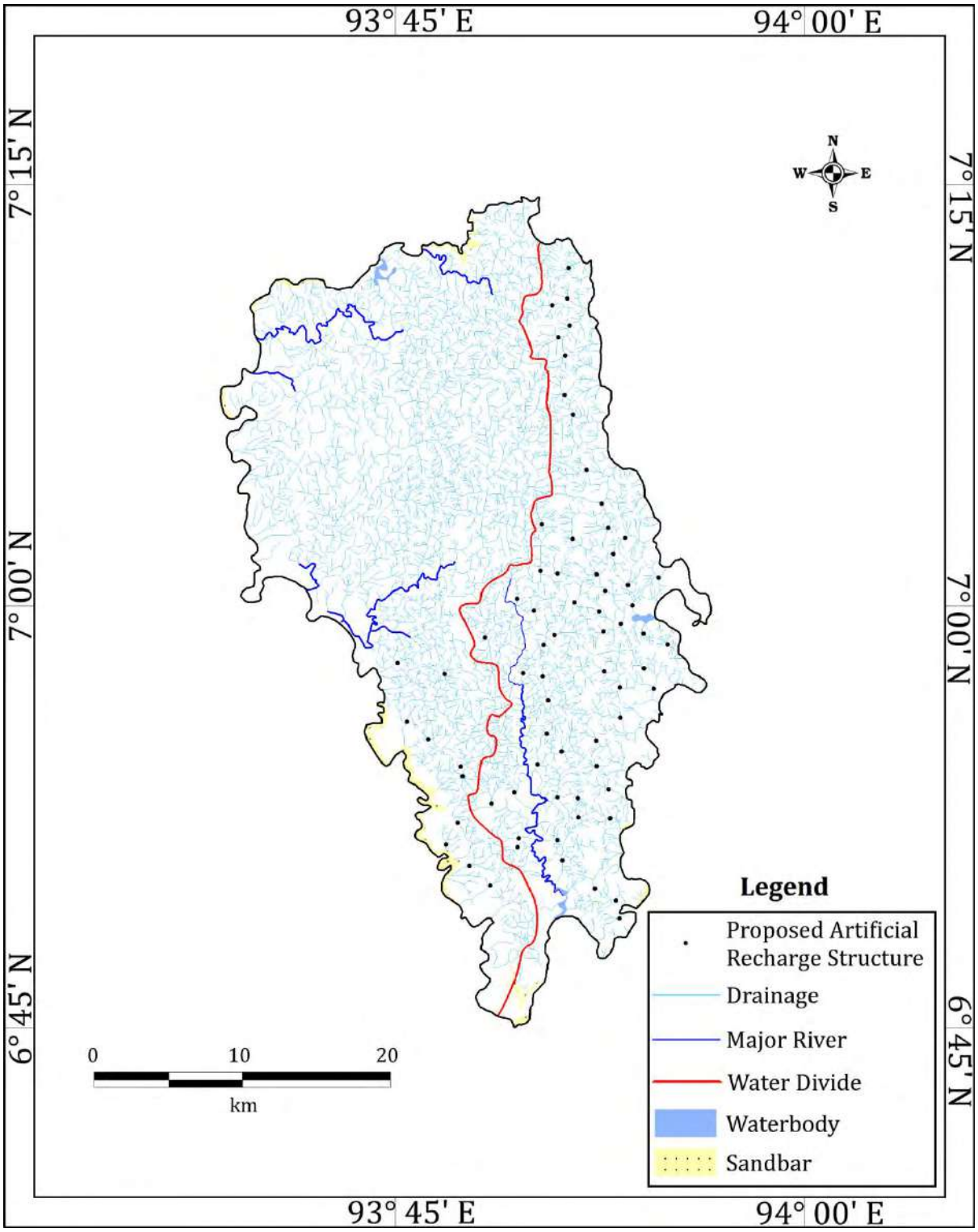


Fig. 8.5 Proposed locations of Check Dam subject to site verification

8.3 Roof-Top Rainwater Harvesting Possibility

During summer season, water becomes scarce in Nicobar Group of Islands. Roof-top rainwater collection is an essential tool to tackle such situation.

A. Possibility of Rainwater Harvesting in Traditional Tribal Houses

Two tribes namely, Nicobari and Shompen, live in the district. Nicobari constitutes the larger part and they reside in all the inhabitant Islands of the District. Shompen is on the other hand semi - nomadic tribe and reside only in certain pockets of Great Nicobar Island. Shompens being semi-nomadic, build only hutments of temporary nature. On the other hand, Nicobarese prepare permanent settlements with variety of huts.

Nicobarese Houses

A Nicobarese village consists of four types of huts, each for a specific purpose. The main circular hut with conical top called the '*ma pati tuhet*' is the principal house of a family. The '*taliko*' is the kitchen, which has a ridged roof with a long floor. The '*pati yong nyeo*' is the communal birth and the fourth type is '*pati kupah*' or death houses (Angne, 2022) (**Fig. 8.6**). Most of the Island including Car Nicobar and Chowra, near each village by the sea- shore, has '*Elpanam*' where the public buildings of the village consisting of a meeting house, a lying-in house, a mortuary and the cemetery (ANA, 2023).

These huts are often of considerable size, containing an entire family. They stand on thick piles, about 7 feet high, but vary in design. The living-houses (tuhet), are about 20 feet in diameter, and 15-20 feet in height from floor to apex. They are in the shape of something between an inverted basin and a pie-dish, covered with a heavy thatch of Lalang grass or Nipah palm. Aluminium sheets are now common, since the introduction of Indira Awas Yojana (ANA, 2023). Roofs are fastened to the framework by lashings of the cane.

Altogether, a typical *tuhet* provides a roof area of about 2722 sq. ft. (considering 20 feet diameter and 12 feet height) or say 250 m^2. With average annual rainfall of 2545 mm in the area, and assuming 60% collection efficiency considering various roof-materials, about 382 m^3 of rain water may be collected annually from each *tuhet* with monthly collection of 6 to 50 m^3 of rain water (**Table 8.11**). Considering 10% evaporation loss, the collected water may be routed through storm water drains and stored in specifically constructed pond of 30 m^3 storage capacity.

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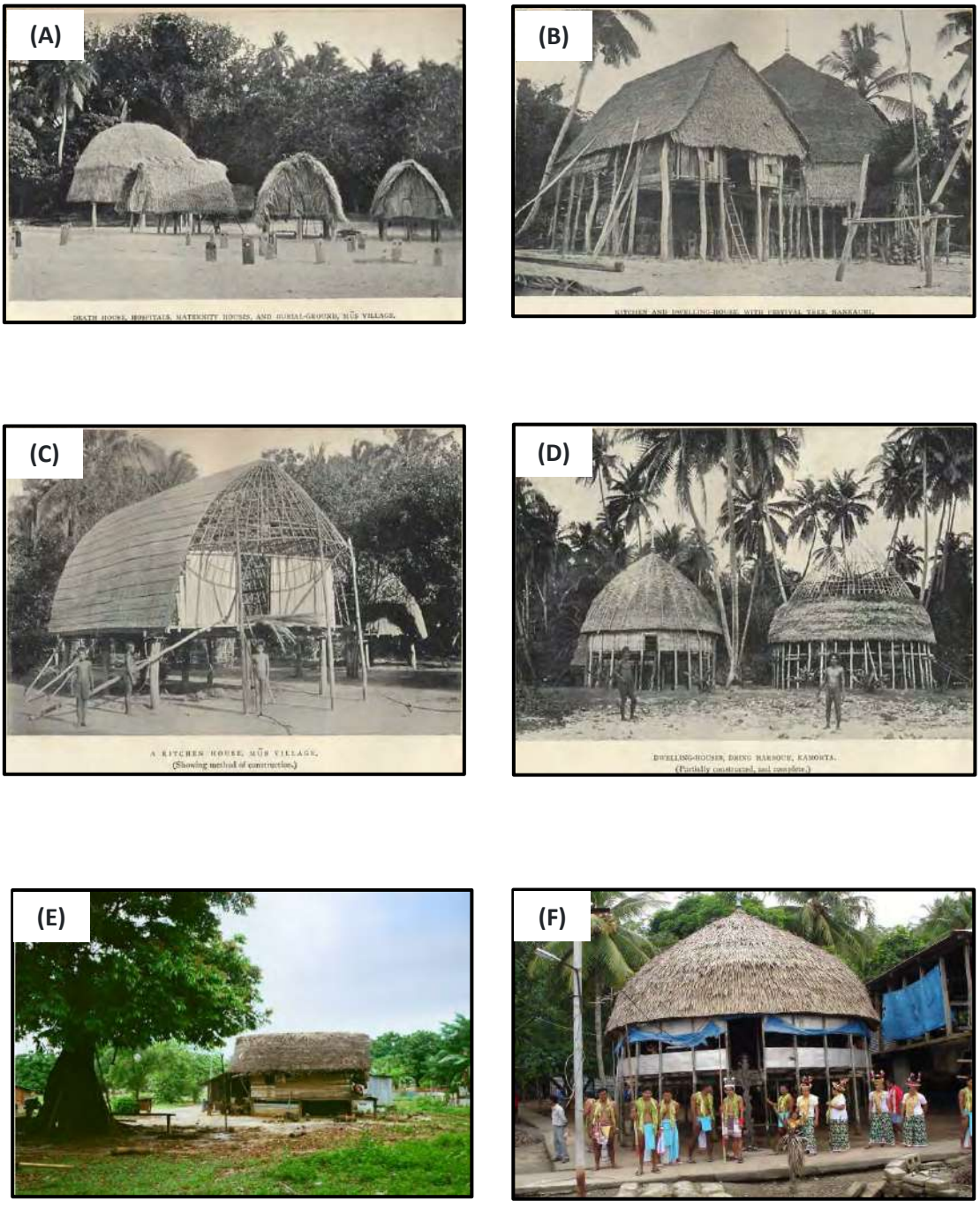


Fig. 8.6 Nicobarese Huts: (A) to (D) 120 years earlier (Boden Kloss, 1903); and (E) to (F) Modern;

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The collected rainwater can be effectively used to provide irrigation to crops grown in the homestead garden during dry season and as drinking water for livestock. Island-wise potential for rainwater conservation through *Tuhets* are summarized in **Table 8.12.**

Table 8.11 Rainwater Potential of *Tuhet*

Month	Average Rainfall	Rainfall on roof of 250 m^2	Collectable Water at 60% efficiency
	(mm)	(m^3)	(m^3)
Jan	99.3	24.8	14.9
Feb	42.3	10.6	6.4
Mar	105.7	26.4	15.8
Apr	101.8	25.5	15.3
May	333.2	83.3	50
Jun	312.7	78.2	46.9
Jul	222.8	55.7	33.4
Aug	260.1	65	39
Sep	321.8	80.5	48.3
Oct	263.3	65.8	39.5
Nov	291	72.8	43.7
Dec	191.2	47.8	28.7
Total =	**2545.2**		**381.9**

Table 8.12 Quantum of Rainwater Conservation through *Tuhet*

Sl.	Island	Estimated Number of Tribal Family	Estimated Number of *Tuhet*	Ponds to be constructed	Total Water Conserved (m^3)
1	Car Nicobar	2000	500	500	15000
2	Great Nicobar	200	50	50	1500
3	Chowra	350	87	87	2610
4	Teressa	400	100	100	3000
5	Katchal	10	2	2	60
6	Nancowry	125	31	31	930
7	Kamorta	500	125	125	3750
8	Pilomillow	5	1	1	30
9	Little Nicobar	60	15	15	450
10	Tilongchang	4	1	1	30
	Total =	**3654**	**912**	**912**	**27360**
					0.027 mcm

(Considering 01 *tuhet* for 04 household)

B. Possibility of Rainwater Harvesting in Modern Houses

Using Census (2011) data, Nicobar district has about 5600 modern residential houses. Using rainfall pattern of Nicobar district with 70% efficiency of the system, every 100 m^2 of roof-area, has potential to collect 35.3 m^3 of rainwater through roof-top rainwater harvesting system. Details are given in **Table 8.13**. Design of simplified collection system is given in **Fig. 8.7**. Quantum of rainwater conservation through modern houses in various islands is in **Table 8.14.**

Table 8.13 Rainwater Potential of Individual household

Month	Average Rainfall (mm)	Volume Rainfall on roof of 100 m^2 area (m^3)	Collectable Water at 70% efficiency (m^3)	Domestic Water Use (500 lit tank)	GW Recharge (m^3)
Jan	99.3	9.9	6.9	6.9	0.0
Feb	42.3	4.2	2.9	2.9	0.0
Mar	105.7	10.6	7.4	7.4	0.0
Apr	101.8	10.2	7.1	7.1	0.0
May	333.2	33.3	23.3	15.0	8.3
Jun	312.7	31.3	21.9	15.0	6.9
Jul	222.8	22.3	15.6	15.0	0.6
Aug	260.1	26.0	18.2	15.0	3.2
Sep	321.8	32.2	22.5	15.0	7.5
Oct	263.3	26.3	18.4	15.0	3.4
Nov	291.0	29.1	20.4	15.0	5.4
Dec	191.2	19.1	13.4	13.4	0.0
	2545.2	**254.5**	**178.0**	**131.4**	**35.3**

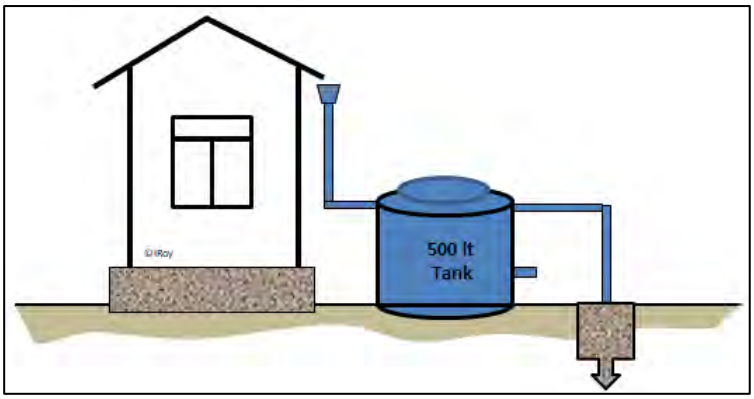


Fig. 8.7 Rainwater Harvesting in Modern Houses

Table 8.14 Quantum of Rainwater Conservation through Modern Houses

Sl.	Island	Estimated Number of Houses	Annual GW Recharge (m^3)	Total Water Conserved (m^3)
1	Car Nicobar	2250	35	78750
2	Great Nicobar	1980	35	69300
3	Chowra	17	35	595
4	Teressa	151	35	5285
5	Katchal	705	35	24675
6	Nancowry	113	35	3955
7	Kamorta	415	35	14525
8	Pilomillow	0	35	0
9	Little Nicobar	3	35	105
10	Tilongchang	0	35	0
	Total =	**5634**		**197190**
				0.2 mcm

8.3 Groundwater Recharge Initiative

Towards groundwater recharge, under ***Amrit Sarovar*** initiative of Govt. of India, 76 sources are chosen in the district. Of them 22 are in Car Nicobar Sub-district, 27 are in Great Nicobar Sub-district and 27 are in Nancowri Sub-district. As per Amrit Sarovar Mission Dashboard, (https://amritsarovar.gov.in/Masterreport) details of the work is summarised in **Table 8.15**.

Being Island, that also nearly entirely forested, developing and rejuvenating suitable water bodies is problematic mainly due to space constraint. Hence, under the scheme more farm-ponds may be constructed as in Pulobaha at Afra Bay or Govind Nagar in Great Nicobar Island. These will act as groundwater recharge structure as well as drinking and agricultural water sources. Rainfall pattern in the islands also support this type of structures.

Table 8.15 Rejuvenation of Water Bodies under *Amrit Sarovar* Scheme

Block	Total Sites	Work Initiated	Island	Village	Type of Structure	Sarovar ID
Car Nicobar	22	18	Car Nicobar	Kimious	Dug well	101216
			Car Nicobar	Perka	Pond	101217
			Car Nicobar	Malacca	Pond	101219
			Car Nicobar	Sawai	Pond	101222
			Car Nicobar	Tee-top	Dug well	101226
			Car Nicobar	Small Lapathy	Dug well	101228
			Car Nicobar	Malacca	Dug well	101229
			Car Nicobar	Big Lapathy	Dug well	101230
			Car Nicobar	Sawai	Dug well	101232
			Car Nicobar	Arong	Dug well	101235
			Car Nicobar	Tamaloo	Dug well	101238
			Car Nicobar	Kinyuka	Dug well	101240
			Car Nicobar	Chukchucha	Dug well	101244
			Car Nicobar	Kinyuka	Dug well	101252
			Car Nicobar	Mus	Dug well	101254
			Car Nicobar	Kakana	Dug well	101257
			Car Nicobar	Kakana	Dug well	101262
			Car Nicobar	Chukchucha	Dug well	101267
Great Nicobar	7	5	Great Nicobar	Govind Nagar	Pond	100142
					Pond	100824
					Pond	100890
					Pond	100900
					Pond	101215
	5	0	Great Nicobar	Gandhi Nagar		
	1	0	Great Nicobar	Kiyang		
	10	0	Little Nicobar	Pulobaha		
	1	0	Great Nicobar	Sastri Nagar		
	3	1	Great Nicobar	Vijay Nagar	Pond	100275
Nancowry	11	0	Nancowri	Kamriak		
	7	2	Kamorta	Knot	Pond	101233
					Pond	101241
	7	0	Teressa	Luxi		
	2	0	Kamorta	Mus		

(Source: https://amritsarovar.gov.in/Masterreport Accessed on 08/02/2023)



Renovated Groundwater Well at Malacca, Car Nicobar Island



Renovation of Pond at Perka Village, Car Nicobar Island



Renovation of Farm Pond at Vijay Nagar, Great Nicobar Island



Renovation of Pond at Knot Village, Kamorta Island

Fig. 8.8 *Amrit Sarovar* initiatives in Nicobar District

8.3 Expected Net-outcome of Management Interventions

Management Interventions are intended for preservation of precious water resource. In an island scenario, the resource is already scanty and its availability is vital for survival of life. Carried out aquifer mapping process is expected to improve our understanding of the geologic framework of aquifers, their hydrologic characteristics, water levels in the aquifers and how they change over time in the Nicobar group of Islands.

Based on the findings of aquifer mapping in the Nicobar group of Islands along with its demand – supply scenario at present as well as projected, several management interventions are proposed in the previous discussions. Projected and Modified Freshwater Requirements are summarized in **Table 8.16a**. Proposed management interventions are expected to cut the demand by 45% i.e. by lowering the total demand from 62.13 mcm to 34.58 mcm annually.

Intervention type specific quantitative impacts on water resource are summarized in **Table 8.16b**. It shows that management interventions are oriented more towards augmentation of resource and reuse-recycling of resource. This is to maintain the fine balance of Saline-Freshwater boundary in these islands, which if disturbed may spoil much of fresh water resource.

Table 8.16a Projected and Modified Freshwater Requirement at 2050

Need	Projected Fresh Water Resource Requirement	Management Intervention	Modified Fresh Water Resource Requirement after Management Intervention
	mcm	(Type)	mcm
Drinking & Domestic	33	Augmentation of SW + GW	33
Irrigation	2.63	Crop Modification	1.58
Industrial	26.5	Waste Water Recycling	-Nil-
Total	**62.13**		**34.58**

Table 8.16b Intervention type specific Quantitative Impact on Water Resource

Intervention	Demand Class	Impact on Water Resource			Major Impact on
		Augmented	Load Reduced	Depleted	
		mcm	mcm	mcm	
Reservoir Creation	Drinking & Domestic	20	–	–	SW + GW
Check Dam Creation	Drinking & Domestic	15	–	–	SW + GW
Groundwater Pumping	Drinking & Domestic	–	–	03	GW
Desalination Plant	Drinking & Domestic	Strategic	–	–	Sea Water
Wastewater Recycling	Industrial & Infrastructure	–	26.5	–	SW + GW
Rainwater Harvesting	Drinking & Domestic + Agriculture	0.23	–	–	GW
Other Recharge Initiatives (*eg.* Amrit Sarovar)	Drinking & Domestic + Agriculture	0.01	–	–	GW
Crop Orientation and Drip irrigation	Agriculture	–	1.05	1.58	GW
Total		`			

Most importantly, it's the People's participation that matters in water security in these islands. It is not simply providing water sources. Just because the water is available does not mean that it's being used correctly. This is where the public participation and social awareness come in. There is a need to start educating the communities on how to use water and integrate positive practices. In future scenario of developing prospect of these islands, where more than 60% of people will come to these islands from mainland, will not properly understand or undervalue the water scenario. Hence awareness generation should be the prime aim for successful implementation of all suggested management interventions. Towards this aim Central Ground Water Board (CGWB) organized a People's Participation Program (PIP) in Campbell Bay Area of Great Nicobar Island on 14th March, 2023, graced by Assistant Commissioner, Great Nicobar Sub Division and all Panchayet Pradhans along with villagers and school kids.



Fig. 8.9 People's Participation Program (PIP) in Campbell Bay Area of Great Nicobar Island on 14th March, 2023

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Annexures

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Annexure – 1

Details of Key Observation Wells in Great Nicobar Island

SL no	Well ID	Island	Village	Latitudes	Longitudes	Type	Depth m	Dia m	MP m	Approachability
1	NGN1	Great Nicobar	Joginder Nagar	6.974444444	93.92305556	Dugwell	4.5	2.72	0.45	In Chingen Basti downward to the Boundary before health & wellness centere Chingen Basti.
2	NGN2	Great Nicobar	Joginder Nagar	6.962777778	93.92194444	Dugwell	4	1.75	0.85	Infront of the godown of Shri Sandeep Kalyan, in Joginder Nagar Village WN 05 at the Culvert.
3	NGN3	Great Nicobar	Joginder Nagar	6.957222222	93.91416667	Dugwell	7	2	0.75	10km joginder nagar Inside Betel nut Garden in open space of the Billu (nick name) RHS of the road.
4	NGN4	Great Nicobar	Joginder Nagar	6.960833333	93.92027778	Dugwell	10	6	1.15	Inside the Vijaynagar Senior Secondary School Playground, Jogindar Nagar Village.
5	NGN5	Great Nicobar	Joginder Nagar	6.959444444	93.92277778	Dugwell	7	2	0.9	LHS of the main road, inside the coconut orchid of Shri Sikandi Singh. After Relex Industries pvt limited phase3 (coconut factory) Joginder Nagar.
6	NGN6	Great Nicobar	Joginder Nagar	6.958888889	93.92222222	Dugwell	7	2	0.9	RHS of the main road, inside the coconut orchid of Shri G Balu (care taker). After Relex Industries pvt limited phase3 (coconut factory) Joginder Nagar.
7	NGN7	Great Nicobar	Joginder Nagar	6.955833333	93.91611111	Dugwell	4.5	2	0.72	The well is LHS of the road, before 8km milestone and after beach side road, on Vijaynagar main road., before Clay loading location.
8	NGN8	Great Nicobar	Joginder Nagar	6.958888889	93.92222222	Dugwell	4	2	0.9	LHS of the road when going towards vijaynagar, after 9km milestone Vijay nagar /2km Jogindernagar. The well is downward infront of the Shri Bhupender singh's house after crossed road inside coconut garden. Farmer

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SL no	Well ID	Island	Village	Latitudes	Longitudes	Type	Depth m	Dia m	MP m	Approachability
										name Bhupender singh S/o Sh Jaspal singh.
9	NGN9	Great Nicobar	Joginder Nagar	6.952222222	93.92055556	Dugwell	3.2	2	0.9	DW is located near Jogindernagar beach side, owner Shri. Satnam Singh coconut orchid, when facing sea ward Dw is LHS near Old Bricks Factory.
10	NGN10	Great Nicobar	Joginder Nagar	6.950833333	93.91722222	Dugwell	3.1	2.5	0.1	RHS of the beach when facing seaward Dw is without ring Kacha well, owner Shri. Manjeet Singh S/O Shri Jagjeet Singh. Cement brickss work,M/s Manjeet traders.
11	NGN11	Great Nicobar	Vijay Nagar	6.920555556	93.90611111	Dugwell	7	1.3	0.6	Inside the House of Shri R. Daisy. LHS inside the Coconut Orchid when come from Main road to Vijay Nagar.
12	NGN12	Great Nicobar	Laxminagar	6.892222222	93.88916667	Dugwell	8	2	0.9	Inside the Coconut orchid LHS of the road before Laxminagar Village. Owner Rjaesh Chaddha and Somaru Ram.
13	NGN13	Great Nicobar	Laxminagar	6.887222222	93.89555556	Dugwell	5	1.3	0.6	At the Laxminagar sea beach side, near Sea adjecent to the Nallah.
14	NGN14	Great Nicobar	Laxminagar	6.8875	93.895	Dugwell	6	1.3	0.7	At the Laxminagar sea beach side, adj to te Old house now abondoned after tsunami,near old medical building .
15	NGN15	Great Nicobar	Laxminagar	6.888055556	93.89138889	Dugwell	8	2	1	Inside the Coconut Orchid of Shri Gyanappu, Before Ts make.
16	NGN16	Great Nicobar	Laxminagar	6.888888889	93.89444444	Dugwell	7	1	0.6	On the Bank of sea Laxminagar Old area. DW is inside the coconut orchid of Nawnath patel.
17	NGN17	Great Nicobar	Laxminagar	6.891388889	93.89194444	Dugwell	8	2	1	Inside the Coconut Garden Owner/Farmer of Shri Girish Joshi S/o Lt Shri VK Joshi.
18	NGN18	Great Nicobar	Laxminagar	6.892222222	93.89	Dugwell	8	2	0.4	The DW is inside the Coconut Orchid of Shri Ban Das S/o Mahendra Sabkal. DW s towards Sea.
19	NGN19	Great Nicobar	Laxminagar	6.891666667	93.89	Dugwell	8	2	0.8	Inside the coconut orchid of Shri Ramkrishna Bankar.

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SL no	Well ID	Island	Village	Latitudes	Longitudes	Type	Depth m	Dia m	MP m	Approachability
20	NGN20	Great Nicobar	Laxminagar	6.892777778	93.89083333	Dugwell	6	0.85	0.35	Inside the Coconut Garden of Shri Hanumant Kokere. A small dia DW is situated.
21	NGN21	Great Nicobar	Gandhinagar	6.843888889	93.89222222	Dugwell	4.5	2.3	0.9	At 30 km Gandhinagar village. Opposite to milestone and 6km Laxminagar. RHS of the road inside the house of Md. Rafique desai.
22	NGN22	Great Nicobar	Gandhinagar	6.843611111	93.8925	Dugwell	4	1.25	0.65	After 200 m from 30 km Gandhinagar RHS of the road in the Land of Shri Gangaram & Ashok Singh.
23	NGN23	Great Nicobar	Gandhinagar	6.842222222	93.89277778	Dugwell	2.5	2	0.65	At 30 km Gandhinagar village in the land of Shri Kumar Swami S/O P Kumar Swami.
24	NGN24	Great Nicobar	Gandhinagar	6.836111111	93.89166667	Dugwell	4	5.5	1.1	A Large dia DW is inside the Premises of Agriculture Sub Depot office Gandhinagar. Adj. to Type 2 quarters.
25	NGN25	Great Nicobar	Gandhinagar	6.8375	93.88861111	Dugwell	5	3	0.65	Backside of the Gandhinagar Filter Bed Plant. New DW Constructed near Spring.
26	NGN26	Great Nicobar	Gandhinagar	6.837777778	93.88916667	Dugwell	4	3	0.6	A DW is Backside of the Gandhinagar Church, Adj to the Nallah bearing a check weir.
27	NGN27	Great Nicobar	Shastrinagar	6.816944444	93.89638889	Dugwell	7	5.95	0.95	Inside the Sastrinagar Filter bed (water treatment plant) a large dia well.
28	NGN28	Great Nicobar	Shastrinagar	6.817777778	93.89638889	Dugwell	5	2	0.85	Before filter bed RHS of the road Just Adj to the Coconut Garden, In front of a House.
29	NGN29	Great Nicobar	Shastrinagar	6.808333333	93.88944444	Dugwell	5	2.75	0.85	At 35 km just at the hospital turning LHS of the Trijunction, in front of the house of Sh. Bhupendra Singh.
30	NGN30	Great Nicobar	Shastrinagar	6.808055556	93.88916667	Dugwell	4	1.2	0.6	35.05 km RHS of the road 4 pump fitted in it used for All purpose very clear water.
31	NGN31	Great Nicobar	Shastrinagar	6.806388889	93.88861111	Dugwell	6	2.25	1.05	RHS of the road at Trijunction at Galathia and Indirapoint road inside the coconut orchard of Shri Parsuram Singh.

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SL no	Well ID	Island	Village	Latitudes	Longitudes	Type	Depth m	Dia m	MP m	Approachability
32	NGN32	Great Nicobar	Shastrinagar	6.806388889	93.88833333	Dugwell	5	1.2	0.9	Just at the trijunction corner RHS on Galathia Indirapont road. A small dia DW made by Govt of Agriculture. Used for all.
33	NGN33	Great Nicobar	Shastrinagar	6.806666667	93.88611111	Dugwell	5	1.4	0.65	At Last point of Shastrinagar inside the Coconut Orchard of Shri. Ravindra Nair. 500 m from the trijunction on Galathia Indirapoint road. Clear water.
34	NGN34	Great Nicobar	Govindnagar	7.001111111	93.91138889	Dugwell	4	1.2	0.75	Starting from main road take RHS turn on Govind nagar road. DW is LHS Just 100 m after main road inside the Agriculture Land of Shri. Sukhdev Singh a small dia DW make before TS
35	NGN35	Great Nicobar	Govindnagar	7.001666667	93.91055556	Dugwell	6	1.45	1	RHS on the road inside the Agriculture Land of Shri Bittu Singh.
36	NGN36	Great Nicobar	Govindnagar	7.001666667	93.91027778	Dugwell	5	1.2	0.65	RHS on the road after 50 m from the Bittu singh land a DW is inside the land of Shri Dilip Singh.
37	NGN37	Great Nicobar	Govindnagar	7.001388889	93.90527778	Dugwell	9	1.95	0.85	take RHS and going upward after 22 km Shampon Bast milestone, Adj to the House of Shri Bodhram Kullu Govind nagar Shelter.
38	NGN38	Great Nicobar	Govindnagar	7.000833333	93.90555556	Dugwell	8.5	2	1	Adj to the Shiv temple (Govind Nagar 6km), used for all purpose.
39	NGN39	Great Nicobar	Govindnagar	7.000833333	93.90666667	Dugwell	9	2	0.85	Downward from the Shiv Temple, in the Land of Shri. Sandeep Kerketa. At 6 km Govind Nagar shelter. Return back to Govindnagar main road.
40	NGN40	Great Nicobar	Govindnagar	6.999444444	93.89916667	Dugwell	9	2	1	On the Main road in front of the Health & Wellness center Govind Nagar village.
41	NGN41	Great Nicobar	Govindnagar	6.999444444	93.89527778	Dugwell	10	1.95	0.95	Inside the Land and House of Sh. Tushar Mondal. At 7km LHS of the road 40 m downward from the road.
42	NGN42	Great Nicobar	Govindnagar	6.999722222	93.89888889	Dugwell	6	1.2	0.2	RHS of the road opposite health and wellness center Govindnagar a small dia

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SL no	Well ID	Island	Village	Latitudes	Longitudes	Type	Depth m	Dia m	MP m	Approachability
										well.
43	NGN43	Great Nicobar	Govindnagar	7.000833333	93.89527778	Dugwell	6	1.3	0.95	RHS of the road before 500 m from 7 km Govindnagar at upper side.
44	NGN44	Great Nicobar	Govindnagar	6.998333333	93.98583333	Dugwell	6	1.6	0.6	Opposite to the Pursh Baba poda Niwas and adj. to the field ground. LHS of the road.
45	NGN45	Great Nicobar	Govindnagar	7.000555556	93.9125	Dugwell	3	1.1	0.7	At the starting of the RHS road from main road and backside of the Bus rest shed. All sceap machinery dumped in the land of Shri Dharmveer Sing Bansal. A small dia DW sea ward.
46	NGN46	Great Nicobar	Rajivnagar	7.016944444	93.925	Dugwell	5	1.3	0.8	Adjacent to the Airport gate of INS BAAZ LHS of the army land road, RHS of the gate. Rajivnagar 1km.
47	NGN47	Great Nicobar	Rajivnagar	7.016944444	93.92388889	Dugwell	5	1.9	0.5	Adjacent to the wall of Airport INS BAAZ 2nd well LHS of the road when going towards Army land.
48	NGN48	Great Nicobar	Rajivnagar	7.018333333	93.92416667	Dugwell	6	1.2	0.75	Opposite to the INS BAAZ 2nd well RHS going upward 50-60m inside habitation the DW is in front of the house of Smt Roduliya Ex. Pradhan.
49	NGN49	Great Nicobar	Rajivnagar	7.021944444	93.92583333	Dugwell	5	2	0.55	Inside the Rajeevnagar Machi Basti (Fishery colony) constructed by Shri. Venket Rao.
50	NGN50	Great Nicobar	Campbell bay	7.009444444	93.93388889	Dugwell	5	9	1.1	Large dia DW inside the APWD Workshop Babu lane.
51	NGN51	Great Nicobar	Campbell bay	7.006944444	93.93388889	Dugwell	5	2	0.8	Indiranagar Campbell bay Adj to the house of Mami, backside of Post office after a large dia DW (abandoned). RHS of the road when facing seaward or post office side.
52	NGN52	Great Nicobar	Campbell bay	7.006944444	93.93472222	Dugwell	5	1.2	0.8	LHS of the road when coming from Post office. In front of Skill Development Centre and INPT Guest House road. A square DW

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SL no	Well ID	Island	Village	Latitudes	Longitudes	Type	Depth m	Dia m	MP m	Approachability
53	NGN53	Great Nicobar	Campbell bay	7.004444444	93.93583333	Dugwell	5	6.1	0.75	Large dia DW in front of the gate of Coast Guard jetty Bazar area. Indian coast guard district HQ no 10 Nicobar. Adj to the Panchayat Guest house.
54	NGN54	Great Nicobar	Campbell bay	7.0125	93.92416667	Dugwell	5	10	0.9	Inside INS BAAZ DW1 adj to the Overhead tank and fuel Parking area.
55	NGN55	Great Nicobar	Campbell bay	7.013055556	93.925	Dugwell	3.1	10	0.1	Inside INS BAAZ ward room area
56	NGN56	Great Nicobar	Campbell bay	7.013055556	93.92555556	Dugwell	2.6	1.25	0.05	Inside INS BAAZ at last of ward room area in front of logistic officer room & SATCO
57	NGN57	Great Nicobar	Campbell bay	7.016111111	93.92472222	Dugwell	3.5	1.3	0.2	Inside INS BAAZ campus after air strip the other side on DSC adj to the transformer & adj to the qtr no P/123 block.
58	NGN58	Great Nicobar	Campbell bay	7.0125	93.92916667	Dugwell	3.5	1.3	0.7	LHS from the main road towards AINIDCO shop RHS of the road Purana Machhi Basti.
59	NGN59	Great Nicobar	Campbell bay	7.003055556	93.93555556	Dugwell	4.2	1.2	0.55	Inside the Kamal Basti after Kamal basti primary School RHS turn and DW is LHS. Pump fitted.
60	NGN60	Great Nicobar	Campbell bay	7.001666667	93.93555556	Dugwell	4	1.8	0.85	Inside the Kamal Basti. DW is adj to the house of Sh Etua, RHS of the shop of Gopi Seth.

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Annexure – 2

Field Values for various Parameters measured in Key Observation Wells

Wet: Wet Season (May, 2022)
Dry: Dry Season (March, 2023)

Well ID	Water Level		Water Level		EC		pH		Temperature	
	m bmp	m bgl	m bgl	m bmp	µs/cm				°C	
	Wet	Wet	Dry	Dry	Wet	Dry	Wet	Dry	Wet	Dry
NGN1	1.55	1.1	0.9	1.35	200	226	8.1	9.3	28.1	27.4
NGN2	1.25	0.4	0.4	1.25	800	757	8.3	8.4	30.3	29
NGN3	1.35	0.6	0.8	1.55	160	156	8.7	8.9	29.8	29
NGN4	1.9	0.75	0.55	1.7	290	274	7.8	8.6	31.3	30.4
NGN5	1.72	0.82	0.9	1.8	480	470	7.4	7.5	28.3	27.7
NGN6	1.45	0.55	0.3	1.2	630	600	7.6	7.9	29.5	29.4
NGN7	1.1	0.38	0.83	1.55	240	252	8.4	7.8	29.5	28.7
NGN8	1.2	0.3	0.3	1.2	500	556	8.5	7.7	29.3	29
NGN9	1.65	0.75	0.95	1.85	720	721	8.1	8.7	28.6	27.4
NGN10	1.6	1.5	1.85	1.95	550	597	8.4	9.2	28	29.7
NGN11	4.22	3.62	1.75	2.35	1080	990	7.9	6.7	27.2	26.8
NGN12	3.9	3	2.55	3.45	490	422	8.1	7.1	27.2	28.3
NGN13	1.3	0.7	0.7	1.3	1220	520	9	7.6	30.2	28.1
NGN14	2.1	1.4	1.4	2.1	900	770	8.5	8.9	28.8	27.1
NGN15	2.2	1.2	0.95	1.95	870	833	8.7	9.5	28.5	28.2
NGN16	2	1.4	1.15	1.75	620	588	8.4	8.9	29.5	28.6
NGN17	2.2	1.2	0.35	1.35	580	811	8.5	8	28.7	29.5
NGN18	1.62	1.22	1.3	1.7	590	916	8.4	9.8	29.6	29.6
NGN19	3.1	2.3	2	2.8	490	900	8.5	9.3	28.6	29.2
NGN20	0.7	0.35	0.44	0.79	540	870	8.7	9.6	30	29.3
NGN21	1.6	0.7	1.15	2.05	720	738	7.8	6.5	29.1	27.4
NGN22	1.6	0.95	0.83	1.48	540	588	7.9	7	27.8	27
NGN23	0.98	0.33	1.35	2	120	590	8.3	7	27.3	27.3
NGN24	1.52	0.42	0.65	1.75	220	600	8.5	7.6	30.3	27.5
NGN25	1.4	0.75	0.53	1.18	430	506	8.4	7.9	29.7	29.4
NGN26	0.85	0.25	0.58	1.18	330	530	8.4	8	28.6	28.8
NGN27	4.55	3.6	3.5	4.45	820	450	6.9	7.8	28.5	28
NGN28	2.1	1.25	1.56	2.41	960	380	9	8.9	28.3	29.1
NGN29	3.4	2.55	2.96	3.81	760	858	7.3	6.2	28	28
NGN30	1.5	0.9	1.3	1.9	750	665	8.9	6.2	28.1	28

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Well ID	Water Level		Water Level		EC		pH		Temperature	
	m bmp	m bgl	m bgl	m bmp	µs/cm				°C	
	Wet	Wet	Dry	Dry	Wet	Dry	Wet	Dry	Wet	Dry
NGN31	1.55	0.5	1.05	2.1	710	800	8.5	7.8	28.4	26.5
NGN32	1.75	0.85	1.49	2.39	380	750	8.1	7.9	27.9	27.1
NGN33	1.25	0.6	1.55	2.2	570	520	6.2	5.5	27.3	27
NGN34	1.1	0.35	0.37	1.12	520	490	8.9	8.6	28.7	27.2
NGN35	2.45	1.45	2.5	3.5	260	275	8.6	8.3	28.7	27.2
NGN36	0.85	0.2	0.5	1.15	70	276	8.3	8.4	27.5	26.5
NGN37	1.55	0.7	1.35	2.2	770	801	8.9	9.2	27.1	27.7
NGN38	1.05	0.05	0.75	1.75	510	620	9.3	8.1	30.4	29
NGN39	1.1	0.25	0.35	1.2	530	446	9.2	8	30.1	29.1
NGN40	1.08	0.08	0.8	1.8	500	410	9.1	7.2	29.6	28
NGN41	1.1	0.15	0.05	1	150	157	9.5	7.8	28.8	28.3
NGN42	0.65	0.45	1.25	1.45	350	299	9	6.9	29.5	28.2
NGN43	1.3	0.35	0.15	1.1	320	200	8.9	7.2	30	28.7
NGN44	0.75	0.15	0.65	1.25	240	228	9.3	7.4	28.9	27.9
NGN45	1.1	0.4	1.15	1.85	700	646	8.7	6.7	27.9	29.1
NGN46	0.9	0.1	0.2	1	700	770	9.1	7.6	30.4	29.1
NGN47	0.9	0.4	1	1.5	660	664	8.4	7.4	32.2	29.8
NGN48	1.3	0.55	0.6	1.35	600	676	9.1	8.8	27.7	26.9
NGN49	0.65	0.1	0.22	0.77	550	450	9.1	7.7	32.4	30.1
NGN50	4.3	3.2	1.35	2.45	930	823	9.2	8.9	30.1	30.7
NGN51	1.4	0.6	0.48	1.28	840	710	9.6	8.3	29.6	29.1
NGN52	1.1	0.3	0.85	1.65	810	1000	9.4	7.6	30.1	28
NGN53	0.9	0.15	0.27	1.02	440	380	9.1	7.7	32.2	31
NGN54	1.5	0.6	1.2	2.1	1430	1982	8.7	7.2	30.3	31
NGN55	0.15	0.05	0.45	0.55	4640	3750	9.1	7.8	31.3	31.1
NGN56	1	0.95	1.28	1.33	790	519	8.7	7.6	29.6	27.6
NGN57	0.3	0.1	1.2	1.4	360	1292	8.9	8.7	30.5	28.3
NGN58	1.35	0.65	1.25	1.95	820	785	8.6	8.4	30.5	29.2
NGN59	2	1.45	1.73	2.28	930	880	8.4	8.3	29.4	28.2
NGN60	1.1	0.25	0.85	1.7	740	680	8.5	8.6	30.5	28

2330

Annexure – 3

Lithological logs of Exploratory Wells in Campbell Bay

Govindnagar - I				
Lithology	**Simplified Lithology**	**From**	**To**	**Thickness**
Thin surface soil underlain by claystone, soft, yellowish, with broken shell fragments	Top Soil	0.00	13.10	13.10
Argillaceous sandstone, poorly compacted, dark grey with shell fragments	Sandstone	13.10	22.40	9.30
Claystone, dark grey, soft changing to yellowish colour, with broken shells and muscovite flakes	Mudstone	22.40	27.10	4.70
Claystone, grey, soft, with thin alternations of argillaceous sandstone and ferruginous concretions	Mudstone	27.10	34.40	7.30
Claystone, grey, soft, changing to yellowish grey downward, with shale fragments	Mudstone	34.40	64.10	29.70
Shale, hard, dark grey with thin alternations of quartzitic sandstone	Shale	64.10	80.50	16.40

Note: The borehole was dry; hence abandoned

Govindnagar-II				
Lithology	**Simplified Lithology**	**From**	**To**	**Thickness**
Thin surface soil, broken coral rag and shell fragments and coralline limestone	Coralline Sand	0.00	6.30	6.3
Claystone, soft, grey showing laminations	Mudstone	6.30	12.90	6.6
Argillaceous sandstone, light grey to greenish composed of quartz, feldspar and rock fragments. Some shell fragments are present	Sandstone	12.90	15.60	2.7
Claystone, soft, grey with shell fragments	Mudstone	15.60	24.90	9.3
Siltstone, hard and compact	Sandstone	24.90	27.36	2.46

NOTE

1. Drilling below 27.36 m was not possible by Rotary Rig due to hard formation
2. The borehole was dry and hence abandoned

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Army Land - I				
Lithology	**Simplified Lithology**	**From**	**To**	**Thickness**
Thin top soil and weathered rock fragments in sticky clay	Top Soil	0.00	1.80	1.80
Sandstone very fine to fine grained, loosely compacted, with sparse globular microfossils	Sandstone	1.80	13.10	11.30
Sandstone, medium to fine grained, loosely compacted with granules of quartz and rock fragments, muscovite flakes and abundant globular microfossils	Sandstone	13.10	17.80	4.70
Sandstone, medium to coarse, with microfossils and rock fragments as above, matrix dominantly argillaceous	Sandstone	17.80	41.50	23.70
Claystone, grey, soft with thin laminations of fine to medium grained sandstone loose	Mudstone	41.50	73.60	32.10
Sandstone, loose, fine to medium grained, dark grey, with thin laminations of hard, grey, shale with occasional microfossils	Sandstone	73.60	92.20	18.60
Claystone, dark grey, soft, lumpy	Mudstone	92.20	94.80	2.60
Sandstone, fine to medium grained, loose, with microfossils	Sandstone	94.80	99.50	4.70
Claystone, soft, lumpy, arenaceous	Mudstone	99.50	101.00	1.50

NOTES:

1. A piezometer has been constructed	20.00	40.00	m bgl
screening zones	76.00	81.00	m bgl
	86.00	92.00	m bgl
2. Discharge by air compressor:	<200 lph		
3. Quality:	Good		

Army Land - II				
Lithology	**Simplified Lithology**	**From**	**To**	**Thickness**
Surface soil, yellow underlain by grey, clayey sand with shell fragments	Top Soil	0.00	6.30	6.30
Claystone with thin sandstone laminations, grey, sand fine to medium, composed of rock fragments	Mudstone	6.30	36.20	29.90

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Army Land - II				
Lithology	**Simplified Lithology**	**From**	**To**	**Thickness**
Sandstone, semi-consolidated, fine to medium grained, grey with thin laminations of claystone	Sandstone	36.20	38.80	2.60
Claystone, grey, soft	Mudstone	38.80	48.20	9.40
Sandstone, semi-consolidated, medium to fine grained, grey, with broken shell fragments	Sandstone	48.20	50.20	2.00
Claystone, grey, soft with broken shell fragments	Mudstone	50.20	59.40	9.20

NOTE: The borehole was dry, hence abandoned.

Civil Hospital				
Lithology	**Simplified Lithology**	**From**	**To**	**Thickness**
Clayey top soil with fragments of weathered rock	Top Soil	0.00	3.60	3.60
Claystone, ash grey, soft with thin layers of rock fragments and ferruginous nodules	Mudstone	3.60	40.80	37.20
Siltstone, massive, fine grained, grey	Siltstone	40.80	43.50	2.70
Claystone with shell fragments	Mudstone	43.50	57.40	13.90
Shale dark grey, with fagments of calcareous siltstone	Shale	57.40	66.70	9.30
Claystone, soft with thin black shale bands	Mudstone	66.70	76.00	9.30
Shale, dark grey with ferruginous concretions in the lower part	Shale	76.00	80.66	4.66

NOTE:

1. A piezometer was constructed with	39.00	43.00	m bgl
screens placed at depth ranges	56.00	60.00	m bgl

2333

Power House				
Lithology	**Simplified Lithology**	**From**	**To**	**Thickness**
Surface soil with coral rags and shell fragments	Coralline Sand	0.00	4.80	4.80
Sandy clay, light grey to greenish with broken shell fragments, sand medium to coarse grained with rock fragments	Sandy Clay	4.80	13.00	8.20
Mudstone, sticky, grey with broken shell fragments	Mudstone	13.00	15.00	2.00
Sandstone, soft poorly compacted, greyish to greenish, composed of quartz, feldspar and rock fragments in an argillaceous matrix	Sandstone	15.00	28.95	13.95
Mudstone, greyish to greenish, soft	Mudstone	28.95	31.60	2.65
Sandstone, soft as above	Sandstone	31.60	40.90	9.30
Mudstone, greenish, soft, becoming sandy downwards	Mudstone	40.90	47.55	6.65
Mudstone-sandstone alternations in thin beds	Mudstone	47.55	52.20	4.65
Sandstone, coarse to fine grained, greyish, composed of sub-angular to subrounded grains of quartz, feldspar and rock fragments in argillaceous matrix	Sandstone	52.20	60.50	8.30

E.C. 4503 Micro-mhos/cm at 25° C
Cl: 1259 ppm

Yatrik Saw Mill, Magar Nala				
Lithology	**Simplified Lithology**	**From**	**To**	**Thickness**
Sand, loose, coarse to medium grained, grey, mixed with broken corals, shells and rock fragments	Coralline Sand	0.00	6.50	6.5
Claystone, grey, hand when dry, mixed with shells (gastropods) corals and fine to medium sand	Mudstone	6.50	17.80	11.3
Sandstone, unconsolidated, grey, fine to coarse grained mixed with corals and shale fragments, clayey at the bottom	Sandstone	17.80	25.10	7.3

2334

Yatrik Saw Mill, Magar Nala				
Lithology	**Simplified Lithology**	**From**	**To**	**Thickness**
Claystone, dark grey, soft, mixed with corals and medium sand	Mudstone	25.10	27.10	2
Sandstone, unconsolidated dark grey, fine to medium grained, with broken shells and corals	Sandstone	27.10	31.80	4.7
Claystone, black, soft and sticky	Mudstone	31.80	39.10	7.3
Sandstone, unconsolidated, dark grey, fine grained, clayey at the bottom	Sandstone	39.10	43.70	4.6
Claystone, dark grey, sticky	Mudstone	43.70	53.00	9.3
Soft claystone and fine grained grey sandstone in thin bedded sequence	Mudstone	53.00	60.65	7.65

NOTE:

1. The borehole was unproductive.
2. Electrical Conductivity of the borehole fluid varied from 2000-3333 micro mhos/cm at 25° C
3. The borehole was abandoned.

Magar Nala				
Lithology	**Simplified Lithology**	**From**	**To**	**Thickness**
Top soil, fine sand and silt brownish to greyish broken shales and corals	Coraline Sand	0.00	6.30	6.30
Claystone, soft, grey, lumpy and sticky when wet with broken shells and corals	Mudstone	6.30	8.30	2.00
Siltstone, soft, with clayey inter-laminations, greyish	Siltstone	8.30	12.90	4.60
Claystone, dark grey, soft, with sand size corals	Mudstone	12.90	15.60	2.70
Sandstone, soft, fine to very fine grained, greyish to brownish with small chips of hard, calcareous siltstone in the lower part	Sandstone	15.60	20.20	4.60
Claystone, grey, soft with fine semi consolidated sandstone inter-laminations	Mudstone	20.20	22.20	2.00
Siltstone, semi consolidated, calcareous, greyish white with small, broken coral fragments	Siltstone	22.20	34.20	12.00
Claystone grey, soft with fine semi consolidated sandstone inter-laminations	Mudstone	34.20	43.50	9.30

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Magar Nala				
Lithology	**Simplified Lithology**	**From**	**To**	**Thickness**
Calcareous siltstone, soft, grey, with claystone interlaminations	Siltstone	43.50	50.10	6.60
Claystone, soft, grey with small siltstone granules and laminations	Mudstone	50.10	57.40	7.30
Siltstone, hard, calcareous, alternating with black shale	Siltstone	57.40	63.10	5.70

NOTE:

1. A zone test was conducted between 15-20 m bgl.
2. The discharge was insignificant, E.C.: 1200 micro-mhos/cm at 25° C.
3. The borehole was abandoned.

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Annexure – 4

Chemical Analysis results of selected Key Well Samples in Great Nicobar Island (May, 2022)

Sample no	Well no	Village	Type of sample	Temp	pH	EC	TH	Ca	Mg	Na	K	CO_3	HCO_3	TA	Cl	NO_3	SO_4	F	TDS	Fe
c1	NGN1	Joginder Nagar	DW	28.1	7.2	224.9	120	24	14.6	7.6	12.6	0	134.2	110	24.8	5.8	-BDL-	0.20	179.8	1.06
c2	NGN2	Joginder Nagar	DW	30.3	7.7	634.0	300	66	32.8	18.8	0.4	0	231.8	190	49.6	12.3	45	0.21	378.6	0.35
c3	NGN11	Vijay Nagar	DW	27.2	7.8	661.5	165	36	18.2	83.6	5.3	0	280.6	230	81.5	3.7	-BDL-	0.09	399.6	0.03
c4	NGN12	Laxmi nagar	DW	27.2	7.7	307.0	150	38	13.3	12.5	1.0	0	201.3	165	14.2	3.5	-BDL-	0.19	247.5	0.63
c6	NGN4	Joginder Nagar	DW	28.3	7.9	426.7	180	48	14.6	15.6	0.9	0	201.3	165	28.4	19.4	-BDL-	0.06	255.7	1.57
c7	NGN5	Joginder Nagar	DW	29.5	7.8	158.6	125	20	18.2	18.8	2.9	0	122.0	100	24.8	0.0	36	0.00	210.0	0.46
c9	NGN6	Laxmi nagar	DW	28.8	7.7	553.2	180	38	20.6	83.6	1.7	0	183.0	150	81.5	21.3	51	0.00	453.3	0.23
c10	NGN3	Laxmi nagar	DW	28.5	7.7	734.8	90	26	6.1	77.4	4.0	0	170.8	140	70.9	4.4	-BDL-	0.00	303.9	0.18
c11	NGN14	Laxmi nagar	DW	29.5	7.8	336.4	100	36	2.4	23.5	0.2	0	164.7	135	17.7	0.0	-BDL-	0.00	196.0	0.40
c12	NGN15	Laxmi nagar	DW	28.7	7.7	375.7	90	10	15.8	42.6	1.9	0	158.6	130	35.5	2.6	-BDL-	0.12	224.4	2.25
c13	NGN16	Laxmi nagar	DW	29.6	7.4	336.3	180	42	18.2	12.3	1.9	0	213.5	175	14.2	0.0	2	0.36	221.3	1.03
c14	NGN17	Laxmi nagar	DW	28.6	8.1	487.7	180	62	6.1	46.9	4.7	0	317.2	260	28.4	0.0	-BDL-	0.41	358.1	1.60
c16	NGN18	Gandhinagar	DW	29.1	7.8	340.5	250	38	37.6	15.0	1.7	0	219.6	180	24.8	16.3	30	0.04	311.7	0.69
c17	NGN19	Gandhinagar	DW	27.8	8.0	436.4	175	40	18.2	19.8	6.6	0	225.7	185	39.0	2.0	-BDL-	0.25	288.9	0.18
c18	NGN20	Gandhinagar	DW	27.3	8.0	342.9	205	30	31.6	7.1	1.9	0	164.7	135	31.9	0.0	21	0.29	224.5	0.29
c20	NGN21	Gandhinagar	DW	29.7	7.7	412.8	180	38	20.6	12.8	1.5	0	195.2	160	35.5	0.0	-BDL-	0.00	242.5	0.21
c21	NGN22	Gandhinagar	DW	28.6	7.7	382.8	125	34	9.7	38.9	2.7	0	225.7	185	35.5	0.0	-BDL-	0.00	272.4	0.29
c24	NGN31	Shastri Nagar	DW	28.4	7.9	426.1	175	28	25.5	29.5	0.7	0	250.1	205	31.9	0.0	-BDL-	0.00	282.2	0.26
c25	NGN33	Shastri Nagar	DW	27.3	8.0	437.8	205	50	19.4	16.2	1.8	0	268.4	220	28.4	2.0	5	0.00	306.6	0.72
c26	NGN34	Govind Nagar	DW	28.7	7.8	452.1	180	32	24.3	22.7	2.1	0	170.8	140	35.5	10.2	18	0.83	287.8	0.29
c27	NGN38	Govind Nagar	DW	30.4	7.9	388.7	175	40	18.2	20.2	4.2	0	244.0	200	21.3	5.2	12	0.08	277.6	0.18
c28	NGN40	Govind Nagar	DW	29.6	7.7	142.1	80	16	9.7	32.0	1.3	0	122.0	100	21.3	9.0	16	0.11	179.8	0.35
c30	NGN46	Rajivnagar	DW	30.4	7.7	482.8	200	40	24.3	11.9	3.1	0	244.0	200	31.9	0.0	3	0.89	277.6	0.40
c31	NGN47	Rajivnagar	DW	32.2	7.8	525.7	250	44	34.0	37.5	3.3	0	286.7	235	35.5	6.1	20	0.03	379.5	0.35
c32	NGN50	Campbell bay	DW	30.1	7.9	490.1	200	38	25.5	24.6	2.4	0	213.5	175	49.6	6.0	8	0.25	293.6	0.21

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c33	NGN51	Campbell bay	DW	29.6	7.9	666.5	200	40	24.3	58.9	6.4	0	317.2	260	70.9	4.0	5	0.06	412.0	0.40
c34	NGN54	Campbell bay	DW	30.3	7.8	1081.0	240	42	32.8	56.9	10.3	0	225.7	185	99.3	2.1	15.6	0.03	405.7	0.29
c35	NGN56	Campbell bay	DW	29.6	7.9	473.7	185	38	21.8	29.9	0.2	0	219.6	180	63.8	0.0	5.2	0.02	302.0	0.21
c36	NGN59	Campbell bay	DW	29.6	7.8	441.8	230	40	31.6	43.9	5.2	0	244.0	200	39.0	12.5	53	0.04	383.1	0.09
c37	NGN60	Campbell bay	DW	30.5	8.0	711.8	225	42	29.1	71.7	6.4	0	366.0	300	67.4	18.1	-BDL-	0.09	467.0	0.32
S1		Gandhinagar	Spring	26	8.0	289.4	145	36	13.3	29.8	1.7	0	189.1	155	17.7	7.7	5.6	0.53	236.7	0.60
S3A		Gandhinagar	Spring	26.3	8.0	283.9	210	34	30.3	14.0	2.1	0	176.9	145	31.9	9.0	22.52	-BDL-	260.8	0.83
N1		Laxmi nagar	Nallah	28.8	7.9	148.8	105	16	15.8	10.0	1.7	0	109.8	90	24.8	2.1	10.2	0.02	156.6	0.77
N2		Laxmi nagar	Nallah	28.2	7.8	144.1	85	16	10.9	10.2	2.0	0	103.7	85	21.3	0.0	0.0	-BDL-	132.6	1.43

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Annexure – 5

Chemical Analysis results of selected Key Well Samples in Great Nicobar Island (March, 2023)

Well no	Village	Type of sample	Temp	pH	EC	TH	Ca	Mg	Na	K	CO_3	HCO_3	TA	Cl	NO_3	SO_4	F	TDS
NGN33	Shastrinagar	DW	27.3	6.98	548.5	180	40	19.4	43.51	7.93	0	231.8	190	42.5	-BDL-	0.2	0.2	295.2
NGN21	Gandhinagar	DW	29.1	7.44	733.2	300	76	26.7	17.61	3.02	0	317.2	260	31.9	3.83	0.05	0.23	352.8
NGN12	Laxmi nagar	DW	27.2	7.15	445.8	210	38	27.9	9.96	4.62	0	244	200	17.7	-BDL-	0.81	0.09	248.0
NGN11	Vijaynagar	DW	27.2	7.06	1077	210	52	19.4	83.13	2.21	0	384.3	315	63.8	2.73	0.33	0.46	458.5
NGN5	Jogindernagar	DW	28.3	7.29	481	190	32	26.7	30.02	3.9	0	231.8	190	31.9	-BDL-	0.52	0.11	266.6
NGN46	Rajivnagar	DW	30.4	7.19	768.2	195	60	10.9	36.5	8.93	0	341.6	280	35.5	2.29	0.18	0.13	362.8
NGN52	Campbell Bay	DW	26.2	6.99	1162	235	54	24.3	109.57	2.06	0	427	350	109.9	0.39	0.11	0.2	561.0
S1	Gandhinagar	Spring	26	7.58	445	170	22	27.9	21.54	10.9	0	244	200	28.4	-BDL-	0.73	0.1	260.4

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Annexure – 6

Soil Infiltration Test observations in Great Nicobar Island

Jogindernagar		Govindnagar	
Time	Depth	Time	Depth
min	cm	min	cm
0	34	0	30
2	33.8	2	28.8
4	33.7	4	27.2
6	33.6	6	25.9
11	33.49	8	24.6
16	33.41	10	23.7
21	33.35	12	22.8
26	33.29	14	22
36	33.19	16	21.2
46	33.11	18	20.4
56	33.05	20	19.5
		25	18.4
		30	16.9
		35	15.4
		40	14.5
		45	13.6
		50	12.7
		55	11.8
		60	11.3
		65	10.5
		70	10.1
		75	9.7
		80	9.3
		90	8.7
		100	8
		110	7.3
		120	6.9

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Annexure – 7

Water level Recovery Test observations in Great Nicobar Island

A. Large diameter APWD Dug-well at Campbell Bay

APWD Dug well				
Depth	7.90 m bmp		M.P	1.16 m abg
Diameter	9.0 m		Aquifer	Fine SSt, soft, Mithakhari Gp
Date	**10.12.1986**		Time	in Minutes
Time in Hours	**Time since Pumping started**	**D.T.W (in m bmp)**	**Drawdown (m)**	**Remarks**
9:25:00 AM	-	4.707	-	S.W.L
9:55:00 AM	30	4.802	0.095	Pumping started at 09:25 hrs.
10:25:00 AM	60	4.875	0.168	
10:55:00 AM	90	4.943	0.236	Pumping stopped at 10:55 hrs.
Time in Hours	**Time since Pumping stopped**	**D.T.W (in m bmp)**	**R.D.D. (m)**	**S1/S2**
10:57:00 AM	2	4.945	0.238	-
11:00:00 AM	5	4.944	0.237	-
11:05:00 AM	10	4.929	0.222	1.063
11:11:00 AM	16	4.935	0.228	-
11:17:00 AM	22	4.928	0.221	1.067
11:30:00 AM	35	4.915	0.212	1.113
11:45:00 AM	50	4.913	0.206	1.145
12:00:00 PM	65	4.906	0.199	1.185
2:10:00 PM	195	4.857	0.15	1.573
2:30:00 PM	215	4.85	0.143	1.65
2:48:00 PM	233	4.842	0.135	1.748
3:05:00 PM	240	4.84	0.133	1.774
3:20:00 PM	255	4.823	0.116	2.034
3:50:00 PM	285	4.822	0.115	2.052
4:15:00 PM	310	4.811	0.104	2.269

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4:20:00 PM	315	4.809	0.102	2.31
4:45:00 PM	340	4.802	0.095	2.484
5:00:00 PM	355	4.796	0.089	2.651
5:15:00 PM	370	4.79	0.083	2.843
Repeat Test				
Date	**11.12.1986**			
Time in Hours	**Time since Pumping started**	**D.T.W (in m bmp)**	**Drawdown (m)**	**Remarks**
9:20:00 AM	-	4.58	-	Pump started at 09:20 hrs.
12:20:00 PM	180	5.03	0.45	Pump stopped at 12:20 hrs.
Time in Hours	**Time since Pumping stopped**	**D.T.W (in m bmp)**	**R.D.D. (m)**	**S_1/S_2**
12:21:00 PM	1	5.028	0.448	1.004
12:23:00 PM	3	5.025	0.445	1.011
12:25:00 PM	5	5.019	0.439	1.025
12:31:00 PM	11	5.027	0.435	-
12:35:00 PM	15	5.009	0.429	1.048
12:50:00 PM	30	4.99	0.41	1.09
1:10:00 PM	50	4.988	0.4	1.125
2:17:00 PM	117	4.947	0.367	1.226
2:30:00 PM	130	4.942	0.362	1.243
3:00:00 PM	160	4.932	0.352	1.278
3:30:00 PM	190	4.92	0.34	1.323
4:00:00 PM	210	4.907	0.327	1.376
4:30:00 PM	240	4.893	0.313	1.437
5:00:00 PM	270	4.886	0.306	1.47
5:20:00 PM	290	4.88	0.3	1.5
Date	**12.12.1986**			
7:00:00 AM	1120	4.666	0.086	5.23
7:20:00 AM	1140	4.66	0.08	5.62

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B. Large diameter Dug-well at APWD PWSS Campbell Bay

Depth	6 m bmp		M.P	0.46 m
Diameter	7.75 m		Aquifer	Coralline sand over Mithakhari Group
GeoRef.	7.0115467 N 93.919635 E		Pump	5 HP
Time	in Minutes		Delivery pipe	3inch
Pre pumping SWL	2.09 m bmp			
Date	16.03.2023			
Time in Hours	**Time since Pumping started**	**D.T.W (in m bmp)**	**Drawdown (m)**	**Remarks**
07:30 AM	0	2.09	0	
	90	1.95	0.14	
	150	1.75	0.34	
11:05 AM	215	1.58	0.51	
Time in Hours	**Time since Pumping stopped**	**DTW (in m bmp)**	**R.D.D. (m)**	**S_1/S_2**
11:05 AM	0	1.58	3.42	
	2	1.64	3.36	1.018
	4	1.65	3.35	1.021
	6	1.66	3.34	1.024
	8	1.66	3.34	1.024
	10	1.67	3.33	1.027
	12	1.68	3.32	1.030
	14	1.69	3.31	1.033
	16	1.7	3.3	1.036
	18	1.71	3.29	1.040
	20	1.72	3.28	1.043
	25	1.75	3.25	1.052
	30	1.79	3.21	1.065
	35	1.82	3.18	1.075
	40	1.86	3.14	1.089
	45	1.9	3.1	1.103
	50	1.92	3.08	1.110

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	55	1.94	3.06	1.118
12:05 AM	60	1.97	3.03	1.129
	70	2.01	2.99	1.144
	80	2.04	2.96	1.155
	90	2.07	2.93	1.167
	100	2.1	2.9	1.179
	110	2.14	2.86	1.196
01:05 PM	120	2.18	2.82	1.213
	130	2.21	2.79	1.226

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Annexure – 8

Island-wise – Habitation-wise Drinking Water Supply Status in Nicobar District

Sl.	Island	Habitation Name	HH	Pop	Req. (LPCD)	Planned Supply (m^3)	Dug well	Infiltration Well	Nallah	Spring	Pond	Rain Water	Pvt. DW	SW Source Name
1	Car Nicobar	Arong	233	1194	150.75	180	2	0	0	0	0	0	0	
2	Car Nicobar	Big Lapati	271	1098	182.15	200	1	0	0	0	0	0	0	
3	Car Nicobar	Chuckchucha	231	1021	121.45	124	1	0	0	0	0	0	0	
4	Car Nicobar	IAF Camp	31	731	136.80	100	1	0	0	0	0	0	2	
5	Car Nicobar	Kakana	231	841	188.80	159	2	0	0	0	0	0	0	
6	Car Nicobar	Kimois	92	382	196.34	75	1	0	0	0	0	0	0	
7	Car Nicobar	Kinmai	152	574	174.22	100	1	0	0	0	0	0	0	
8	Car Nicobar	Kinyuka	309	1120	156.25	175	1	0	0	0	0	0	0	
9	Car Nicobar	Malacca	368	1637	111.79	183	1	0	0	0	0	0	0	
10	Car Nicobar	Mus	365	1553	135.22	210	1	0	0	0	0	0	0	
11	Car Nicobar	Perka	711	2527	197.86	500	1	0	0	0	0	0	0	
12	Car Nicobar	Sawai	286	1247	192.46	240	1	0	0	0	0	0	0	
13	Car Nicobar	Small Lapati	242	938	159.91	150	1	0	0	0	0	0	0	
14	Car Nicobar	Tamaloo	379	1515	115.51	175	1	0	0	0	0	0	0	
15	Car Nicobar	Tapoiming	214	941	116.90	110	1	0	0	0	0	0	0	
16	Car Nicobar	Teetop	135	522	191.57	100	1	0	0	0	0	0	0	
17	Great Nicobar	7 Km Farm	37	141	190.00	27	0	0	1	0	0	0	0	Chingam Nallah
18	Great Nicobar	Campbell Bay	1608	5736	102.86	590	2	0	2	0	0	0	0	Magar Nallah (02 Sources)
19	Great Nicobar	Chingen	3	12	191.67	2	0	0	1	0	0	0	0	Chingam Nallah
20	Great	Govinda	194	676	143.49	97	0	0	0	1	0	0	0	

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Sl.	Island	Habitation Name	HH	Pop	Req. (LPCD)	Planned Supply (m^3)	Dug well	Infiltration Well	Nallah	Spring	Pond	Rain Water	Pvt. DW	SW Source Name
	Nicobar	Nagar												
21	Great Nicobar	Gandhi Nagar	13	69	144.93	10	0	0	1	0	0	0	0	Gandhi Nagar Nallah
22	Great Nicobar	Joginder Nagar	208	693	173.16	120	0	0	1	0	0	0	0	Prem Bahadur Nallah
23	Great Nicobar	Laxmi Nagar	13	230	108.70	25	0	0	1	0	0	0	0	Laxmi Nagar Nallah
24	Great Nicobar	Sastri Nagar	6	15	200.00	3	1	0	0	0	0	0	0	
25	Great Nicobar	Vijoy Nagar	12	100	10.00	1	1	0	0	0	0	0	0	
26	Little Nicobar	Afra Bay	2	10	1.00	0	1	0	0	1	0	0	0	
27	Little Nicobar	Makhahu Or Makachua	17	47	106.38	5	1	0	0	1	0	0	0	
28	Little Nicobar	Pulloullo Or Puloulo	16	81	135.80	11	1	0	1	0	0	0	0	
29	Little Nicobar	Pulobha Or Pulobahan	6	52	10.00	1	1	0	0	0	0	0	0	
30	Little Nicobar	Pulomilo	5	29	1.00	0	0	0	1	0	0	0	0	
31	Little Nicobar	Pulopanja	16	75	200.00	15	1	0	1	0	0	0	0	
32	Chowra	Alhiata	59	190	1.00	0	0	1	0	0	0	1	0	
33	Chowra	Chongkamong	38	150	10.00	2	0	1	0	0	1	0	0	
34	Chowra	Kuitasuk	77	277	10.00	3	0	1	0	0	0	0	0	
35	Chowra	Raihio N	74	276	1.00	0	0	1	0	0	0	1	0	
36	Chowra	Tahaila	119	377	10.00	4	0	1	0	0	0	1	0	
37	Kamorta	Alukian Or Alhukheck	10	46	10.00	0	0	10	0	0	0	0	0	
38	Kamorta	Berainak Or	38	188	194.68	37	1	10	0	0	0	0	0	

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Sl.	Island	Habitation Name	HH	Pop	Req. (LPCD)	Planned Supply (m^3)	Dug well	Infiltration Well	Nallah	Spring	Pond	Rain Water	Pvt. DW	SW Source Name
		Badnak												
39	Kamorta	Changua Or Changup	36	146	10.00	1	0	10	0	0	0	0	0	
40	Kamorta	Chota Inak	42	237	118.14	28	1	10	0	0	0	0	0	
41	Kamorta	Daring	27	115	10.00	1	0	10	0	0	0	0	0	
42	Kamorta	Kakana	71	270	185.19	50	1	10	0	0	0	0	0	
43	Kamorta	Kamorta Kalatapu	513	1815	188.86	343	0	10	0	2	0	0	0	Reservoir (02 nos.)
44	Kamorta	Munak Incl Ponioo	24	117	192.31	23	1	10	0	0	0	0	0	
45	Kamorta	Payuha	5	24	166.67	4	1	10	0	0	0	0	0	
46	Kamorta	Pilpilow	62	282	146.27	41	2	10	0	0	0	0	0	
47	Kamorta	Ramzoo	23	98	10.00	1	0	10	0	0	0	0	0	
48	Kamorta	Vikas Nagar	48	235	193.62	46	1	10	0	0	0	0	0	
49	Katchal	Mildera	403	1350	92.59	125	1	0	0	0	0	0	0	
50	Nancowry	Al Hit Touch Or Balu Basti	59	19	1.00	0.0	1	1	0	0	0	0	0	
51	Nancowry	Alteak	8	30	200.00	6	1	0	0	0	0	0	0	
52	Nancowry	Champin	33	143	139.86	20	1	0	0	0	0	0	0	
53	Nancowry	Hitui or Itoi	41	181	191.71	35	1	0	0	0	0	0	0	
54	Nancowry	Malacca	35	158	10.00	2	1	0	0	0	0	0	0	
55	Nancowry	Tapong and Kabila	62	271	134.81	37	1	0	0	0	0	0	0	
56	Theresa	Aloorang	68	271	10.00	3	1	0	0	0	0	0	0	
57	Theresa	Bengali	150	354	10.00	4	1	0	0	0	0	0	0	
58	Theresa	Chukmachi	69	237	10.00	2	1	0	0	0	0	0	0	
59	Theresa	Enam	56	223	10.00	2	1	0	0	0	0	0	0	

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Sl.	Island	Habitation Name	HH	Pop	Req. (LPCD)	Planned Supply (m^3)	Dug well	Infiltration Well	Nallah	Spring	Pond	Rain Water	Pvt. DW	SW Source Name
60	Theresa	Kalasi	78	335	10.00	3	1	0	0	0	0	0	0	
61	Theresa	Kanahinot	15	60	10.00	1	1	0	0	0	0	0	0	
62	Theresa	Luxi	59	149	1.00	0	1	0	0	0	0	0	0	
63	Theresa	Minyuk	76	305	1.00	0	1	0	0	1	0	0	0	
	Total		**8884**	**34736**		**4512**	**50**	**126**	**10**	**6**	**1**	**3**	**2**	

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Annexure – 9

Identified Geo-electrical Layers with layer resistivity and thickness in Great Nicobar Island

A. Layer Properties

VES ID	VES Locations	Latitude	Longitude	R1	H1	R2	H2	R3	H3	R4	H4	R5	H5	R6
				Ohm-m	m	Ohm-m	m	Ohm-m	m	Ohm-m	m	Ohm-m	m	
VES1	Rajiv Nagar-1	93.927112	7.023832	9.4	4.5	1.39	8.73	4.3	42	1878				
VES2	Rajiv Nagar-2	93.925222	7.0215	11.4	1.2	3.4	2.7	7.4	6	3.2	20	13.9		
VES3	Army Land 1	93.9116111	7.017639	37	3.2	28	16.1	7.4	30.9	66.3				
VES4	Army Land 2	93.913556	7.018944	20	13.6	49.2	20.9	0.06						
VES5	INS Baaz	93.9177889	7.011856	60.7	5.5	2.15	11.5	5177						
VES6	Govindnagar-1	93.888762	7.002027	19.1	2.3	146	5.1	2	12.2	1898				
VES7	Govindnagar-2	93.89958	6.999558	29.8	3.2	8	13.1	2.1	24.2	71.7				
VES8	Govindnagar-3	93.909852	7.000549	58.1	1.2	173	2.9	32.4	13	2.2	31.3	15.7		
VES9	Govindnagar-4	93.886972	6.866083	1024	0.7	60.5	3.5	8.7	21.7	1.7	39.2	15.8		
VES10	Jogendernagar-1	93.9191111	6.9521111	167	1.6	622	3.2	48.5	15	4.7	31.7	1042		
VES11	Jogendernagar-2	93.920083	6.960861	73.6	1	27.3	2.8	95.2	6.3	1.5				
VES12	Jogendernagar-3	93.920083	6.960861	0.9	0.6	148	19.5	2						
VES13	Viajynagar-1	93.903861	6.924833	11.3	0.7	2.1	1.8	23.3	4	3.2	9.7	33.6		
VES14	Vijaynagar-2	93.893556	6.925278	85.2	5.71	12.5	16.5	2833						
VES15	Laxminagar-1	93.885504	6.89242	127	2.3	52.1	10.7	31.4						
VES16	Laxminagar-2	93.890539	6.889274	123	6.5	27	19.5	2.84						
VES17	Laxminagar-3	93.895847	6.888185	119	3.3	4.4	22.4	0.016						
VES18	Gandhinagar-1	93.894358	6.841442	387	3	26.6								
VES19	Gandhinagar-2	93.89171	6.839447	29	1.2	19.3	2.5	42	5.3	21.9	23.8	8.9	23.8	50.1

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VES ID	VES Locations	Latitude	Longitude	R1	H1	R2	H2	R3	H3	R4	H4	R5	H5	R6
				Ohm-m	m	Ohm-m	m	Ohm-m	m	Ohm-m	m	Ohm-m	m	
VES20	Gandhinagar-3	93.889694	6.839056	108	1.3	33.7	3.2	126	6.49	31.9	39.5	5.73		
VES21	Gandhinagar-4	93.886972	6.866083	56.2	1.2	122	5.3	59.5	23.8	26.7	50.1	3.6		
VES22	Shastrinagar-1	93.88816	6.806561	40.1	0.8	15	2	75.8	5.1	0.4	10.8	5.3		
VES23	Shastrinagar-2	93.886957	6.806776	28.9	4.2	6.1	23.3	0.85	47.7	7.9				
VES24	Shastrinagar-3	93.895058	6.816037	13.3	1.7	5.2	3.1	34.7	6.3	4.2	77.8	0.13		

B Inferred Layer Lithology

VES ID	Inferred Lithology					
	R1	R2	R3	R4	R5	R6
VES1	Top Soil	Weathered Formation(Clayey)	Clay	Compact Formation		
VES2	Top Soil	Weathered Formation(Clayey)	Clay	Clay/Brackish Formation	Fine Grained Sand with Fresh Water	
VES3	Top Soil	Medium Grained Sand with Fresh Water	Clay	Medium to Coarse Grained Sand with Fresh Water		
VES4	Top Soil	Medium Grained Sand with Fresh Water	Sand Formation saturated with Saline Water			
VES5	Top Soil	Clay	Compact Formation			
VES6	Top Soil	Weathered Formation (Gravelly)	Clay	Compact Formation		
VES7	Top Soil	Clay	Clay	Sand Formation saturated with Fresh		

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VES ID	Inferred Lithology					
	R1	R2	R3	R4	R5	R6
				Water		
VES8	Top Soil	Coral Sand	Medium Grained Sand with Fresh Water	Sand Formation saturated with Brackish Water	Fine Grained Sand with Fresh Water	
VES9	Top Soil	Coral Sand	Clay	Sand Formation saturated with Brackish Water	Fine Grained Sand with Fresh Water	
VES10	Top Soil	Weathered Formation	Medium to Coarse Grained Sand with Fresh Water	Clay/Brackish Formation	Compact Formation	
VES11	Top Soil	Fine to Medium Grained Sand with Fresh Water	Coarse Grained Sand with Fresh Water	Brackish Formation		
VES12	Top Soil	Coarse Grained Sand with Fresh Water	Brackish Formation			
VES13	Top Soil	Clay	Medium Grained Sand with Fresh Water	Clay/Brackish Formation	Medium Grained Sand with Fresh Water	
VES14	Top Soil	Sand Formation saturated with Fresh Water	Compact Formation			
VES15	Top Soil	Weathered Formation	Medium Grained Sand with Fresh Water			
VES16	Top Soil	Medium Grained Sand with Fresh Water	Sand with Brackish water			
VES17	Top Soil	Clay/Sand with Brackish water	Sand Formation saturated with Saline Water			

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VES ID	Inferred Lithology					
	R1	R2	R3	R4	R5	R6
VES18	Top Soil	Medium Grained Sand with Fresh Water				
VES19	Top Soil	Fine Grained Sand with Fresh Water	Medium to Coarse Grained Sand with Fresh Water	Medium Grained Sand with Fresh Water	Clay/Brackish Formation	Coarse Grained Sand with Fresh Water
VES20	Top Soil	Medium Grained Sand with Fresh Water	Medium to Coarse Grained Sand with Fresh Water	Medium Grained Sand with Fresh Water	Clay	
VES21	Top Soil	Weathered Formation (Gravelly)	Medium to Coarse Grained Sand with Fresh Water	Medium Grained Sand with Fresh Water	Brackish Formation	
VES22	Top Soil	Fine Grained Sand with Fresh Water	Medium to Coarse Grained Sand with Fresh Water	Brackish Formation	Clay	
VES23	Top Soil	Sand with Brackish water	Sand with Brackish water	Clay		
VES24	Top Soil	Clay	Medium Grained Sand with Fresh Water	Clay	Saline Formation	

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REPORT ON
SUSTAINABLE MANAGEMENT OF WATER RESOURCES IN PORT BLAIR URBAN AREA, SOUTH ANDAMAN DISTRICT, ANDAMAN & NICOBAR ISLANDS

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FOREWORD

The Phase-II programme of the National Aquifer Mapping and Management project started during the Annual Action Plan 2023-24 with various themes following the NAQUIM 2.0 Toolkit of the Central Ground Water Board, Ministry of Jal Shakti. Under the theme 'Urban Agglomerates', a detailed study with a multidisciplinary approach in R&D mode covering an area of 42 sq. km within Port Blair City, the headquarters of the Union Territory of Andaman and Nicobar Islands. As Port Blair was facing the problem of water scarcity, a detailed analysis of water supply and demand was carried out to design a comprehensive scenario for managing the aquifers on the supply and demand side.

An important finding of the study is that the construction of structures for water conservation and managed aquifer recharge, such as ponds and check weirs will be more beneficial than groundwater extraction structures like large-diameter dug wells and bore wells. The results of the study were submitted to the Andaman administration as a special report to alleviate the problem of water scarcity.

The findings of the study were presented to the National Level Expert Committee (NLEC) chaired by the Chairman of CGWB in April 2024. The salient findings and results of the study were highly appreciated by the Chairman, CGWB and the expert members of the NLEC. The Andaman administration has been requested to follow the recommendations of the CGWB to alleviate the problem of water scarcity in the Port Blair urban area.

This report is the outcome of the efforts of a team of hydrogeologists, geophysicists, chemists and hydrometeorologists led by Debasish Bagchi, Scientist-D. I hope the report will serve as a valuable guide to the government organizations, policy makers, NGOs and others working in the water sector for sustainable aquifer management with area-specific recommendations.



(Dr. Anadi Gayen)
Regional Director

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EXECUTIVE SUMMARY

During the Annual Action Plan: 2023-24 of Central Ground Water Board, Eastern Region, Kolkata, a study area of 42 km^2 study area was allocated under Phase-II of the National Project on Aquifer Mapping and Management (NAQUIM 2.0) in the urban agglomeration of Port Blair City, South Andaman district, Union Territory of Andaman and Nicobar Islands. After a detailed hydrogeological survey, 230 key observation wells were established in 24 Municipal Wards in Port Blair City. From April 2023 to March 2024, 16 groundwater monitoring wells were monitored monthly. During the study, 252 groundwater samples were collected and analyzed at the regional laboratory of CGWB, ER, Kolkata. Seventy-three samples (pre-monsoon: 38 and post-monsoon: 35) were analyzed for bacteriological contamination (as total coliforms) by the Regional Medical Research Centre, Port Blair. Twenty-two vertical electrical soundings (VES) were conducted to assess the feasibility of constructing bore wells in the area. Pumping tests were conducted in the large-diameter water supply wells. Monthly rainfall data and total evapotranspiration (TET) from 2000 to 2023 were analyzed and climatological models were used to predict rainfall and change in TET pattern from 2024 to 2030. To assess the problem of water scarcity in the area, the water supply potential of dug wells, bore wells, ponds, and check weirs was evaluated. The results were used to analyze the supply and demand side components from an aquifer management perspective.

Maps of groundwater table contours show the delineation of recharge and discharge areas near Port Blair City, both during pre-monsoon and post-monsoon 2023. The analysis of groundwater table contours has revealed that a localized groundwater discharge zone exists in the northern, northeastern, southwestern, eastern, southern, and southeastern parts of the Port Blair urban area. Zones of groundwater discharge where the construction of bore wells and dug wells would be more feasible are located in ward number 3, 5, 8, 11, 12, 15, 16, 17, 18, 20, 21, 22, and 23. Based on the monthly monitoring data from April 2023 to March 2024, hydrographs were generated for all 16 groundwater monitoring wells, which are large-diameter dug wells tapping the phreatic aquifer. The analysis of the data on the depth of water level in the monitoring wells showed that 69% of the wells show an increasing trend in the pre-monsoon season, while 31% show a decreasing trend. In the post-monsoon season, 50% of the wells showed a rising trend, while another 50% of the

wells showed a declining trend. The time-averaged trend analysis shows that 56% of the wells showed a rising trend in groundwater level while the remaining 44% showed a declining trend. The analysis of in-situ storage of 25 large-diameter dug wells in the post-monsoon season shows that 16 wells (64% of the total) have recorded an increase in groundwater storage compared to the pre-monsoon season, which should be the norm. However, the decrease in in-situ groundwater storage in 9 dug wells (36% of the total) is attributed to extensive use in the post-monsoon season as a result of low rainfall in the winter season. In the pre-monsoon season, the cumulative in-situ groundwater storage was estimated to be 437.80 m^3. In post-monsoon, the cumulative storage increased to 515.40 m^3, representing a 118% increase in the storage volume of groundwater. This indicates that the extent of groundwater-based water supply in Port Blair City is better in the post-monsoon season (November to March) than in the pre-monsoon season (March-May) when the problem of water scarcity was a major challenge in Port Blair.

Geophysical, ground hydrogeological surveys and terrain analysis have revealed that 7 dug wells, 7 bore wells, 12 ponds, and 10 check weirs are feasible for water resource augmentation. The supply potential is estimated at 12.84 million litres per day (MLD). Considering the government database on resident and floating population and guidelines under the *Jal Jeevan Mission – Har Ghar Jal*, the daily water requirement was estimated at 9.80 MLD. This indicates a surplus water supply of 3.04 MLD in the Port Blair urban area, provided recommended guidelines on the design and construction of the structures are followed. Basic hydrochemical analysis, heavy metal analysis, and iron analysis show that groundwater is suitable for drinking. Bacteriological analysis shows that the majority of samples (70%) are contaminated. This is attributed to secondary contamination as a result of long-term storage (2-3 days) due to scarcity of drinking water in the city area, which was also reported by Port Blair Municipal Council. The estimated daily water supply from the proposed bore wells and dug wells (groundwater extraction structures) is 1.33 MLD, while the estimated daily supply from the ponds and check weirs (water conservation and artificial recharge structures) is 11.51 MLD. Thus, the combined water supply potential of ponds and check weirs is about nine times higher than the combined supply potential of dug wells and bore wells. The problem of water scarcity in the study area can therefore be largely solved by conserving water resources through surface storage and the controlled recharge of

aquifers through the check weirs. Groundwater abstraction and supply would not be very effective in tackling the drinking water crisis in Port Blair City.

Supply-side management of aquifers includes water conservation and surface recharge through active and abandoned dug wells. The potential for conservation and augmentation of water resources through ponds, rooftop rainwater harvesting, and managed aquifer recharge through check weirs was assessed based on an integrated hydrogeological-geophysical study. Demand-side management of groundwater should focus on commercial enterprises to optimize the use, regulation, and management of the resources. Climatological modelling of satellite data shows that there is no trend of increase or decrease in rainfall (RF) in the Port Blair urban area. The seasonal analysis of total evapotranspiration (TET) shows a positive trend in winter and pre-monsoon but no trend in monsoon and post-monsoon. The analysis of RF and TET shows that groundwater recharge occurs between April and December. The projected RF (2024-2030) is lower than the observed RF (2000-2023) during the pre-monsoon and post-monsoon. In winter and post-monsoon seasons, the projected rainfall is higher than the observed RF, indicating an absence of climate change impact by 2030.

A sample survey was conducted in selected households on 16 parameters on water supply profile, importance of rainwater harvesting, and awareness of health and sanitation. Due to the general lack of awareness among the residents about the conservation and sustainable management of water resources, a staggering 92% of the respondents were 'not concerned' about the importance of sustainability of drinking water sources. Although the responses varied widely, a more detailed socio-economic survey across all 24 municipal wards of the Port Blair urban area is required for a holistic assessment of the issues and challenges of sustainable management of water resources.



(Debasish Bagchi)
Scientist-D
and Team Leader, NAQUIM 2.0

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1. INTRODUCTION

The National Aquifer Mapping and Management Programme (NAQUIM) was launched in 2012 by the Central Ground Water Board (CGWB) as per the recommendations of the report of the Steering Committee on Water Resources and Sanitation in the Twelfth Five Year Plan (2012-2017) of the Planning Commission. NAQUIM (later renamed as NAQUIM 1.0) was launched with the objective of delineating and characterizing the aquifers and preparing an aquifer management plan at district and block levels. The mapping of aquifers at the national level at a scale of 1:50,000 was considered sufficient for the planning requirements up to the block level.

Although some of the results of NAQUIM 1.0, such as the preparation of aquifer management plans at the block level, were partially useful for sustainable groundwater management, there was a lack of large-scale implementation of the recommendations at the soil level by the user organizations. As a follow-up project to NAQUIM 1.0, NAQUIM 2.0 was launched in April 2023, retaining several sub-themes as per the guidelines of the Ministry of Jal Shakti. In the Port Blair Urban Area (PBUA), the NAQUIM 2.0 study on 'Urban agglomeration' was conducted in the city of Port Blair covering an area of about 42 km^2.

1.1 Overview of Port Blair City

Port Blair is the capital and the largest city of the Union Territory of Andaman and Nicobar Islands. It is also the headquarters of the South Andaman district. The city serves as a base for visiting the Andaman and Nicobar Islands and is connected to mainland India by air and sea. In 1789, the Bengal government established a penal colony on Chatham Island in the southeastern bay of Great Andaman and named it Port Blair in honour of Archibald Blair of the British East India Company. As the Indian independence movement continued to grow in the late 19^{th} Century, the Cellular Jail was built between 1896 and 1906 to house Indian convicts, mostly political prisoners, in solitary confinement. From 1943 to 1944, Port Blair served as the headquarters of the Azad Hind government under Netaji Subhas Chandra Bose.

Although Port Blair was affected by the 2004 Indian Ocean earthquake and tsunami, it survived sufficiently to serve as a base for relief operations in the islands. According to published government data, Port Blair City had a population of 100,608 (Census, 2011). Males constituted 52.92% (53,247) of the total population while females constituted 47.07%

(47,361) of the total population. The proportion of children (under six years of age) in the total population was 9.3% (Census, 2011).

The study area falls under Survey of India Toposheet No. 87A/10 and 87A/14 and is covered by 24 urban wards of Port Blair Municipal Council (PBMC). The PBMC is a municipal body which came into existence on October 2, 1957 after the assent of the President of India to the Andaman and Nicobar Islands (Municipal Board's) Regulation Act. The base map of the study area is shown in **Fig. 1.1.** A Google Earth map of the area is shown in **Fig. 1.2.**

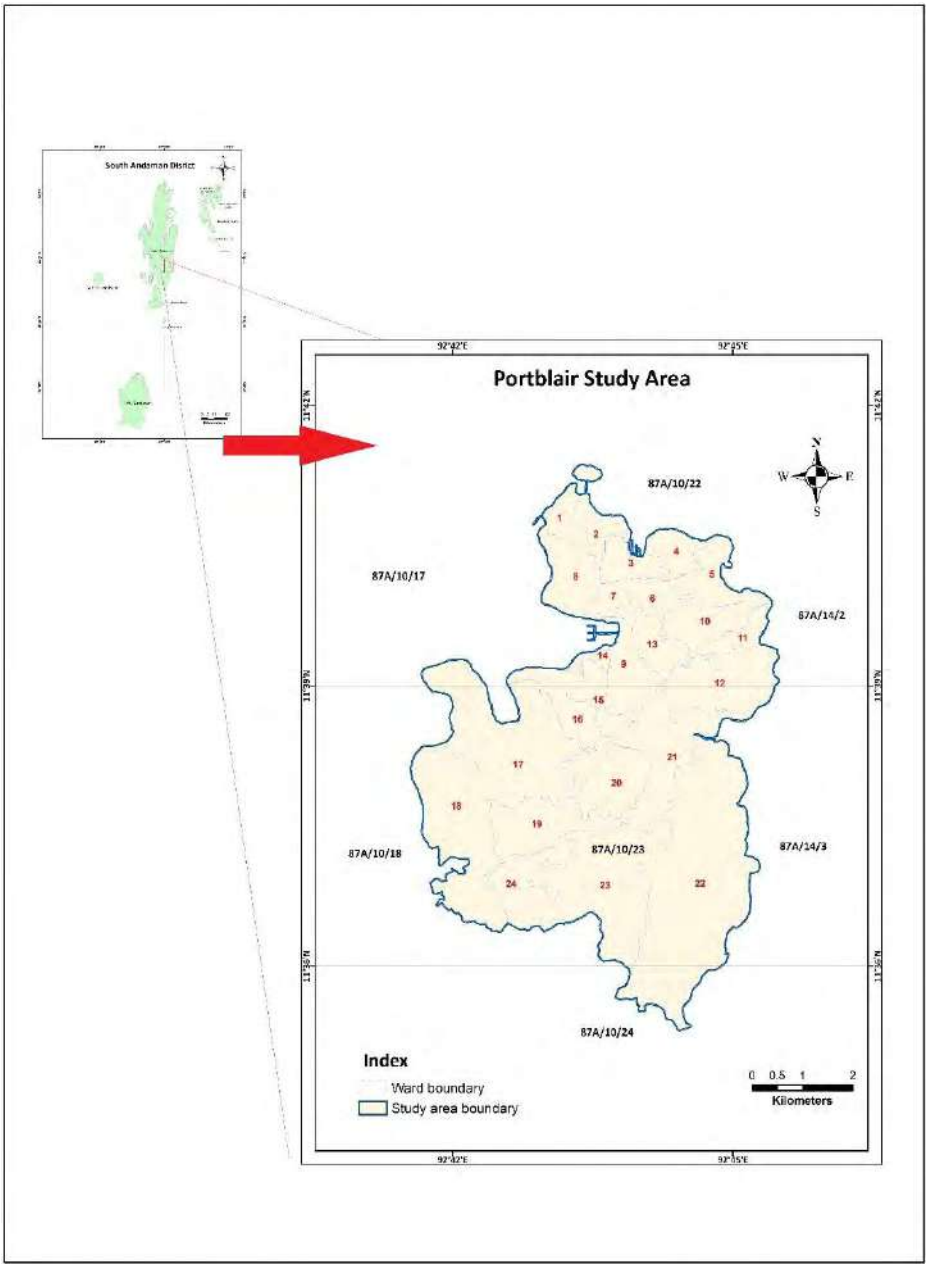


Fig. 1.1 Base Map of Port Blair Urban Area

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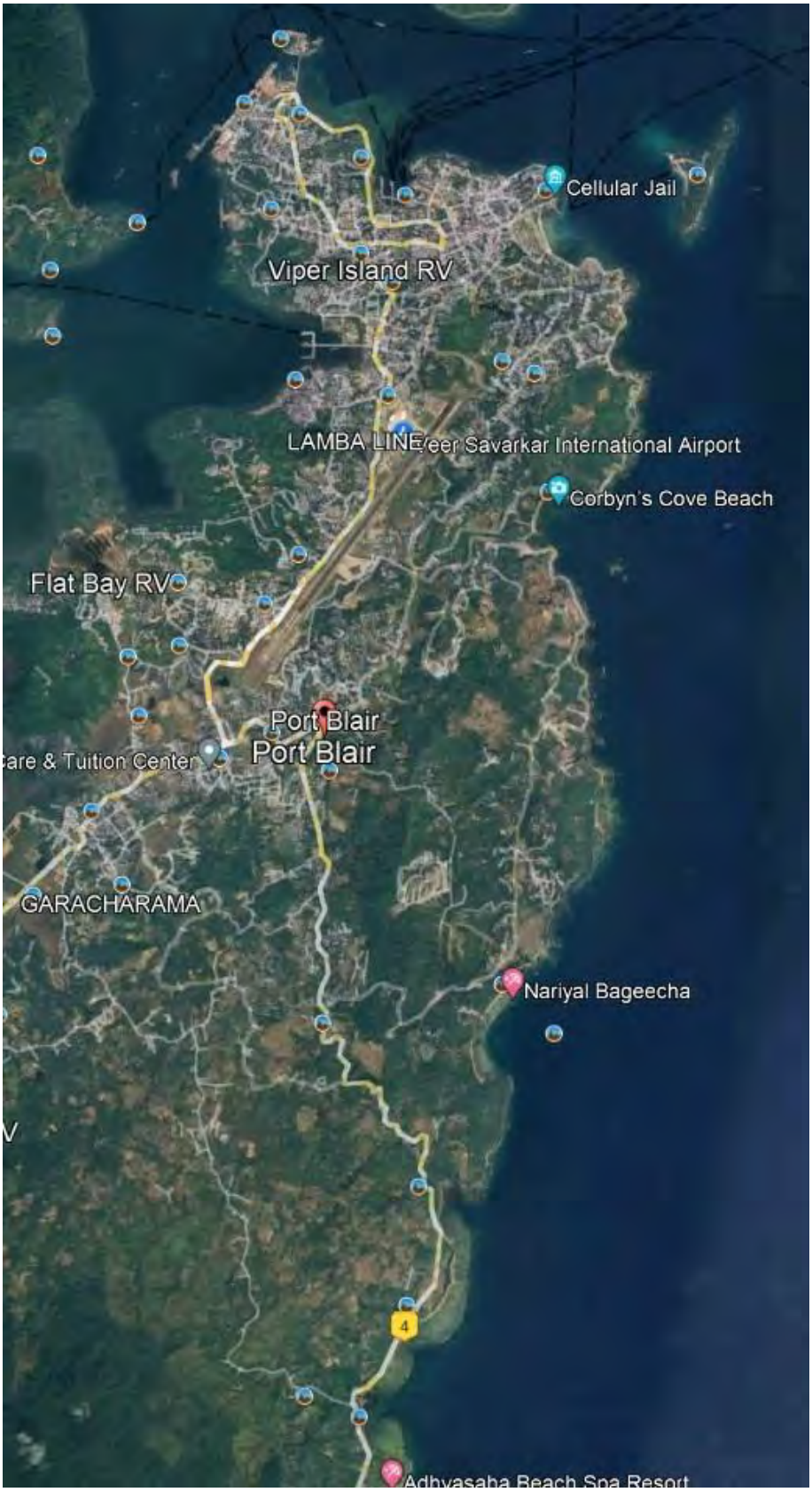


Fig. 1.2. Google Earth Map of Port Blair Urban Area

The Digital Elevation Map (DEM) has been generated to study the topographical variation over an area of about 42 km^2. The DEM is shown in **Fig. 1.3.**

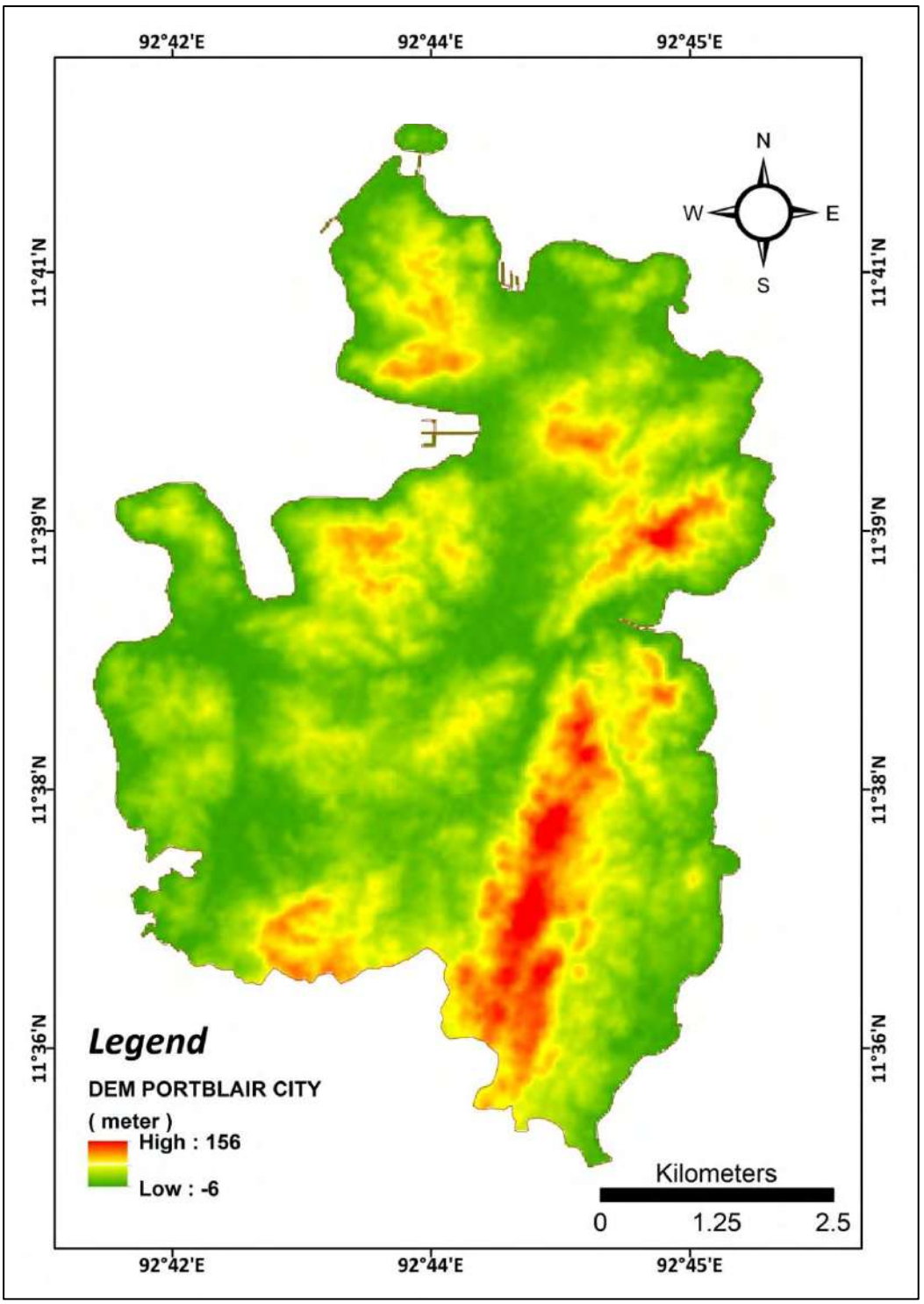


Fig. 1.3 Digital Elevation Map (DEM), Port Blair Urban Area

A study of the DEM indicates that highest elevation areas (red-orange colour) occurs as a prominent band trending almost north-south in the east-central and south-eastern parts.

The areas having highest elevation pass through Municipal Ward No. 21 and 23. Elevation is also high (> 100 m amsl) in and around Haddo, Anarkali and Megapode in Municipal Ward No. 7 and 8. Higher elevation (>80 m amsl) also occurs in the southern part (Ward No. 24) in and around Bathu Basti and Garacharma. Areas with the lowest elevation (< 30 m, shown in green) are prominent in the central, west central and north eastern parts of the study area.

1.2 Objectives of the Study

The NAQUIM 2.0 study in Port Blair Urban Area (PBUA), completed under the theme 'Urban Agglomerations' as per the NAQUIM 2.0 Toolkit (CGWB 2024), was a multidisciplinary study with inputs from the fields of hydrogeology, groundwater geophysics, hydrochemistry and hydrometeorology (climatology) carried out by a group of scientific collaborators and officials under Annual Action Plan (AAP) 2023-24.

The main objectives of the NAQUIM 2.0 study are (CGWB, 2024):

1. Provide information with higher granularity, focusing on increasing the density of dynamic data such as groundwater levels and groundwater quality, and explore opportunities to conserve and augment water resources.
2. Provide thematic scientific input for groundwater management in the urban area covering the urban wards of Port Blair City.
3. Develop a strategy for implementation of the study recommendations by the local administration.
4. Based on the recommendations of the NAQUIM 2.0 study, success stories shall be provided by the UT administration through departments working in the water sector such as Andaman Public Works Department (APWD) and Port Blair Municipal Council (PBMC), which can be published on the official website of CGWB.
5. Based on the success stories, a convergence between the central government (CGWB and CWC) and the UT administration is being sought with a focus on water users (stakeholders) for sustainable and judicious utilization of water resources through a participatory approach.
6. The findings of the study were presented before the National Level Expert Committee (NLEC) on April 4, 2024 by Dr. Anadi Gayen, Regional Director, accompanied by Debasish Bagchi, Scientist-D and Team Leader. The NLEC meeting was chaired by Dr. S.K. Ambast, Chairman of the CGWB. The meeting was attended by esteemed members from IIT Delhi, IIT

Roorkee, ICAR, JNU Delhi, former Chairman of CGWB and a former member of CGWB. The presentation was appreciated by the knowledgeable members of NLEC.

1.3 Major challenges in the study area

The following are the major challenges we faced during the study:

1. Water scarcity: considering the urban agglomeration, constant population growth and urbanization in Port Blair City, the major challenge is sustainable management of water resources in general and groundwater resources in particular. The availability of freshwater in the PBUA is limited by the nature of the aquifers of fractured rock with limited groundwater potential. In the typical hydrogeology of the island, there is the additional problem of saline water intrusion along the coastline and submarine groundwater discharge through the perennial springs in the vicinity of Port Blair City.

2. Groundwater contamination: Due to water supply in PBUA through Dhanikhari Dam (surface reservoir) and several large diameter open wells, a study was conducted to assess the groundwater contamination in a few areas of the districts. For this purpose, the Total Coliform (TC) was analyzed by Regional Medical Research Center (Indian Council for Medical Research), Port Blair. The analysis shows that 79% of the samples collected from the supply sources were contaminated with total coliforms with value >5 MPN/mL, where MPN indicates “most probable number” of bacteria.

1.4 Priority type

The urban area of Port Blair was selected under the pre-defined priority type (Priority Area 2) “Urban Agglomerate” out of 11 priority areas in India (CGWB, 2024). The selection was made under the national mandate of NAQUIM 2.0 study as per the guidelines of Department of Water Resources, River Development and Ganga Rejuvenation, Ministry of Jal Shakti to be implemented by the CGWB.

1.5 Previous studies

A number of hydrogeological studies were carried out previously in South Andaman district, which were mostly on a regional scale. Relevant details are given below.

- Systemic Hydrogeological Survey was carried out by Dr. P.G. Adyalkar and K. Md. Najeeb of CGWB, ER in the year 1981 in South Andaman district.
- Reconnaissance Hydrogeological Survey in selected areas of South Andaman district was

completed by G.C. Chatterjee, B.N. Niyogi and D.P. Ghosh from the Geological Survey of India (GSI).

- Geo-electrical spot resistivity survey was conducted by CGWB, ER in locations selected for exploratory drilling in two phases, first phase was completed in the year 1984 by Dr. A.N. Bhowmik and Dr. A. Srisailnath, whereas the second phase was done in 1986 by Dr. P.C. Chandra and C.R. Das.
- Hydrogeology and Ground Water Resources evaluation in parts of South Andaman and Campbell Bay, Great Nicobar Islands was carried out by I. Banerjee and others in the year 1988.
- A study was made on the environment of the oceanic pelagic sediments associated with ophiolite assemblage in the South Andaman Islands by T. C. Lahiri and M.K Sen in 1988.
- Systematic Hydrogeological Surveys in parts of Middle and South Andaman district was completed by T.L. Chakraborty in 1990.
- A study on feasibility of construction of groundwater abstraction structures was done in the civil Airport area of Port Blair by S. Bhattacharya in 1997.
- A study on hydrogeology of Andaman and Nicobar Islands was completed by Amlanjyoti Kar and brought out as a report in 2001. This was followed up by another study on artificial recharge of groundwater for augmentation of water supply and landscape development in Port Blair in 2002. Further studies on Port Blair area was continued by Amlanjyoti Kar of CGWB, which included possibility of inter-island transfer of spring water from the Rutland Island and preliminary assessment of water supply potential from the pre-existing Dug Wells and Ponds in the Port Blair Municipal area.
- Findings of hydrogeological studies were compiled as Ground Water Information Booklet of South Andaman district by J.S. Sharma and Amlanjyoti Kar in ar 2013 and published for open access through the CGWB website.
- Under NAQUIM Phase-I (NAQUIM 1.0) programme, a detailed report on Aquifer Mapping and Management in South Andaman district was prepared by Awadhesh Kumar in 2020. The report was uploaded in the official website of CGWB.
- In 2022, a report on Assessment of Dynamic Groundwater Resources of Andaman and Nicobar Islands was published by CGWB, ER, Kolkata.

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2. CLIMATOLOGY

2.1 Introduction

The monitoring of energy and water flow between the Earth and the atmosphere is the general focus of hydrometeorology. As a unique field within meteorology and hydrology, hydrometeorology connects meteorologists' basic understanding with hydrologists' need to evaluate the water and energy cycles in local, regional, and global level. Meteorological data is integrated with hydrological models in hydrometeorology to forecast weather, climate, wildland fires, storms, droughts, and floods, as well as the exchange of water and energy between the land surface and the atmosphere. While hydrometeorologists are more interested in studying short time-scale phenomena (hours to few days), climatologists concentrate on seasonal to decadal scale weather parameters.

The study area (Port Blair City) has a tropical monsoon climate with Köppen climate classification of *Am*, with little variation in average temperature and high precipitation throughout the year. All months except January, February, and March receive substantial rainfall. Port Blair City receives an annual average rainfall of about 3180 mm. Due to the absence of extremely chilly winters or hot summers, Port Blair experiences a uniform climate throughout the year.

The City experiences a dry season and a heavy monsoon. The average temperature is 26.2 °C in the winter season. Another weather aspect of Port Blair is the annual sunshine that averages 2405 hours. The relative humidity level is around 80 per cent. The mean temperature varies between 23 °C and 31 °C.

2.2 Dataset utilized

To analyze the climatological data over Port Blair City Pre-whitening, Mann–Kendall (M-K) test analysis, Sen Slope, and Exponential Triple Smoothing (ETS) Algorithms are used. Rainfall (RF) and evapotranspiration (ET) parameters are considered for climatological analysis. The Monthly RF and ET data were acquired from the Global Precipitation Measurement Satellite system (GPM IMERG Final Precipitation L3, 1 month, 0.1 degree x 0.1 degree, V06) and Famine Early Warning Systems Network (FEWS NET) Land Data Assimilation System (FLDAS) (FLDAS Noah Land Surface Model L4 Global Monthly 0.1 x 0.1 degree) with a spatial resolution of 0.1^{o} x 0.1^{o} over a period from 2000 to 2023. The monthly

data is organized in terms of four seasons following the India Meteorological Department classification, viz. a) winter (WN, December-February), b) pre-monsoon (PM, March-May), c) monsoon (MN, June-September), and d) post-monsoon (PMN, October-November).

2.2. ENSO impact over the region

El Niño and La Niña are opposite phases of what is known as the El Niño-Southern Oscillation (ENSO) cycle. The ENSO is a recurring climatic pattern involving temperature changes in the waters of the eastern and central tropical Pacific Ocean, and changes in the patterns of upper and lower-level winds, sea level pressure, and tropical rainfall across the Pacific Basin. El Nino is often called the warm phase and La Nina is called the cold phase of ENSO. These deviations from the normal sea-surface temperatures can have a large-scale impact on the global weather conditions and overall climate.

ENSO index from 2000 to 2023 is plotted in the **Fig.2.1**. Five seasons are considered for the analysis December-January-February (DJFD), March-April-May (MAM), June-July-August (JJA), September-October-November (SON), and November-December-January (NDJ). During this period, seven warm periods (2002, 2004, 2006, 2009-2010, 2014-2015, 2018-2019 and 2023) are observed. The warm period in 2023 will be continued in 2024. It is observed that the events ENSO index <1 cause the warm impact for that particular year with low *RF*, whereas ENSO index >1 have impact for current as well as the next year as well and caused low RF for two consecutive year (**Table 2.1, Table 2.3, Fig. 2.1**). The RF during the warm periods are 1156 mm, 1456 mm, 1543 mm, 1452 mm, 1473 mm, 1510 mm, and 1374 mm over the study area.

Table 2.1 Warm periods from 2000 to 2023

Sl.	Year	Mean ENSO index
1	2002	1
2	2004	0.63
3	2005	0.8
4	2009	1.15
5	2014	1.37
6	2018	0.75
7	2023	1.63

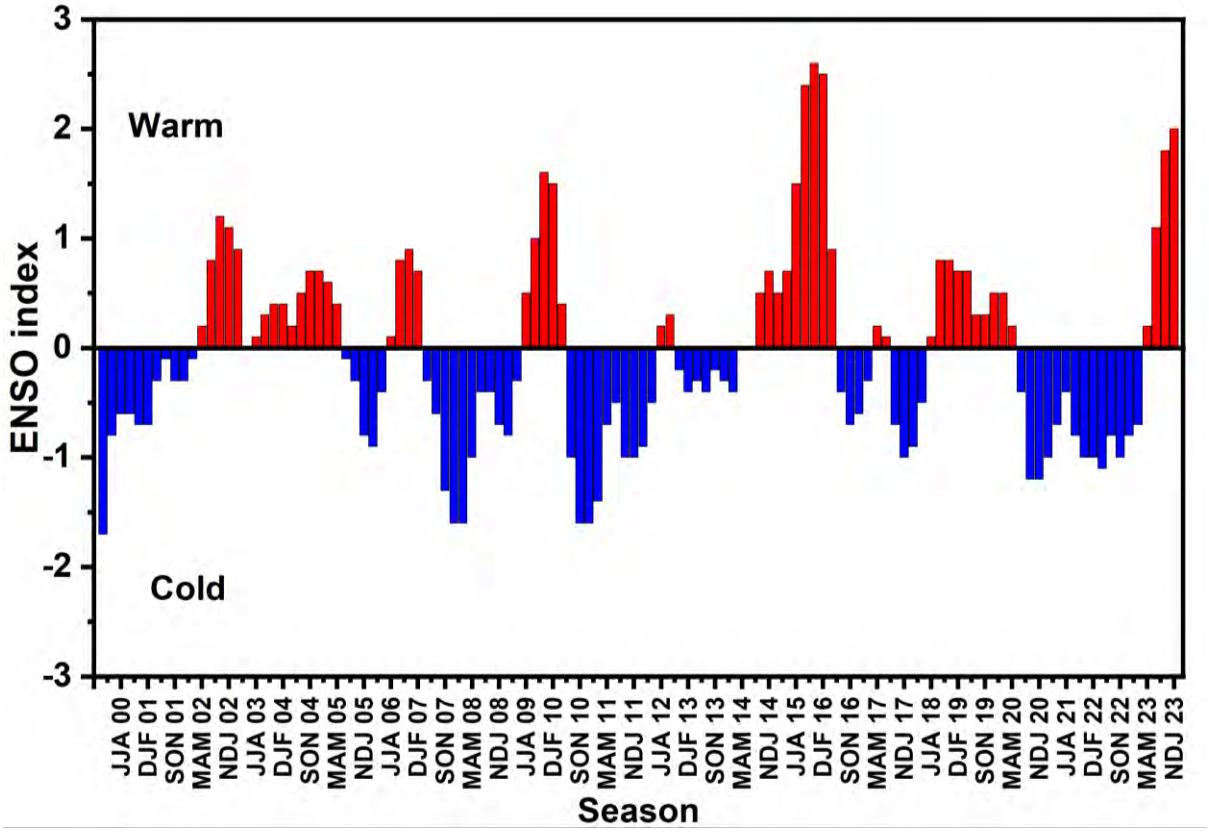


Fig.2.1 ENSO index with warm and cold periods from 2000 to 2023

2.2 Variation of rainfall and wet days

Wet-day data analyzed over the region for the period of 2001-2020 (**Fig.2.2**). The RF is less compare to number of wet-days for warm period. The number of wet-days was almost equal in every year. The annual average wet-day number is 135.15±10.87. In the years 2002, 2003, 2014, 2016, and 2019, the number of wet-day was below average (110-126). In the year 2001 and 2020, the number of wet-days was 24.15 and 17.9 respectively, which caused 1064 mm and 344 mm RF during the pre-monsoon season. Similarly, in the years 2001 and 2020, 23.4 and 27.4 wet-days are recorded, which caused 274 mm and 545 mm RF during the post-monsoon season (**Fig. 2.3**).

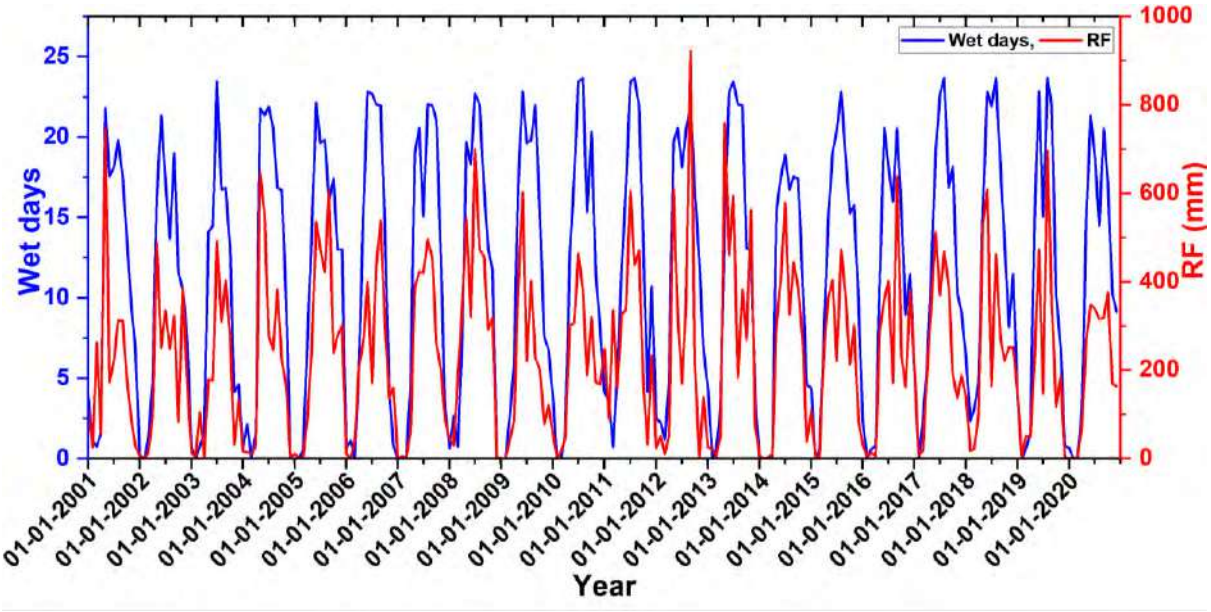


Fig.2.2 Month wise RF and wet-day from 2001 to 2020, Port Blair

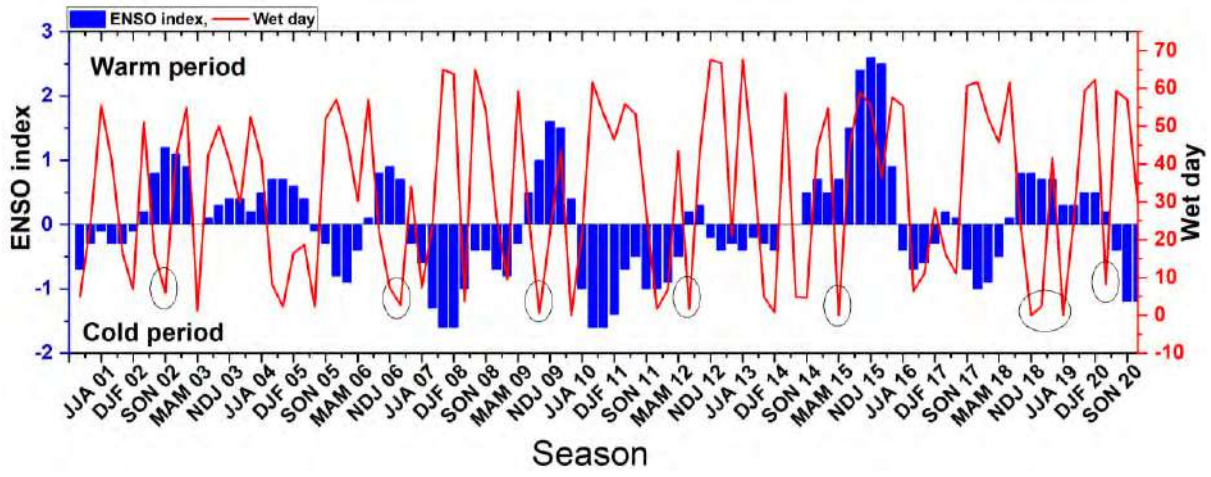


Fig.2.3 Season wise ENSO index and wet-day comparison from 2001 to 2020, Port Blair

Twenty years of monthly data (from 2000 to 2023) on number of wet-day is used for linear trend analysis. The trend analysis of wet-day variations in Port Blair shows small seasonal variability in the magnitude and direction of trend. Seasonal analysis of wet-day indicated a positive trend in winter, monsoon, and post-monsoon season, which signifies an increase in wet-days with time. However, the correlation coefficient value is negligible. A negative trend is observed for pre-monsoon season and indicates that the number of wet-days is declined. In 2001, number of wet-days was 24.15 with 1064.8 mm RF in pre-monsoon. While, 17.9 wet-days with 344.5mm of RF in the year 2020. Fig.2.3 indicates that during the warm period, wet-day as well as RF declined compared to cold period.

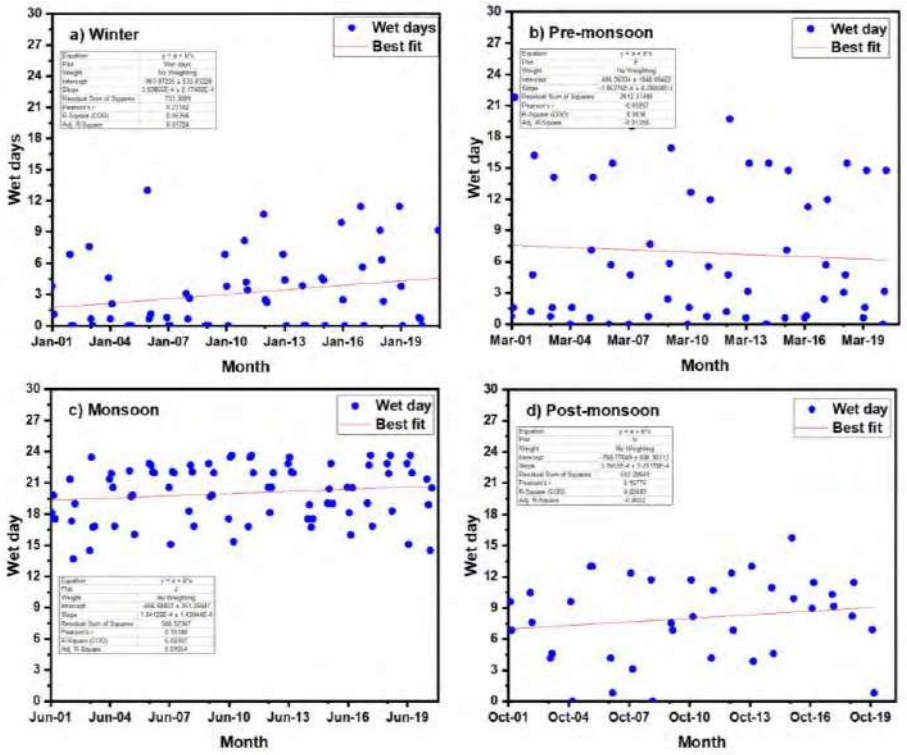


Fig.2.4 Season wise wet-day trend analysis (2001-2020), Port Blair

2.3 Trend Analysis of Rainfall and Evapotranspiration

Twenty years (from 2000 to 2023) of monthly rainfall (RF) and evapotranspiration €T were used for Mann-Kendall trend analysis over Port Blair City. The magnitude of the trend in the time series was determined using the Sen Slope estimator (**Table 2.2**). The analysis of trends of RF and ET variations in Port Blair shows large variability in the magnitude and direction of trend from one season to another. Seasonal analysis of ET indicated a positive trend in winter and pre-monsoon seasons, which signifies an increase in ET with time. This indicates less scope of groundwater recharge, when all other parameters remain the same. The ET is increasing at the rate of 1.13 mm and 6.13 mm in the region during winter and pre-monsoon seasons, respectively. On the other hand, during the monsoon and post-monsoon season, no trend is observed. The seasonal cumulative RF over Port Blair City from 2000 to 2023 is given in **Table 2.2.**

Table 2.2 M-K Trend and Sen Slope analysis of RF and ET in Port Blair

Parameter	Season	MK Trend	Sen Slope
Rainfall	Winter	No	5.1
	Pre-monsoon	No	-9.3
	Monsoon	No	14.6
	Post-monsoon	No	4.9
ET	Winter	Yes	1.1
	Pre-monsoon	Yes	6.1
	Monsoon	No	2.3
	Post-monsoon	No	0.2

The winter, pre-monsoon, monsoon and post-monsoon RF variation from 2001 to 2023 is shown in **Table 2.3.** The mean cumulative RF during winter, pre-monsoon, monsoon and post-monsoon are 213 mm, 564 mm, 1552 mm, and 430 mm, respectively.

Table 2.3 Seasonal cumulative RF over Port Blair in different seasons

Year	Cumulative Rainfall (mm)			
	Winter	Pre-monsoon	Monsoon	Post-monsoon
2000	--	--	1155.1	319.9
2001	163.6	1064.9	1020.6	273.9
2002	185.4	592.8	1156.7	471.2
2003	147.4	288.2	1381.0	305.4
2004	35.0	686.3	1456.2	384.1
2005	314.8	340.4	2039.4	516.6
2006	171.9	513.2	1543.8	450.6
2007	95.6	448.5	1792.3	459.6

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2008	81.4	1074.1	1952.3	611.8
2009	123.4	504.3	1452.7	280.2
2010	225.5	364.9	1342.4	493.0
2011	570.2	821.7	1850.4	211.7
2012	214.2	671.1	1784.7	219.7
2013	123.0	816.5	1621.8	832.6
2014	45.1	313.0	1759.1	655.8
2015	202.4	600.0	1473.4	513.1
2016	418.4	309.3	1573.6	395.0
2017	413.0	564.2	1740.6	327.0
2018	411.1	647.8	1510.1	474.6
2019	155.2	320.0	1672.9	303.7
2020	167.4	344.5	1322.4	545.6
2021	243.7	411.0	1459.0	479.1
2022	245.6	397.9	1416.8	484.6
2023	567.3	384.8	1374.6	490.0

The seasonal ET over Port Blair City from 2000 to 2023 during winter, pre-monsoon, monsoon and post-monsoon is shown in **Table 2.4.** The mean cumulative ET during winter, pre-monsoon, monsoon and post-monsoon are 78 mm, 152 mm, 231 mm and 34 mm, respectively.

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Table 2.4 Seasonal cumulative ET over Port Blair in different seasons

Year	ET (mm)			
	Winter	Pre-monsoon	Monsoon	Post-monsoon
2000	55.8	60.6	206.5	32.0
2001	61.2	86.4	213.6	23.0
2002	59.1	87.8	156.3	37.0
2003	68.4	125.0	215.1	29.8
2004	76.7	78.7	195.8	34.9
2005	72.5	159.2	247.1	30.1
2006	91.2	142.4	205.3	32.3
2007	73.1	157.5	253.5	31.6
2008	88.8	140.4	269.0	39.9
2009	98.9	175.3	204.1	28.4
2010	80.5	128.8	298.0	38.0
2011	82.6	161.0	272.0	38.7
2012	88.5	159.8	237.8	37.1
2013	90.5	200.2	228.3	39.9
2014	72.5	207.3	181.7	34.7
2015	72.9	185.2	262.0	43.6
2016	82.9	183.0	283.7	36.1
2017	96.9	166.5	249.9	25.0
2018	72.5	174.7	199.6	35.5
2019	84.6	190.0	258.5	36.1
2020	85.8	223.5	221.4	32.4

2021	86.9	214.6	250.8	37.1
2022	88.0	220.8	252.9	37.3
2023	89.0	227.0	255.1	37.5

2.4 Monthly Variation of Rainfall (RF) and Evapotranspiration (ET)

The mean monthly RF and ET are plotted from 2000 to 2023 and shown in **Fig. 2.5**. RF starts rising in April and reaches a peak in the last week of May. Pre-monsoon rainfall was received during March and April. Between April and May, about 300 mm increase in rainfall was observed, which is attributed to onset of south-west monsoon during the end of April. In May-June, the highest RF occurs over Port Blair City, after which the RF starts declining till July. Peak rainfall is observed during August-September, after which RF again started decreasing. Due to the break in south-west monsoon, RF is lower as compared to other months. In post-monsoon season, RF decreased to about 50% of the monsoon RF due to the retreat of south-west monsoon. The RF in post-monsoon season is due to convective localized system.

Convective RF occurs due to daily evaporation and wind movement, and it is a daily weather phenomenon. As the study region is an island with complex topography, the maximum RF goes out into the Andaman Sea or the Bay of Bengal as surface runoff, while a part of the RF is lost as evapotranspiration (ET).

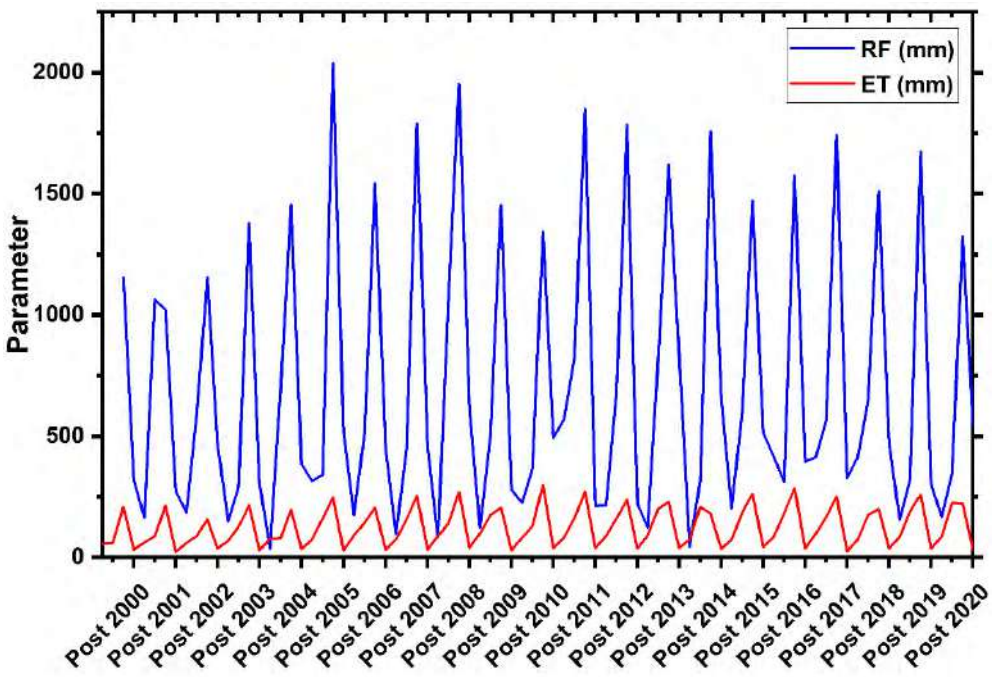


Fig. 2.5 Monthly cumulative RF and ET from 2000 to 2023 over Port Blair City

The peak in ET is observed in March during pre-monsoon, which starts declining with increasing RF over Port Blair City (**Fig. 2.6)**. June contributes minimum ET during monsoon season owing to high RF. Highest ET is observed in August, which is attributed to the increase in air temperature and RF. After the monsoon break, ET reaches the maximum annual value of 85 mm. ET is lower in the post-monsoon and winter season. Urbanization and complex topography are the major factors cutting down the ET over the region. Rainfall is the addition of water into the earth system and ET is the subtraction of the water from the same system. Therefore, when the addition is more than the subtraction then recharge will take place. During April-December, Port Blair received a RF ~2627 mm and an ET loss of ~363 mm. As the RF is predominant over ET from April to December, this period can be considered as a groundwater-recharging window.

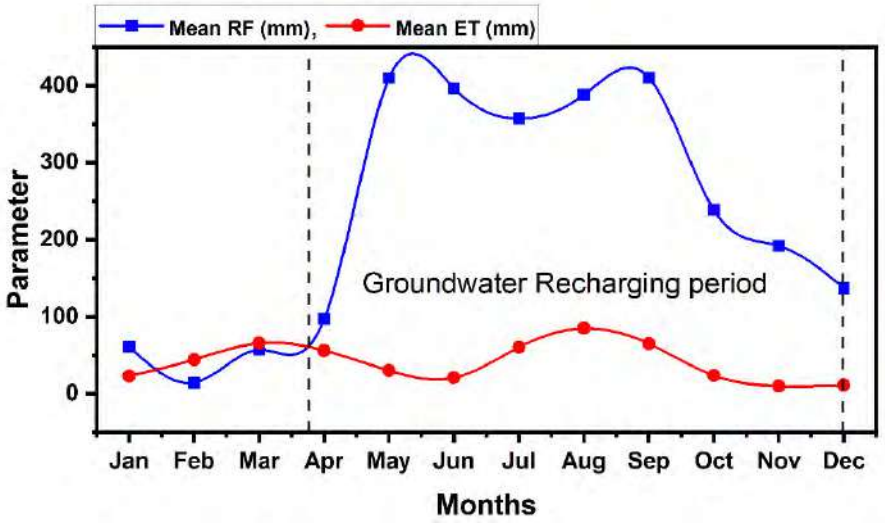


Fig. 2.6 Monthly cumulative RF and ET over Port Blair (2000 to 2023)

2.5. Forecasting of Rainfall and Evapotranspiration

The year-wise seasonal variation of Rainfall (RF) and Total Evapotranspiration (ET) over Port Blair City is shown in **Fig. 2.7**. In addition to this, an attempt is made to forecast RF and ET up to the year 2030. For RF and ET forecasting, ETS (AAA) technique is utilized (**Table 2.5**). Analysis of the average monthly rainfall over the period 2000-2023 reveals that during pre-monsoon and monsoon season, the forecasted RF is lower than the observed RF in Port Blair City. During the winter and post-monsoon season, the forecasted RF is higher than the observed RF. The percentage difference between the forecasted RF and the average monthly rainfall over the period 2000-2023 is given in **Table 2.5.**

For the ET, in all the seasons, the forecasted ET is higher than the observed ET in the study area **(Table 2.5).** In pre-monsoon season, the forecasted ET value is ~45.9% higher than the observed ET value (2000-2023). The percentage difference between the observed and the forecasted ET is also shown in **Table 2.5.**

Table 2.5 Observed and forecasted RF and ET over Port Blair City

Sl. No.	Parameter	Season	Observed (2000-2023)	Forecasted (2023-2030)	% Difference
1	**RF (mm)**	Winter	213.2	343.3	46.7
		Pre-monsoon	564.3	351.9	46.4
		Monsoon	1572.3	1269.2	21.3

		Post-monsoon	436.3	503.7	14.3
2	**ET (mm)**	Winter	78.9	91.7	15.0
		Pre-monsoon	152.1	242.6	45.9
		Monsoon	231.4	260.4	11.8
		Post-monsoon	34.1	38.1	11.2

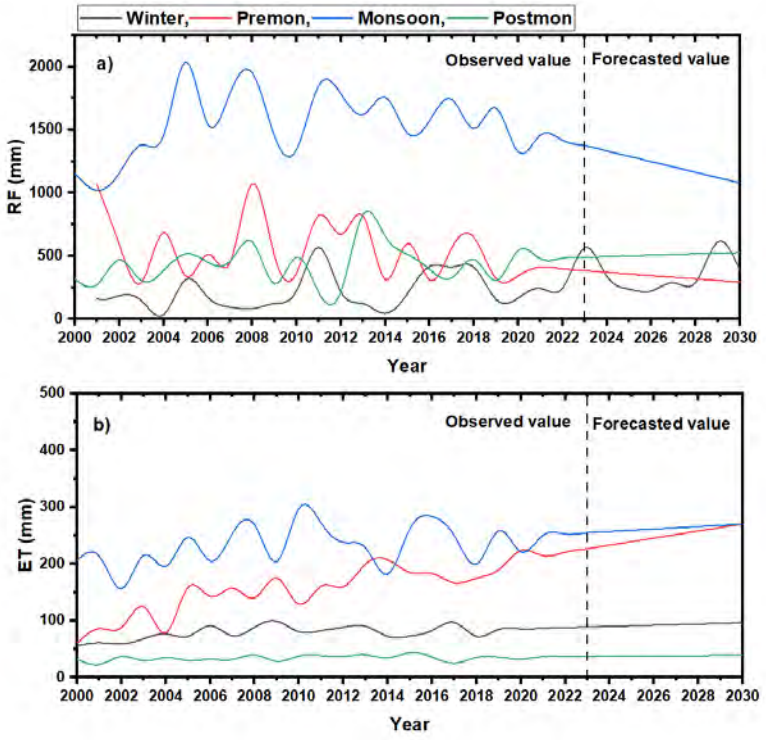


Fig. 2.7 Observed (2000-2023) and forecasted (2024-2030) value of a) RF and b) ET in Port Blair City

3. GEOLOGY

As there are no outcrops in the urban area, the scope for studying the surface geology in the urban area of Port Blair (PBUA) is very limited. However, from the geological database published by Geological Survey and India (GSI), it is evident that the study area is mainly underlain by coralline limestone resting unconformably on mudstone. At the regional scale, the geology of the South Andaman district consists of thick Eocene sediments deposited on pre-Tertiary sandstone, siltstone and shale with intrusions of basic and ultrabasic igneous rocks. The surface geology consists of marine inorganic sedimentary rocks such as shale, sandstone, gravel and conglomerate belonging to the Andaman Flysch Group and Mithakhari Group, organic sedimentary rocks such as coralline limestone in the atolls and extrusive and intrusive igneous rocks (volcanic and ultramafic rocks) in the highland areas. Coral limestone is a potential aquifer due to its high permeability, while sedimentary rock is a poor aquifer due to its lower permeability (Chakraborty 1990). In the eastern part of the study area, volcanic rocks (basalt and agglomerate) are found in places like Bimblitan, Corbyns Cove, Brookshabad and Brichgunj. Such rocks sometimes represent potential aquifers as bubbles form (Roy 2014). Fig. 3.1 shows a field photograph of pillow basalt in the Brookshabad area, near a disused quarry.



Fig. 3.1 Section of pillow basalt at Brookshabad, Port Blair

A close up view of the pillow basalt at Brookshabad, showing prominent pillow structures, is shown in **Fig. 3.2.** The convex side of the pillow points towards the top of an ophiolite suite.



Fig. 3.2 Close up of the pillow basalt at Brookshabad, Port Blair

In the northern part of Port Blair City viz. around Chatham, Haddo, Anarkali, and Aberdeen Bazar, greywacke is the main rock type along with siltstone, grit, conglomerate, limestone and black shale. The rock units belong to Port Blair Formation and Mithakhari Formation of Eocene age, belonging to the Andaman Flysch Group. Field photo of an outcrop of greywacke of Mithakhari Formation near Flag Point (to the north of Corbyns Cove) is shown in **Fig. 3.3.** The outcrops form jagged ages with steeply southerly dip, as evident from the field photograph. The generalized stratigraphic succession (on a regional scale) of the South Andaman Island is given in **Table 3.1.** A study of the table shows that rocks from Late Cretaceous (99.6 to 65.5 Ma) to Holocene (<0.11 Ma) are exposed in the study area. In general, rocks of the Quaternary Holocene Group constitute the potential aquifers.



Fig. 3.3 Steeply dipping outcrops of greywacke near Flag Point, Port Blair

Table 3.1. Generalized stratigraphic succession (after Geological Survey of India)

Age	Group	Formation
Holocene	Quaternary Holocene Group	Beach sand, Mangrove clay, Alluvium, Coral rags and Shell limestone, loosely consolidated pebble beds
----------	**Pygmalion Point Unconformity**	----------
Pleistocene to Late Pliocene	Nicobar Group	Shell limestone, Sandstone, Claystone
Miocene	Archipelago Group (Upper)	White claystone, Melville Limestone
----------	**Unconformity**	----------
Oligocene to Paleocene	Andaman Flysch, Mithakhari Group	Thinly bedded alternations of sandstone and siltstones. Gradual passage with local pebbly bed (Manglutan grit), conglomerates with pebbles of pillow lava and other older rocks, thinly bedded chert and volcanogenic sediments; black to greyish black shale.
----------	**Non-conformity**	----------
Late Cretaceous	Ophiolite Group	Dyke swarms, acidic suite, pillow lava with radiolarian chert and ultramafic suite.

A geological map of Port Blair area (after Geological Survey of India) is shown in **Fig. 3.4.**

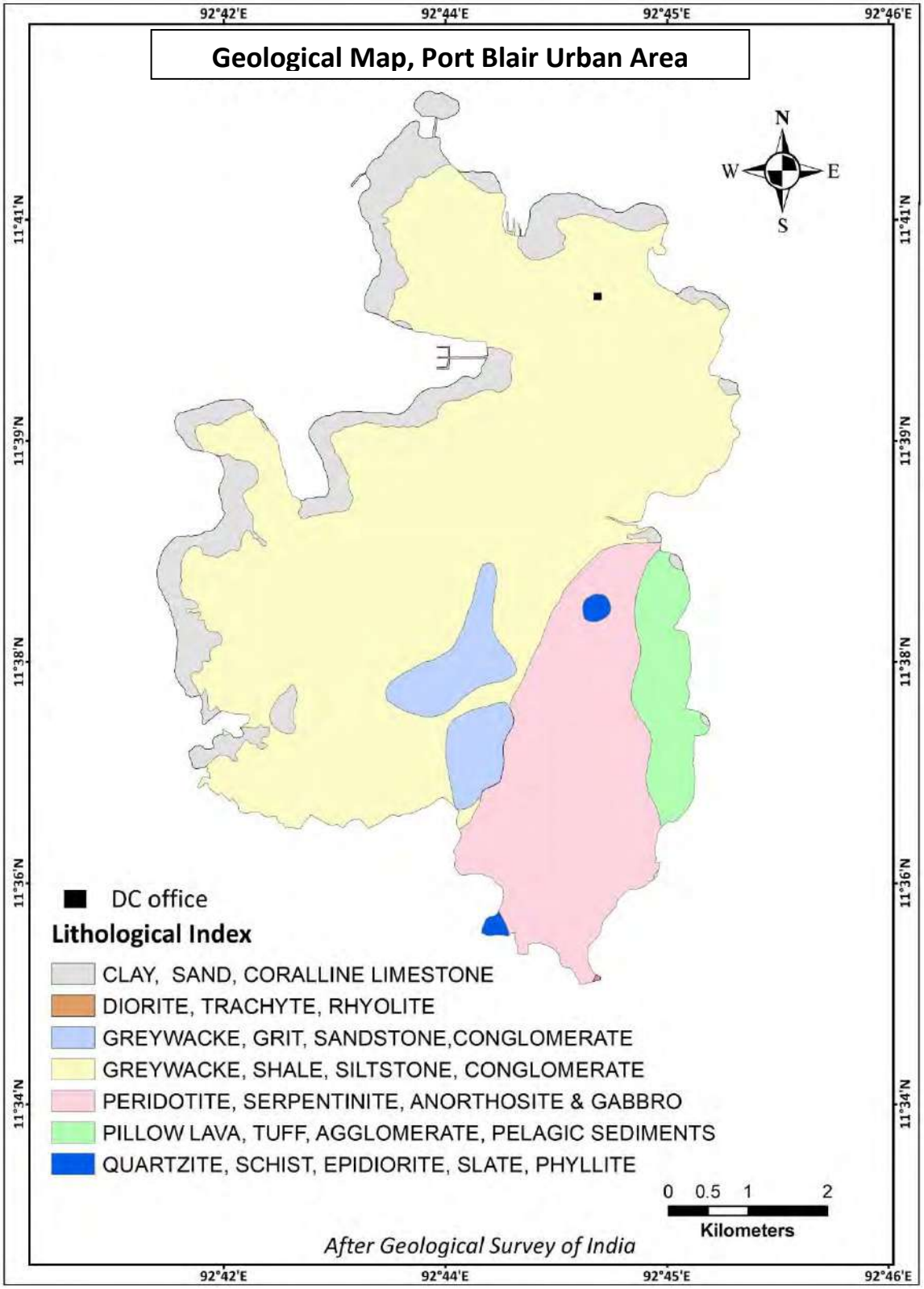


Fig. 3.4. Geological map, Port Blair Urban Area

4. DATA GAP ANALYSIS

In the context of aquifer mapping, Data Gap Analysis (DGA) has the following major objectives (CGWB 2013)

- Identification of gaps in the existing data on various aspects of the aquifer being mapped.
- Optimization of additional data requirements for a realistic depiction of the aquifer system and management of its groundwater resources.

The process of identification of data gap involves the following steps:

- Compilation of the available data on the aquifer being studied.
- Compilation of the data collected in a common standardized format.
- Interpretation/analysis of each data layer.
- Identification of data gaps with respect to thematic layers, sub-surface data and data on groundwater recharge and draft.

4.1 Existing Data: Groundwater Monitoring, Groundwater Quality, Groundwater Exploration and Geophysical Data

The existing data on groundwater monitoring is based on analysis of depth to water level from 16 Ground Water Monitoring Wells (GWMW) in the study area. Long term depth to water level data on pre-monsoon and post-monsoon and only pre-monsoon data on groundwater quality is available from these monitoring wells. A total of 15 Vertical Electrical Sounding (VES) were conducted in the study area, which can be considered as existing data on groundwater geophysics before initiation of NAQUIM 2.0 study. A data on pumping test is available at Calicut, which was constructed by CGWB Rig in the 1980s. A summary of existing Ground Water Monitoring Wells (GWMW) in the study area is given in **Table 4.1.** Two dug wells at Sampat Lodge (AN001) and at Garacharma (AN011) were replaced during the NQUIM 2.0 study as both them were disused and dirty. The replacement dug wells (Ground Water Monitoring Wells) were established near Velodrome (AN001A) and near Garacharma Kali Temple (AN011A); the former by the Team Leader (NAQUIM 2.0) and the latter by Sandip Bhowal, Team Member.

The locations of VES conducted before initiation of NAQUIM 2.0 study is summarized in **Table 4.2.** Existing data on groundwater exploration in the study area is given in **Table 4.3.**

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Table 4.1 Active and existing GWMW in the study area (March 2024)

Sl No.	Well No.	Location	Well Type	M.P. (m)	Latitude (°N)	Longitude (°E)
1	AN001A	Velodrome	Dug Well	0.98	11.67057	92.74398
2	AN002	South Point	Dug Well	0.49	11.66408	92.75384
3	AN003	Corbyn's Cove	Dug Well	0.68	11.64253	92.74598
4	AN005	Austinabad	Dug Well	0.58	11.63509	92.73469
5	AN008	Shadipur	Dug Well	0.60	11.65651	92.74348
6	AN011A	Garacharma	Dug Well	0.80	11.61367	92.70953
7	AN013	Brookshabad	Dug Well	0.40	11.63799	92.74037
8	AN017	Calicut	Dug Well	0.58	11.60738	92.72644
9	AN020	Junglighat (V I P Road)	Dug Well	0.88	11.6576	92.73523
10	AN045	Marina Park	Dug Well	0.56	11.67113	92.74633
11	AN046	Calicut	Bore Well	0.36	11.60009	92.71949
12	AN057	Dhobi Well	Dug Well	0.75	11.6709	92.7349
13	AN059	Light House	Dug Well	0.25	11.66814	92.73775
14	AN091	Dollygunj Chowk (Old Pahargaon)	Dug Well	0.52	11.63425	92.72282
15	AN092	Lamba Line	Dug Well	0.74	11.65928	92.7495
16	AN093	Haddo	Dug Well	0.85	11.67938	92.72803

Table 4.2. Existing VES Locations, Port Blair Urban Area

Sl. No.	Location	VES No.	Latitude (°N)	Longitude (°E)	Elevation (m amsl)
1	Airport	VES1	11.648448	92.732173	38
2	Airport	VES2	11.648761	92.732469	37
3	Airport	VES3	11.65018	92.734375	34
4	DBRAIT	VES4	11.636151	92.716461	44
5	DBRAIT	VES5	11.635999	92.716471	46
6	DBRAIT	VES6	11.635763	92.716519	47
7	DBRAIT	VES7	11.636103	92.71666	47

8	Calicut	VES8	11.597979	92.709147	70
9	Calicut	VES9	11.594936	92.714181	105
10	Calicut	VES10	11.603103	92.699767	23
11	Calicut	VES11	11.592721	92.719961	91
12	Calicut	VES12	11.606101	92.719239	79
13	Calicut	VES13	11.612393	92.724944	62
14	Calicut	VES14	11.609886	92.720696	74
15	Calicut	VES15	11.59921	92.719927	81

Table 4.3. Summary of groundwater exploration, Port Blair Urban Area

Location	Type of well	Coordinates	Geology	Depth drilled (m)	Productive fracture zones (m bgl)	SWL (m bgl)	Discharge (lps)	Drawdown, (m)	EC (µS/cm)	Cl (mg/L)
Prothera pore-IB	EW	-do-	-do-	60.60	25.0-27.0 30.0-32.0 59.0-60.0	--	4.72	--	5910	1588
Brichganj	EW	11°36´35"N 92°44´10"E	Volcanics and ultramafics (Ophiolite Group)	128.60	Within 30.0	--	0.50 (C)	--	512	14
Dilthaman Tank	EW	11°39´00"N 92°44´00"E	Mithakhari Formation (black shale & compact, very fine grey sandstone)	121.00	Within 30.0	2.20	--	--	2078	131
Prothera pore-I	EW	11°37´04"N 92°43´42"E	Andaman Flysch (sandstone, siltsone& shale)	56.60	Nil	Negligible (abandoned due to poor discharge)				
Prothera pore-IA	EW	-do-	-do-	37.00	Nil	Negligible (abandoned due to poor discharge)				
Project Tartik Office (Austinabad)	EW	11°38´00"N 92°44´00"E	Mithakhari Formation (black shale)	103.60	Nil	Negligible (abandoned due to poor discharge)				

Pumping test data analysis is available for an Exploratory Well (EW) at Calicut, although *sensu stricto* the drilling site is outside the municipal ward limit. This site was selected for construction of an Observation Well (OW) to determine Storativity of the fractured rock

aquifer during in-house groundwater exploration in the 1980s. The relevant details are given in **Table 4.4.** A perusal of the table indicates that aquifer transmissivity (T) is moderately high (T > 150 m^2/day), and storativity is typical of a confined aquifer. From the outcomes of NAQUIM 1.0 study in South Andaman district, it was revealed that the deeper, fractured rock aquifer (>60 m depth) is the potential source of water supply in Calicut area. The EW was subsequently converted into a production tube well by the Andaman Public Works Department (APWD).

Table 4.4. Pumping test data in the study area

Sl. No.	Location	Discharge (LPS)	Transmissivity (m^2/day)	Storativity (S)	Latitude (°N)	Longitude (°E)
1	Calicut	12.41	163.79	$9.65x10^{-4}$	11.6°	92.725°

4.2. Data Gap Analysis: Groundwater Exploration

The study area of about 42 km^2 has been divided into a grid size of 3' X 3' (latitude and longitude wise) and the possibility of drilling Exploratory Wells and Observation Wells was assessed. A perusal of **Table 2.3** clearly shows that out of total 6 wells drilled in the study area, only one Exploratory Well at Prothrapur recorded significant discharge (4.72 LPS), although groundwater was saline. Thus, quality of groundwater (especially salinity issue) is an important aspect as far as supply of fresh groundwater is concerned. It is suggested that prior to construction of more Exploratory Wells that can be utilized afterwards as production Tube Wells by the APWD, intensive surface geophysical investigation and if possible, heliborne survey may be conducted to know the subsurface geology in 2-D and 3-D. This will help in characterization of the weathered and fractured rock aquifers in the study area. Among the geophysical surveys, priority may be given to Electrical Resistivity Tomography (ERT) and Transient Electromagnetic (TEM) survey keeping in mind the local hydrogeological, physiographic and hydrological condition.

4.3. Data Gap Analysis: Groundwater Monitoring

The map of existing Ground Water Monitoring Wells (GWMW) is shown in **Fig. 4.1.** Relevant data on groundwater monitoring are summarized in **Table 4.5.**

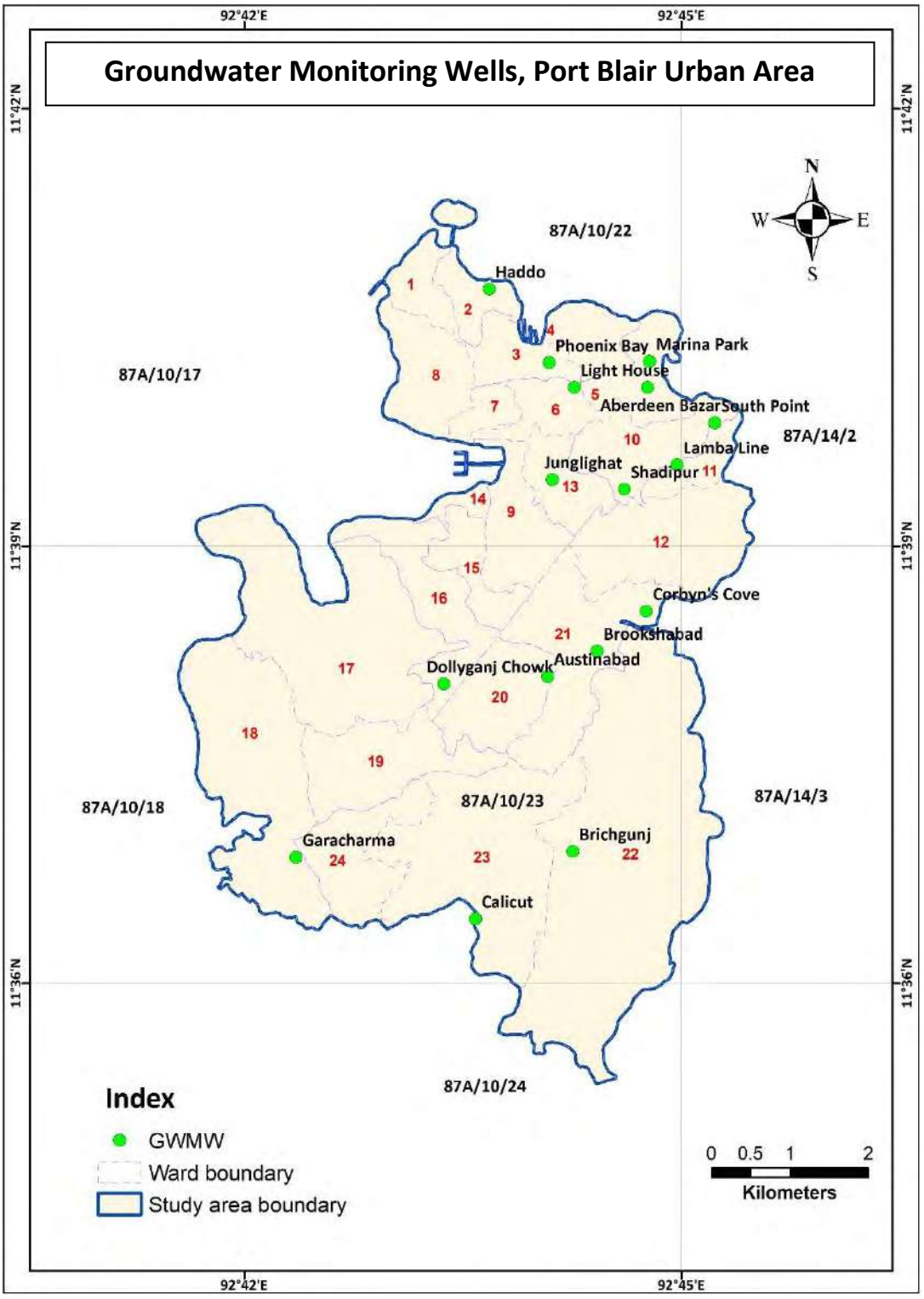


Fig. 4.1. Location map of Ground Water Monitoring Wells, Port Blair Urban Area

As per existing guidelines on NAQUIM (CGWB 2013), one open dug well is recommended for each quadrant of a toposheet. The dug wells in the study area tap shallow fracture zones and weathered zones of sedimentary and igneous rocks usually in the depth range from 5 to 20 m. The first aquifer (Aquifer-I), which occurs under unconfined conditions, is tapped by

the large diameter, open dug wells in Port Blair Urban Area. Deeper aquifers (Aquifer-II) develop in the fractures of ultramafic and occasionally in the metasedimentary rocks in the depth range of ~30 to ~80 m. Aquifer-II can be developed by constructing Piezometers, which may be utilized for groundwater monitoring. Later, such piezometers may be fitted with Digital Water Level Recorders (DWLR) with telemetry system in a phased manner for acquisition and analysis of near real-time groundwater level data.

Considering the existing guidelines on NAQUIM, ideally 40 Ground Water Monitoring Wells (GWMW) should exist in the study area. There are 16 existing GWMW; so, the data gap is 24 monitoring wells. Already 230 Key Observation Wells (KOW) were established during the present study, out of which the balance 24 GWMW can be selected keeping in mind their present utilization. Only non-pumping dug wells tapping the shallow aquifer (Aqufer-I) need to be selected, as existing bore wells tapping Aquifer-II are heavily used by the concerned departments like the PBMC and the APWD.

4.4. Data Gap Analysis: Groundwater Quality

The norms for data gap analysis on groundwater quality is like that of the groundwater level monitoring. The data gap for quality monitoring would be 24 stations (GWMW), that may be selected across all the 24 Municipal Wards of Port Blair City. The existing protocol on groundwater quality monitoring suggests quality monitoring from all the 40 (proposed) monitoring stations and selecting the trend monitoring stations based on anomalous values obtained from the base line stations. For a comprehensive analysis, groundwater samples need to be collected and analyzed both for the pre-monsoon (April-May) and post-monsoon (November-December) periods.

4.5. Data Gap Analysis: Geophysical Data

Available guidelines on aquifer mapping (NAQUIM 1.0) for an area with two main aquifer systems (Aquifer-I and Aquifer-II) as in the present study area, the number of Gradient Resistivity Profiling (GRP) and Vertical Electrical Sounding (VES) should be 3 in each of the 9 quadrants of a topographic sheet on 1:50000 scale. However, in most of the cases, the desirable number of GRP/VES is not practically feasible due to problems of accessibility and insufficient space for conducting the surveys. Considering the present study area has six

quadrants with only 2 quadrants covering appreciable geographical area out of the study area of about 42 km^2, if the total number of GRP/VES is 18 (3 GRP/VES in each of the six quadrants), a reasonable coverage will be achieved. Locations of VES already carried out in the study area (prior to NAQUIM 2.0 study) are shown in **Fig. 4.3.**

4.6 New Data Generation Plan

The study area in Port Blair (under NAQUIM 2.0) was divided into grids of 3' X 3' (latitude and longitude wise) with an objective to establish new Key Observation Wells (KOW), new groundwater sampling points, to see the possible recharge and discharge areas by analysis of water table contour maps, to assess the scope of rainwater harvesting and managed aquifer recharge and finally, to carry out geophysical survey (VES) for knowing the subsurface geology in parts of the area. To fulfill these objectives, a Data Generation Plan has been worked out, which is summarized in **Table 4.5.**

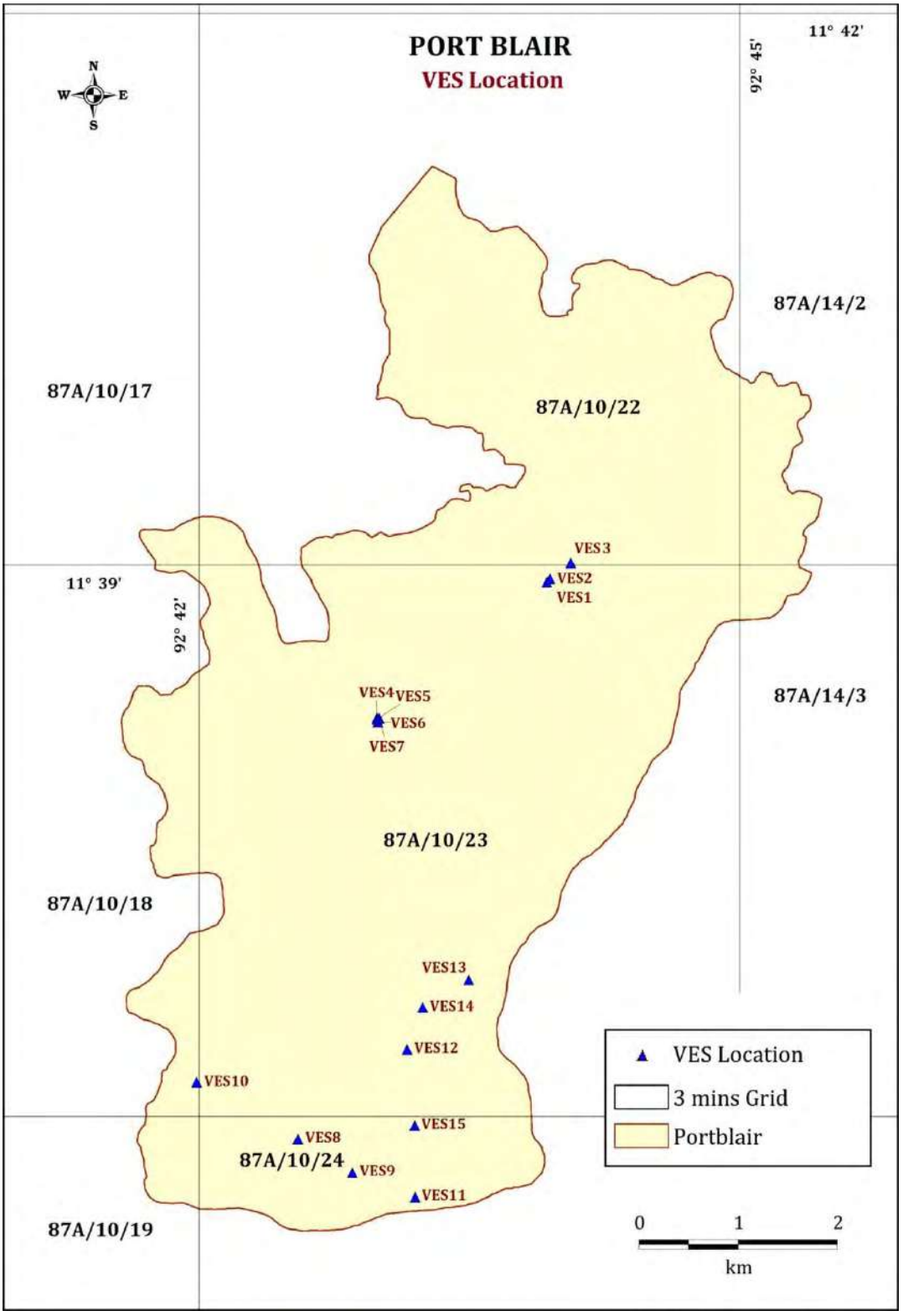


Fig. 4.3. Location map showing VES previously done in the study area

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Table 4.5. Data Generation Plan, NAQUIM 2.0 in Port Blair Urban Area

Proposed activity	Particulars	Proposed number
Establishment of Key Observation Wells (KOW)	In all the 24 Municipal Wards in Port Blair City	200
Collection of groundwater samples from the KOW	In-house: Analysis of inorganic constituents (basic analysis, analysis of iron, analysis of heavy metals)	200
	Outsourced: Analysis of bacteriological parameters (from RMRC, Port Blair)	35
Geophysical Survey	Vertical Electrical Sounding (VES)	20
Pumping Test	In large-diameter open dug wells	3
Estimation of groundwater storage	Detailed measurement of selected KOW across Municipal Wards	10
Data collection from concerned departments of UT administration	Through physical meetings, site visits, and data sharing	Need based
Requesting feedback from the UT administration	Through physical/online meeting with the Deputy Commissioner	Twice, before pre-monsoon and after monsoon
Data sharing and dissemination	Through Quarterly dialogues with Central Water Commission and related departments of Andaman administration	Second quarter (July-September) and Fourth quarter (January-March)

Secondary data generation was proposed through data sharing with the Andaman Public Works Department, Port Blair Municipal Council and other such departments. Collaboration with Regional Medical Research Centre (ICMR), Port Blair was proposed for bacteriological analysis of groundwater samples collected from supply water source and a few large-diameter, open dug wells used primarily for domestic use.

As a follow-up of the activity under NAQUIM 2.0 study in Port Blair, capacity building of the stakeholders through organization of trainings on “Source Sustainability for Drinking Water” was planned based upon the requests received from departments working in the water sector like the Andaman Public Works Department (APWD) and the Port Blair Municipal Council (PBMC).

Based on the work components in field (Field Work) and in the Lab/HQ, Kolkata, the timeline for various activities completed by the team members of NAQUIM 2.0 in Port Blair Urban Area is prepared. The timeline is given in **Table 4.6.** A perusal of the table reveals that both field based and HQ based/lab based activities were completed in a systematic manner by all the team members. The field-based activities started in April 2023 and continued till January 2024. During the period from January 2024 to March 2024, the data analysis, data interpretation, thematic map preparation, draft report preparation, draft report scrutiny, modification and report finalization was completed.

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Table 4.6. Timeline from April 2023 to March 2024, NAQUIM 2.0 study, Port Blair

Name and Designation	*FIELD WORK/ LAB WORK & HQ, KOLKATA BASED WORK: MONTH WISE ACTIVITY*											
	APR 2023	**MAY 2023**	**JUN 2023**	**JUL 2023**	**AUG 2023**	**SEP 2023**	**OCT 2023**	**NOV 2023**	**DEC 2023**	**JAN 2024**	**FEB 2024**	**MAR 2024**
Debasish Bagchi, Scientist-D (HG) & Team Leder	LW	LW	FW & LW	FW & LW	LW	LW	LW	LW	FW & LW	FW & LW	LW	LW
Sujit Sarkar, Scientist-D (GP)	LW	LW	FW & LW	LW	LW	LW	LW	LW	FW & LW	LW	LW	LW
Dr. K. C. Mondal, Scientist-D (GP)	LW	LW	FW & LW	LW	LW	LW	LW	FW & LW	FW & LW	LW	LW	LW
Sandip Bhowal, AHG	LW	FW & LW	FW & LW	FW & LW	LW	LW	LW	FW & LW	LW	LW	LW	LW
Awadhesh Kumar, STA (HG)	FW & LW	FW & LW	FW & LW	FW & LW	LW	LW	LW	FW & LW	FW & LW	LW	LW	LW
Dr. Nilamoni Barman, Scientist-C (HM)	LW	LW	FW & LW	LW	LW	LW	LW	FW & LW	LW	LW	LW	LW
Prasanth Yentapalli, ACH	LW	FW & LW	FW & LW	LW	LW	LW	LW	FW & LW	LW	LW	LW	LW

FW: FIELD Work, LW: Lab Work and Work in the HQ (Kolkata)

5. HYDROGEOLOGY

5.1 General

There are three main types of formations in the study area, namely the "unconsolidated formations", the "consolidated marine sedimentary formations" and the "consolidated, igneously fractured formations". The “unconsolidated formations” are of Quaternary age and consist of beach sand, coral rubble and thin alluvial cover. The formations are distributed in the study area only in the form of narrow linear tracts along the east coast of the Andaman Sea. The marine sedimentary rocks, consisting of sandstone (greywacke), siltstone, black shale, gravel and conglomerate, form the "semi-consolidated sedimentary formations" (Banerjee et al. 1988). The “fractured formation” consists of a series of volcanic rocks characterized by fracture porosity. The hydrogeologic map of the study area is shown in Fig. 5.1. The hydrogeological map in Fig. 5.1 shows that the Protherapore area, which consists of rocks such as graywacke, gravel, sandstone, conglomerate, siltstone and shale, has the most promising groundwater potential. Here, a well discharge (lps) of > 3 lps is expected. The Lambaline area, which consists of rocks such as graywacke, conglomerate, siltstone and shale, and the Brooksabad area, which consists of rocks such as graywacke, conglomerate, siltstone, shale and some portions of volcanic rocks such as peridotite, serpentinite, anorthosite and gabbro, also have a good groundwater potential of >1-3 lps discharge. The Birdline area, on the other hand, consists of rocks such as graywacke, gravel, sandstone, conglomerate, siltstone and shale, and the Brichganj area, which consists of volcanic rocks such as peridotite, serpentinite, anorthosite and gabbro, has a low groundwater potential of 0-1 lps.

The shallow, unconfined aquifers (Aquifer-I) consist of beach sands with coral fragments and shells, alluvium in the stream valleys and colluvium in the intermediate valleys. The maximum thickness of sediments in Aquifer-I is 9 m, but the saturated thickness varies from 0.45 m to 4.75 m in summer and from 0.05 m to 3.85 m during the post-monsoon season (CGWB 2020). The groundwater in Aquifer-I generally occurs as a freshwater lens over saltwater fronts. Discharges from bore wells tapping Aquifer-I generally vary between 2.4 and 20.0 m^3/hour (0.67 to 5.56 LPS).

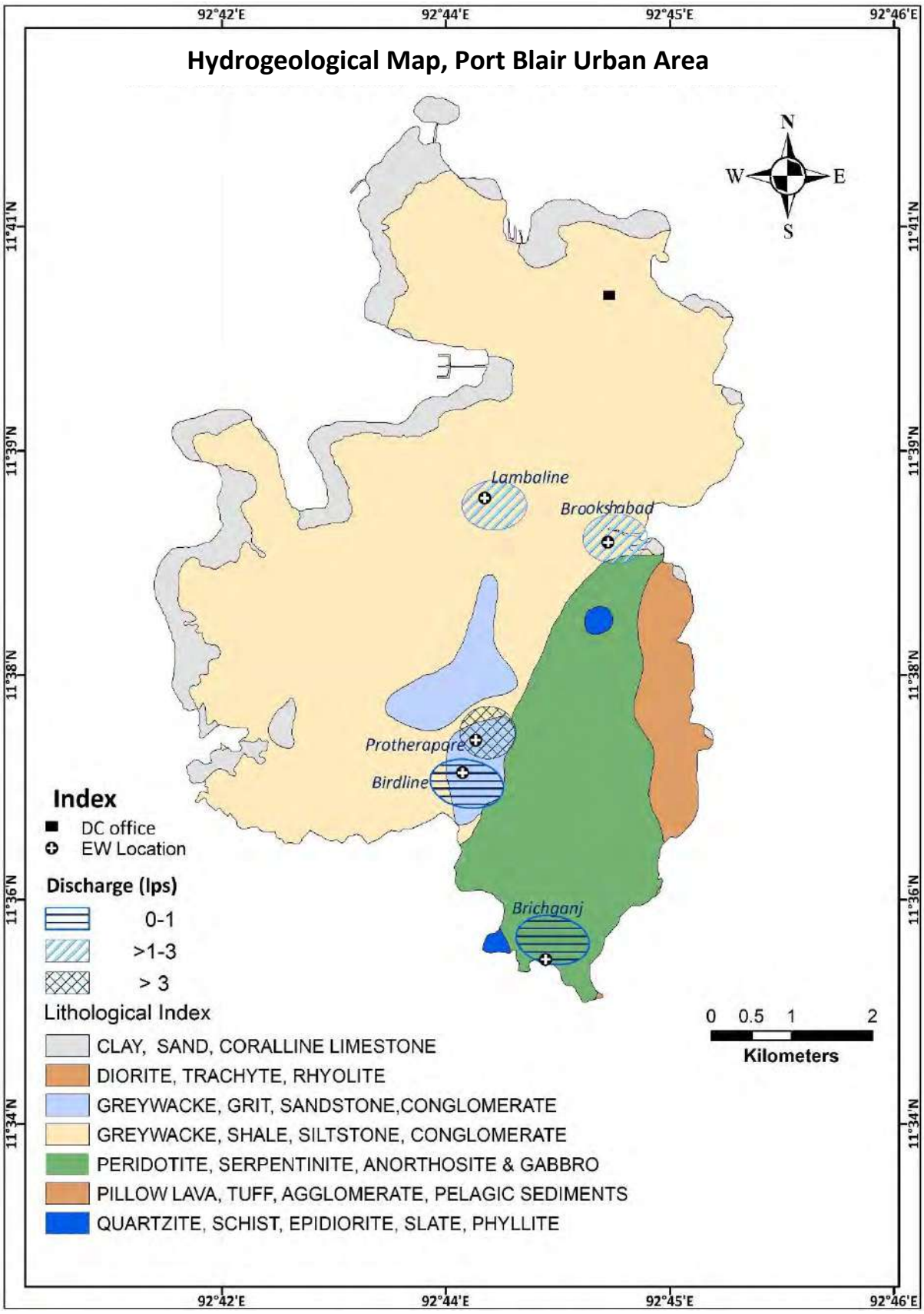


Fig. 5.1. Hydrogeological Map, Port Blair Urban Area

Weathered mantle of fissured and semi-consolidated sedimentary rocks also form a moderately potential, shallow aquifer (Aquifer-I), which is often developed by the shallow

dug wells and occasionally by shallow bore wells having depth varying from 5 to 20 m. In the shallow, unconfined aquifers, water table follows the topography. Depth to Water Level (DTWL) during pre-monsoon and post-monsoon periods and seasonal fluctuation of water table across all 24 Municipal Wards along with the number of Key Observation Wells (KOW) inventoried in each Municipal Ward in the study area is given in **Table 5.1.**

Table 5.1 Ward-wise pre-monsoon and post-monsoon water level and fluctuation

Municipal Ward No.	Pre-monsoon DTWL (mbgl)	Post-monsoon DTWL (mbgl)	Fluctuation (m)	No. of KOW inventoried
1	1.29-2.68	0.97-3.85	0.38-2.73	8
2	1.11-4.75	0.40-1.86	0.37-3.33	10
3	1.10-2.05	0.25-1.95	0.30-2.09	10
4	1.20-2.45	0.49-2.74	0.01-1.27	16
5	0.80-3.90	0.51-2.32	0.18-1.43	24
6	0.50-1.95	0.28-1.97	0.37-0.92	10
7	0.90-2.34	0.44-1.74	0.14-0.60	6
8	0.80-3.00	0.12-2.69	0.05-0.68	5
9	1.00-1.30	0.40-0.91	0.09-1.65	6
10	1.30-3.20	0.76-2.61	0.22-0.59	8
11	0.90-1.80	1.31-3.75	0.41-1.95	4
12	0.90-2.00	0.43-2.02	0.30-1.34	13
13	1.10-2.50	0.08-1.73	0.64-1.68	5
14	1.20-1.60	0.51-1.97	0.68-0.89	5
15	0.80-1.60	0.28-1.26	0.46-1.32	8
16	0.90-1.80	0.13-1.32	0.17-1.37	8
17	1.00-2.40	0.44-2.98	0.11-0.70	9
18	0.70-1.80	0.30-0.97	0.16-1.46	9

Municipal Ward No.	Pre-monsoon DTWL (mbgl)	Post-monsoon DTWL (mbgl)	Fluctuation (m)	No. of KOW inventoried
19	0.80-3.80	0.20-3.85	0.15-1.79	9
20	0.75-1.80	0.24-2.48	0.02-0.76	11
21	0.80-3.0	0.16-2.77	0.01-1.34	11
22	0.60-1.70	0.39-1.43	0.12-0.61	6
23	0.88-2.50	0.05-2.04	0.15-3.53	11
24	1.70-3.50	1.07-2.75	0.48-0.83	7

5.2 Hydrogeological Survey

During the pre-monsoon hydrogeological survey in June 2023, total 231 KOWs were inventoried, which consists of 220 dug wells and 11 bore wells. Follow up fieldwork was done in the post-monsoon period (November and December 2023), wherein repeat measurements were taken along with detailed inventory of 25 large diameter dug wells. During the detailed survey, in-storage volume of groundwater was estimated in Municipal Ward No. 2, 3, 5, 6, 7, 10, 11, 12, 13, 16, 20, 21 and 22. Details of the Key Observation Wells (KOW) inventoried in the study area is given in **Annexure-I.** A description on Aquifer-I and Aquifer-II in the study area is given below.

5.2.1 Shallow Aquifer (Aquifer-I): The shallow aquifer is well developed within a depth range from 5 to 20 mbgl. Discharge of these aquifers was estimated during pumping test of large diameter dug wells in the study area. Well discharge was found to vary from 0.70 LPS at Birdline to 1.14 LPS at Brookshabad (June 2023). Static Water Level (SWL) was 0.48 mbgl at Birdline (APWD Pump House), 0.81 mbgl at Brookshabad and 1.67 mbgl at Lambaline. Transmissivity (T) of the shallow aquifer (Aquifer-I) was 8.46 m^2/day at Birdline and 14.0 m^2/day at Brookshabad.

5.2.2 Deeper Aquifer (Aquifer-II): The deeper in the study area are composed of tholeiitic basalt (Andaman Volcanics) and ultramafic rocks of the Ophiolite Group. These aquifers occur under confined conditions. Groundwater is developed through shallow and medium to deep tube wells. The thickness of aquifers ranges from 6 to 7 m. Total six bore wells were drilled by CGWB in the study area during the 1980s. Aquifer-II manifests as productive

fracture zones in hard rocks comprising serpentine peridotite and dunite (Chakraborty 1990). The depth of Aquifer-II (observed during drilling of the Exploratory Wells and Observation Wells) ranges from 25-27 m, 30-32 m and 59-60 m at Prothrapur but <30 m at Brichganj and Dilthaman Tank. The highest discharge recorded in the study area was 4.72 LPS at Prothrapur, near jail junction (Chakraborty 1990).

5.3 Depth to Water Level in the study area

The depth to water level (DTW) data was collected both during pre-monsoon and post-monsoon survey. The database comprises DTW of regularly monitored water wells (Ground Water Monitoring Wells) and newly established Key Observation Wells (KOW) from across all the 24 Municipal Wards. Based on the DTW data during pre-monsoon and post-monsoon (Year: 2023) the Depth to Water Level maps have been prepared, which are shown in **Fig. 5.2** and **Fig. 5.3**, respectively.

5.3.1 Pre-monsoon Depth to Water Level

Based on pre-monsoon DTW in the GWMW and the KOW, the DTW map has been prepared. The map (**Fig. 5.2**) shows that in the dug wells and bore wells, DTW varies from 0 to 2 mbgl. DTW >2 mbgl but <4 mbgl was seen only in few isolated pockets in the northern, south central and northwestern parts of the study area. Deeper water levels are observed in parts of Municipal Ward No. 2, 3, 17, 23 and 24. Out of these, DTW ranging from 2-4 mbgl is prominent in the northwestern part of Ward No. 17.

5.3.2 Post-monsoon Depth to Water Level

As in pre-monsoon, similar depth to water (DTW) level scenario was seen in post-monsoon period (December 2023). Almost entire study area is characterized by very shallow water level ranging from 0 to 2 mbgl. In the northern, northwestern and north central parts of the study area, small pockets of DTW ranging from 2 to 4 mbgl was observed. The areal extent of the DTW zone of 2-4 mbgl has shrunk as compared to the pre-monsoon (April 2023), which indicates a rise in the water level across the Municipal Wards in Port Blair City.

Table 5.4 Groundwater storage volume in selected Dug Wells, Port Blair Urban Area

KOW No./ GWMW No.	Location	Well Dia. (d), m	Well Depth (H), mbmp	DTW (d'), mbmp	Well Area (A), m^2	Water Column (h), m (h=H-d')	Volume of GW (V), m^3
PB12/W2/DW (AN093)	Haddo	1.25	4.77	1.55	1.234	3.22	3.9735
PB26/W3/DW (AN057)	Port Blair (Dholi well)	2.27	3.75	2.3	4.071	1.45	5.903
PB73/W6/DW (AN059)	Port Blair (Light House)	3.07	4.48	1.03	7.446	3.45	25.689
AN045	Port Blair (Marina Park)	1.62	4.5	1.61	2.073	2.89	5.991
PB114/W11/DW (AN002)	Port Blair (South Point)	3.6	11.1	2.54	10.238	8.56	87.637
PB108/W10/DW (AN008)	Shadipur	1.89	6.57	2.04	2.822	4.53	12.874
PB108/W10/DW (AN003)	Corbyn's Cove	1.52	6.4	1.41	1.825	4.99	9.107
PB185/W21/DW (AN013)	Brookshabad	4.8(L) 3.82(B)	2.65	1.38	18.336	1.27	23.287
PB182/W20/DW	Austinabad	2.04	5.48	1.21	3.288	4.27	14.04
PB206/W22/DW (AN007)	Brichgunj	2.00	4.54	2.08	3.160	2.46	7.774
AN017	Calicut	1.32	4.32	2.47	1.3765	1.85	2.547
PB149/W16/DW (AN091)	Dollygunj Chowk	2.52	5.3	1.43	5.017	3.87	19.416
PB51/W5/DW	Rajeev Gandhi Velodrome	1.68	2.15	1.46	2.229	0.69	1.538
PB45/W8/DW (AN093)	Indian Coat Guard Depot (Haddo)	3.22	4.55	2.00	8.191	2.55	20.887

2407

KOW No./ GWMW No.	Location	Well Dia. (d), m	Well Depth (H), mbmp	DTW (d'), mbmp	Well Area (A), m^2	Water Column (h), m (h=H-d')	Volume of GW (V), m^3
PB213/W23/DW	Birdline APWD Pump House	4.99	5.60	1.25	19.671	4.35	24.589
PB188/W22/DW (AN093)	Brookshabad	6.05	5.68	2.09	28.916	3.59	103.808
PB119/W11/DW (AN093)	Mazar Pahad	1.34	4.38	2.11	1.419	2.27	3.221
PB118/W11/DW (AN093)	Govt. Primary School, Mazar Pahad	1.65	4.2	3.35	2.151	0.85	1.828
PB127/W12/DW (AN093)	Doctor's Colony, Nayagaon	3.0	6.78	1.61	7.110	5.17	36.759
PB132/W13/DW (AN093)	Junglighat	2.083* 2.083	2.63	0.96	8.009	1.67	13.375
PB129/W12/DW (AN093)	Nepali Basti	1.50	5.67	1.65	1.778	4.02	7.148
PB144/W20/DW (AN093)	New Pahargaon	1.52	4.65	2.39	1.825	2.26	4.125
PB200/W20/DW (AN093)	New Pahargaon	1.52	3.80	1.13	1.825	2.67	4.873
PB203/W20/DW (AN093)	New Pahargaon	1.53	5.44	2.20	1.849	3.24	5.991
PB208/W22/DW (AN093)	Brichgunj	1.84	5.48	2.95	3.216	2.53	9.487

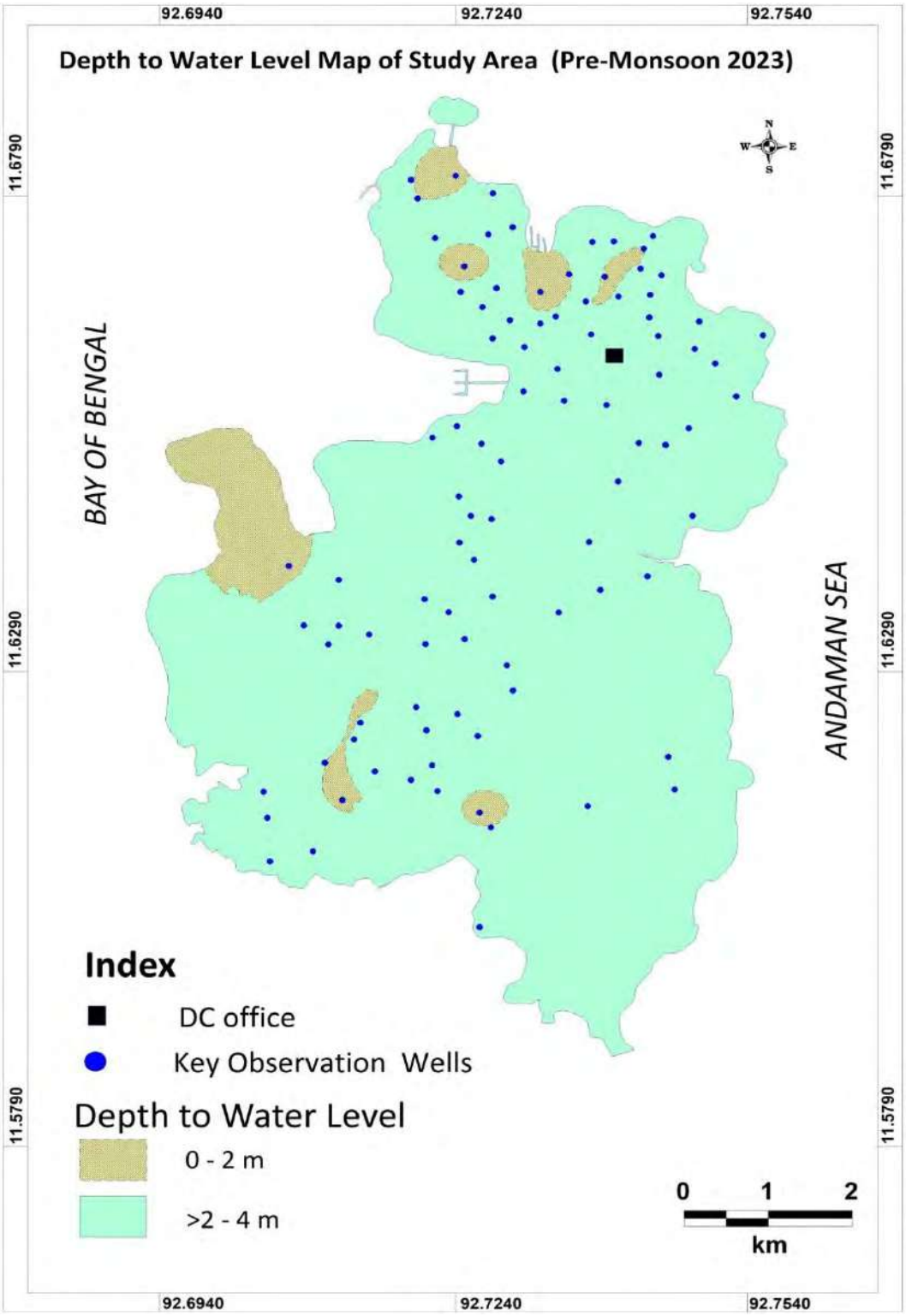


Fig. 5.2 Pre-monsoon Depth to Water Level Map, Port Blair Urban Area

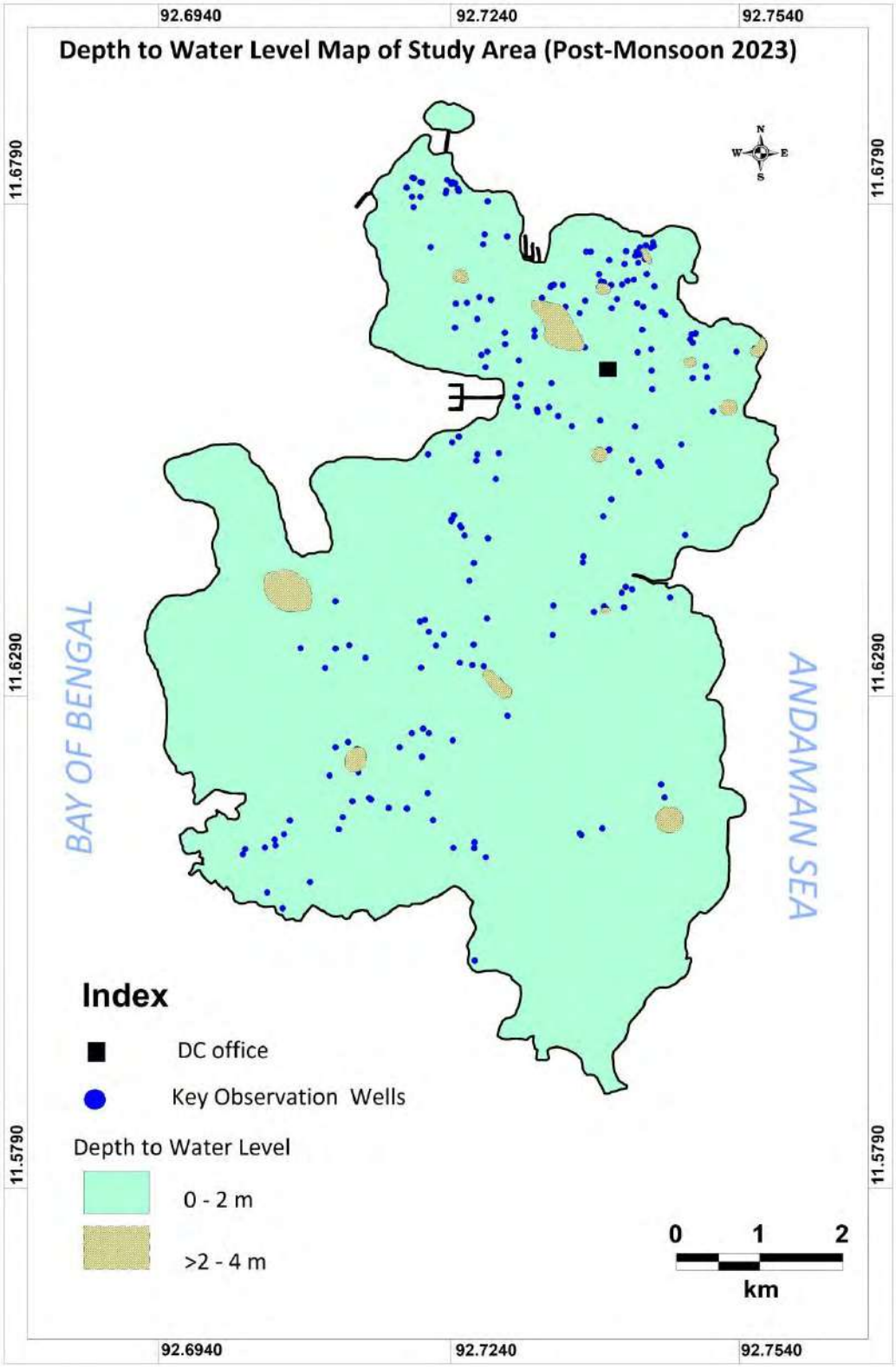


Fig. 5.3 Post-monsoon Depth to Water Level Map, Port Blair Urban Area

5.4 Water table contour maps

Based on reduced level and depth to water level data, water table (WT) elevation in the KOWs has been estimated both for the –re-monsoon and post-monsoon periods. Due to

variation in the WT elevation data, four classes of values are kept namely 0-30 m, >30-50 m, >50-70 m, and >70 m. A study of the WT elevation contours across the Municipal Wards of Port Blair City indicates direction of local-scale groundwater flow in the unconfined, shallow aquifer (Aquifer-I) and aids in delineation of zones of convergence and divergence of groundwater flow. The zones of groundwater discharge towards Andaman Sea in the east coast and towards the Bay of Bengal along the west coast probably forms a component of the submarine groundwater discharge (

5.4.1 Pre-monsoon Water Table Contour Map: The pre-monsoon WT contour map is shown in **Fig. 5.4.** Analysis of the map indicates that about 60% of the study area is characterized by WT contours of 0-30 m. Generally, the pattern of variation in the WT contours is similar to the topography of the area, which is revealed through comparison of **Fig. 5.4** with **Fig. 1.3** (Digital Elevation Map). Highest value of WT contour (>70 m) is observed in the southern, southeastern and northwestern parts of the study area. These areas are also characterized by elevated topography (upland areas) from where groundwater flow divergence occurs in a radial pattern.

5.4.2 Post-monsoon Water Table Contour Map: In post-monsoon period, similar WT contour pattern was observed as in pre-monsoon period. The WT contour intervals were kept at 30, 50, and 70 m. The WT contour map is shown in **Fig. 5.5.** The zones of groundwater flow divergence indicate discharge zones in the shallow, weathered aquifers which are tapped by the dug wells. The discharge areas are prominent along the southeastern, northwestern, northeastern, north central and southern parts of the study area, which have more groundwater potential as compared to remaining areas. Construction of large diameter dug wells would be more beneficial as the expected discharge would be higher as compared to other areas of Port Blair City.

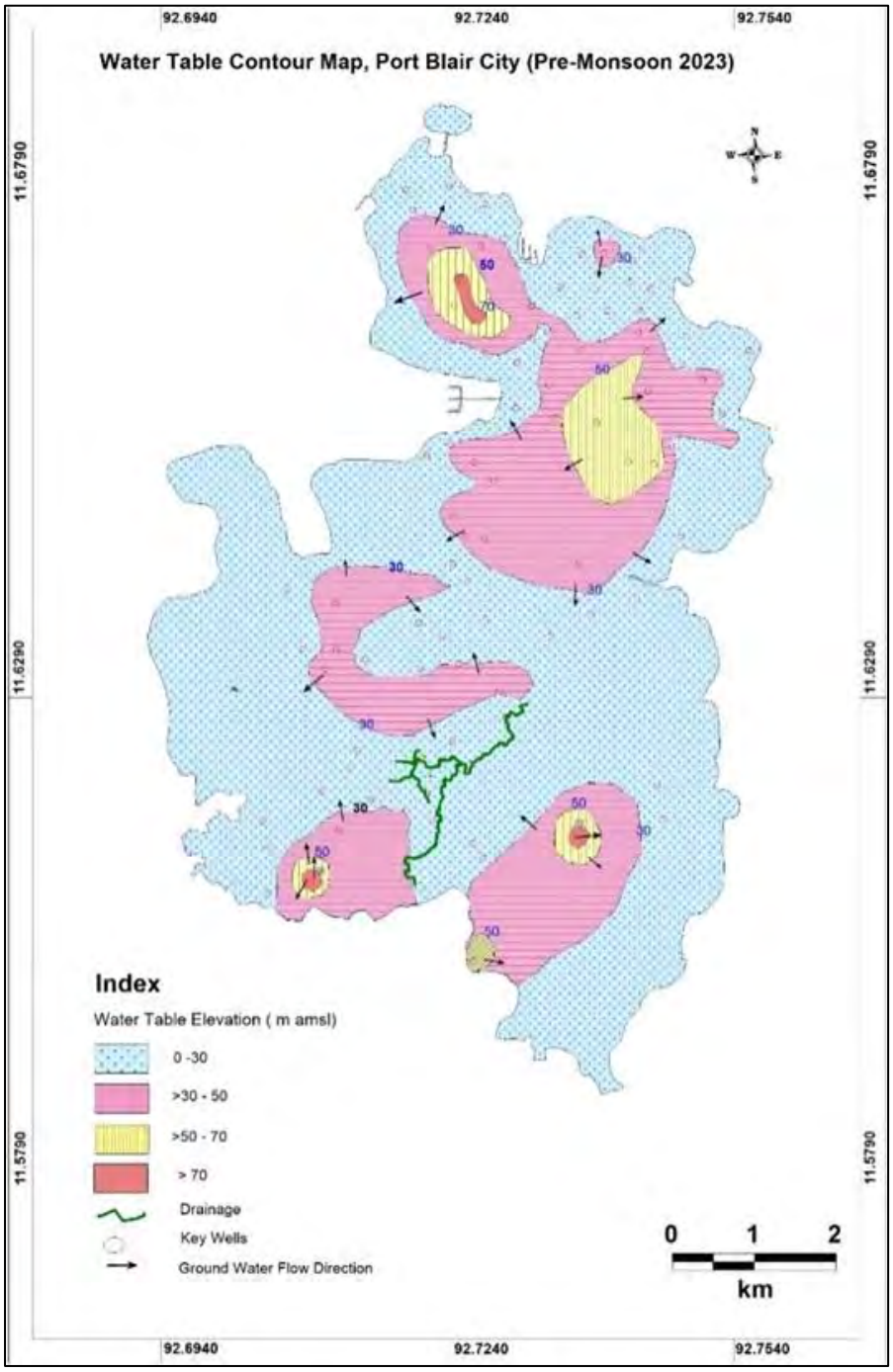


Fig. 5.4 Pre-monsoon Water Table Contour Map, Port Blair Urban Area

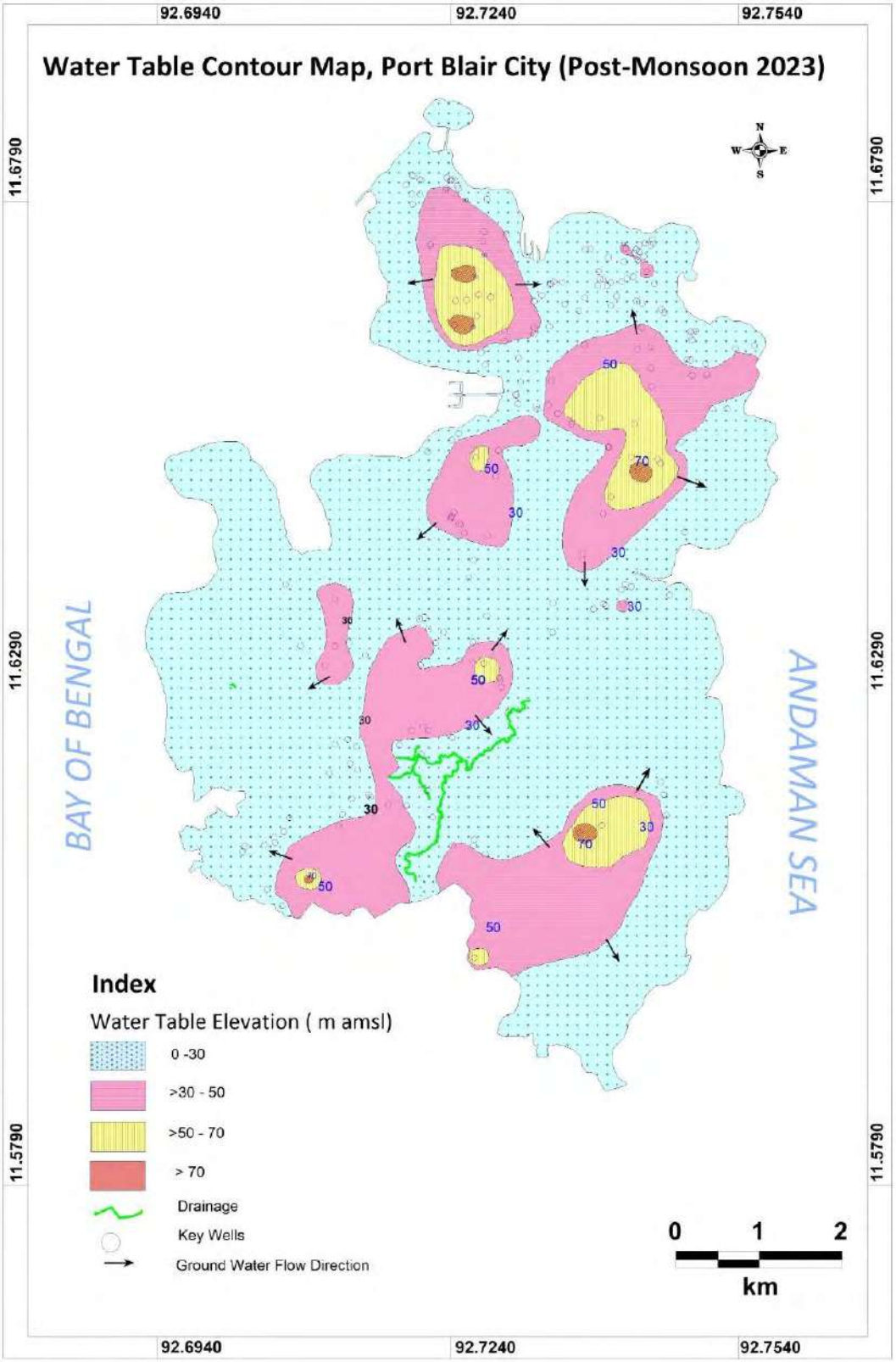


Fig. 5.5 Post-monsoon Water Table Contour Map, Port Blair Urban Area

5.5 Monthly monitoring in Port Blair Urban Area

During NAQUIM 2.0 study, monthly monitoring of the Ground Water Monitoring Wells was taken up from April 2023 to March 2024. The main objective was to analyze the monthly variation in depth to water level and prepare Well Hydrographs based on the monthly data. The monthly data for each monitoring well are given below.

Monthly monitoring data at Sampat Lodge Dug Well (AN001), Port Blair

Month and Year	Depth to Water Level (mbgl)
Apr-23	0.13
Jul-23	0.03
Aug-23	-0.02
Sep-23	0.03
Oct-23	0.02
Nov-23	0.03
Dec-23	0.03
Jan-24	0.40
Feb-24	0.62
Mar-24	0.57

Monthly monitoring data at South Point Dug Well (AN002), Port Blair

Month and Year	Depth to Water Level (mbgl)
Apr-23	2.41
Jul-23	0.00
Aug-23	1.35
Sep-23	0.18
Oct-23	0.10
Nov-23	0.20
Dec-23	0.40
Jan-24	1.94
Feb-24	1.25
Mar-24	2.05

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Monthly monitoring data at Corbyns Cove (AN003), Port Blair

Month and Year	Depth to Water Level (mbgl)
Apr-23	2.07
Jul-23	0.21
Aug-23	0.22
Sep-23	0.13
Oct-23	0.10
Nov-23	0.15
Dec-23	0.15
Jan-24	0.92
Feb-24	0.88
Mar-24	1.85

Monthly monitoring data at Austinabad (AN005), Port Blair

Month and Year	Depth to Water Level (mbgl)
Apr-23	2.58
Jul-23	0.17
Aug-23	0.83
Sep-23	0.21
Oct-23	0.18
Nov-23	0.03
Dec-23	0.13
Jan-24	0.54
Feb-24	0.57
Mar-24	0.92

2415

Monthly monitoring data at Brichgunj (AN007), Port Blair

Month and Year	Depth to Water Level (mbgl)
Apr-23	2.05
Jul-23	0.45
Aug-23	0.82
Sep-23	0.56
Oct-23	0.55
Nov-23	0.80
Dec-23	0.95
Jan-24	1.60
Feb-24	1.63
Mar-24	1.97

Monthly monitoring data at Shadipur (AN008), Port Blair

Month and Year	Depth to Water Level (mbgl)
Apr-23	3.75
Jul-23	1.26
Aug-23	1.45
Sep-23	1.30
Oct-23	1.25
Nov-23	1.25
Dec-23	1.35
Jan-24	1.42
Feb-24	1.45
Mar-24	2.02

Monthly monitoring data at Garacharma (AN011), Port Blair

Month and Year	Depth to Water Level (mbgl)
Apr-23	2.43
Jul-23	1.30

2416

Aug-23	1.61
Sep-23	1.53
Oct-23	1.43
Nov-23	1.43
Dec-23	1.48
Jan-24	0.60
Feb-24	0.73
Mar-24	0.43

Monthly monitoring data at Brookshabad (AN013), Port Blair

Month and Year	**Depth to Water Level (mbgl)**
Apr-23	0.70
Jul-23	0.39
Aug-23	0.45
Sep-23	0.50
Oct-23	0.50
Nov-23	0.50
Dec-23	0.30
Jan-24	0.64
Feb-24	0.69
Mar-24	0.90

Monthly monitoring data at Calicut (AN017), Port Blair

Month and Year	**Depth to Water Level (mbgl)**
Apr-23	3.22
Jul-23	0.29
Aug-23	0.85
Sep-23	0.35
Oct-23	0.30
Nov-23	0.55
Dec-23	0.20
Jan-24	2.42
Feb-24	5.40

2417

Mar-24	0.63

Monthly monitoring data at Junglighat VIP Road, (AN020), Port Blair

Month and Year	Depth to Water Level (mbgl)
Apr-23	0.62
Jul-23	0.33
Aug-23	0.42
Sep-23	0.32
Oct-23	0.32
Nov-23	0.37
Dec-23	0.42
Jan-24	0.42
Feb-24	0.42
Mar-24	0.42

Monthly monitoring data at Marina Park (AN045), Port Blair

Month and Year	Depth to Water Level (mbgl)
Apr-23	1.49
Jul-23	0.16
Aug-23	0.79
Sep-23	0.25
Oct-23	0.24
Nov-23	0.24
Dec-23	0.19
Jan-24	0.72
Feb-24	0.88
Mar-24	1.44

Monthly monitoring data at Dhobi Well (AN057), Port Blair

Month and Year	Depth to Water Level (mbgl)
Apr-23	1.84
Jul-23	0.61
Aug-23	0.94
Sep-23	0.69

Oct-23	1.19
Nov-23	0.99
Dec-23	1.14
Jan-24	1.74
Feb-24	1.20
Mar-24	1.70

Monthly monitoring data at Light House (AN059), Port Blair

Month and Year	**Depth to Water Level (mbgl)**
Apr-23	1.65
Jul-23	0.60
Aug-23	0.50
Sep-23	0.25
Oct-23	0.45
Nov-23	1.15
Dec-23	1.30
Jan-24	1.78
Feb-24	1.54
Mar-24	1.77

Monthly monitoring data at Dollygunj Chowk (AN091), Port Blair

Month and Year	**Depth to Water Level (mbgl)**
Apr-23	1.53
Jul-23	0.53
Aug-23	0.85
Sep-23	0.61
Oct-23	0.60
Nov-23	0.55
Dec-23	0.55
Jan-24	0.85
Feb-24	0.85
Mar-24	0.93

2419

Monthly monitoring data at Lambaline (AN092), Port Blair

Month and Year	Depth to Water Level (mbgl)
Apr-23	0.46
Jul-23	0.27
Aug-23	0.51
Sep-23	0.31
Oct-23	0.26
Nov-23	0.31
Dec-23	0.36
Jan-24	0.58
Feb-24	0.44
Mar-24	0.62

Monthly monitoring data at Haddo (AN093), Port Blair

Month and Year	Depth to Water Level (mbgl)
Apr-23	1.52
May-23	0.60
Jul-23	0.85
Aug-23	0.70
Sep-23	0.60
Oct-23	0.55
Nov-23	0.45
Dec-23	0.93
Jan-24	0.87
Feb-24	0.97
Mar-24	0.97

Based on monthly variation in depth to water level from April 2023 to March 2024, the Well Hydrographs are prepared for all 16 Ground Water Monitoring Wells, which are shown in **Fig. 5.6** to **Fig. 5.22.**

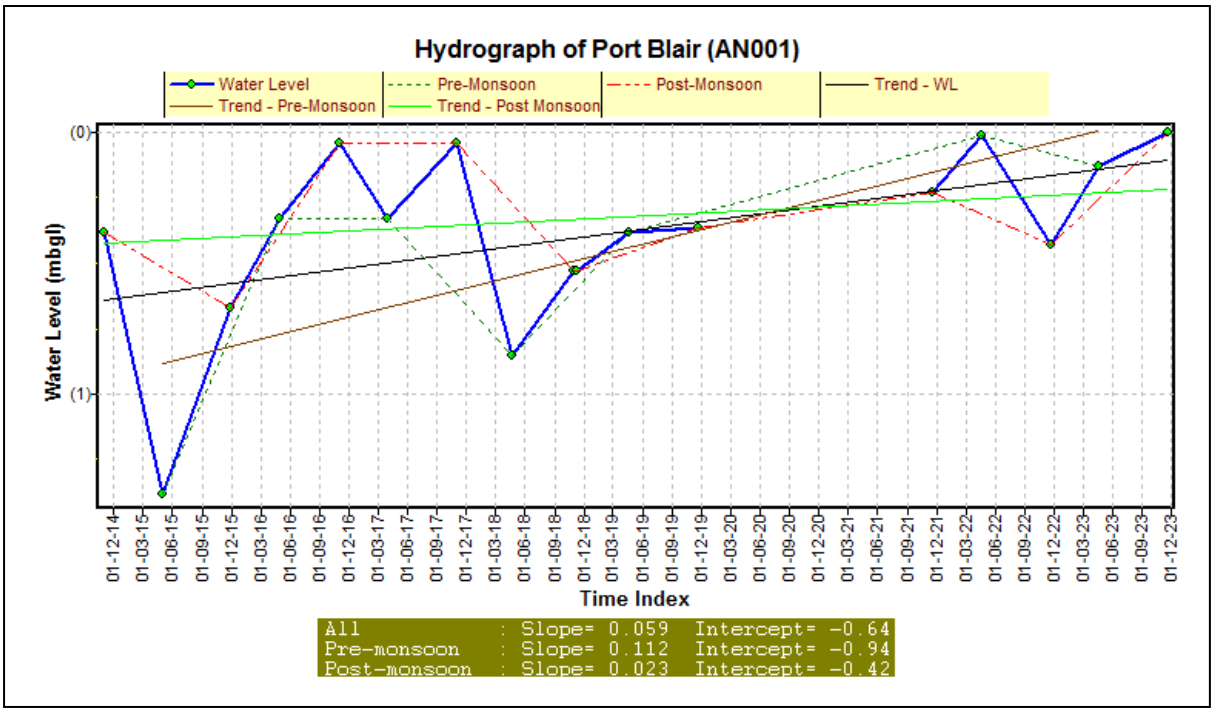


Fig. 5.6 Well Hydrograph of Sampat Lodge DW (AN001), Port Blair City

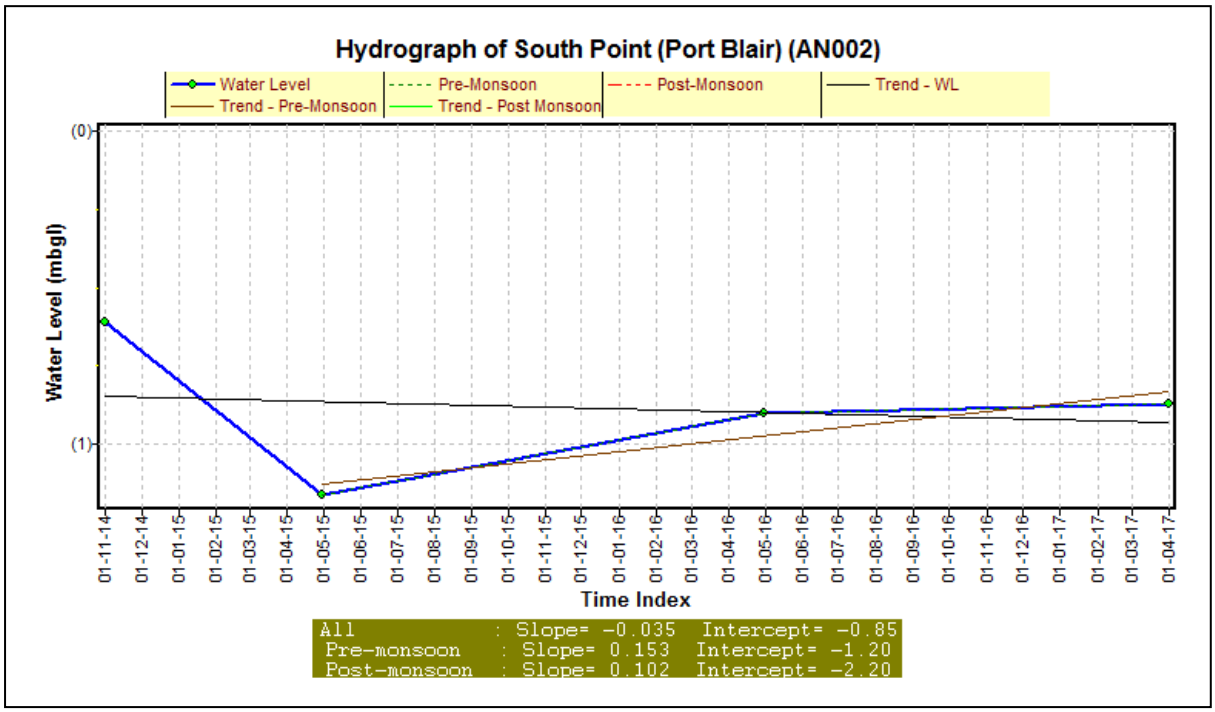


Fig. 5.7 Well Hydrograph of South Point DW (AN002), Port Blair City

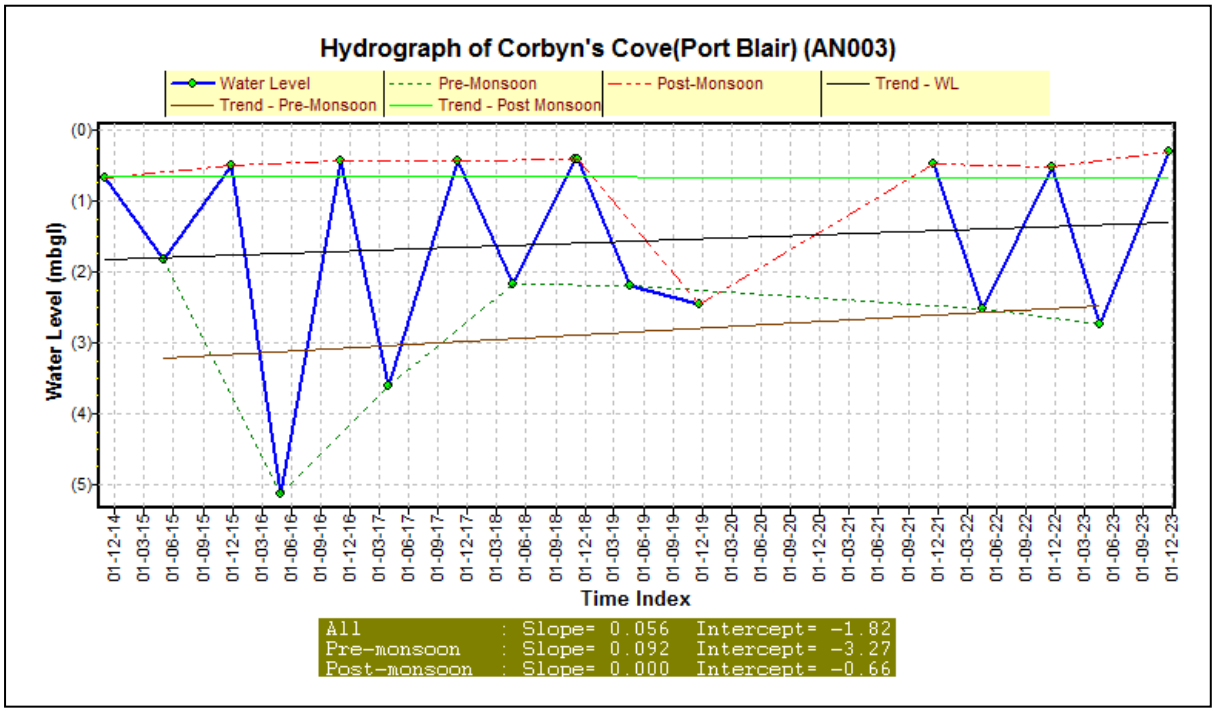


Fig. 5.8 Well Hydrograph of Corbyn's Cove DW (AN003), Port Blair City

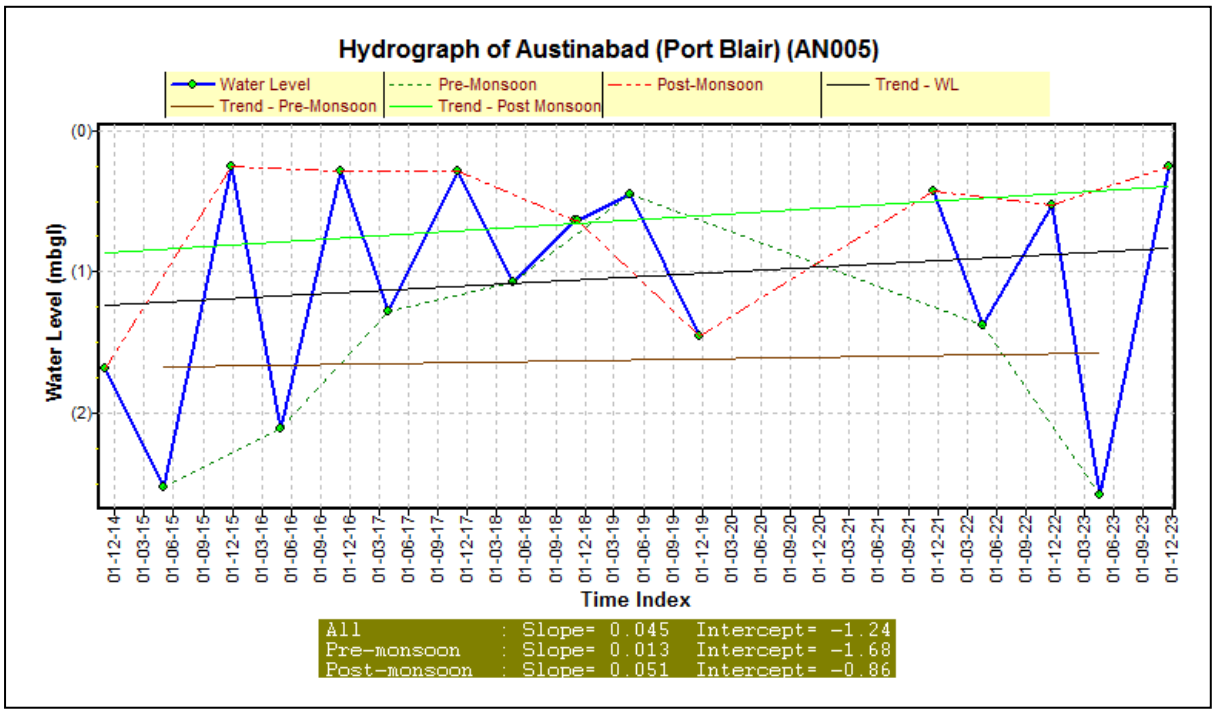


Fig. 5.9 Well Hydrograph of Austinabad DW (AN005), Port Blair City

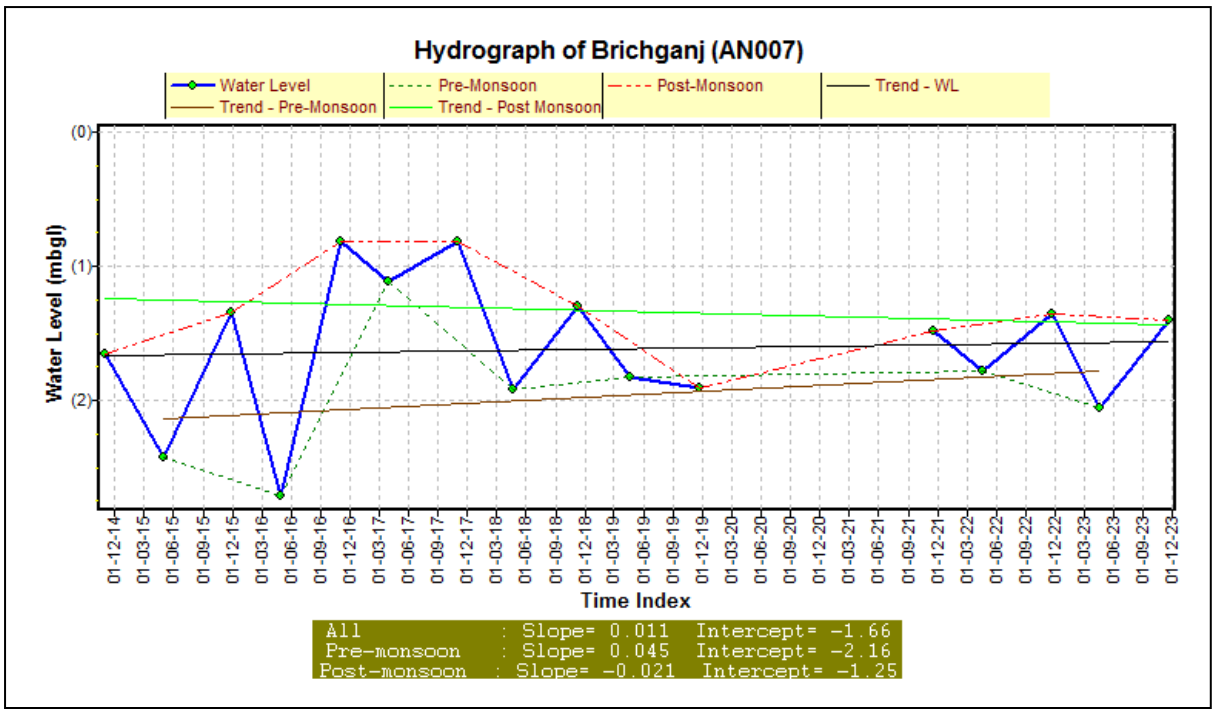


Fig. 5.10 Well Hydrograph of Brichganj DW (AN007), Port Blair City

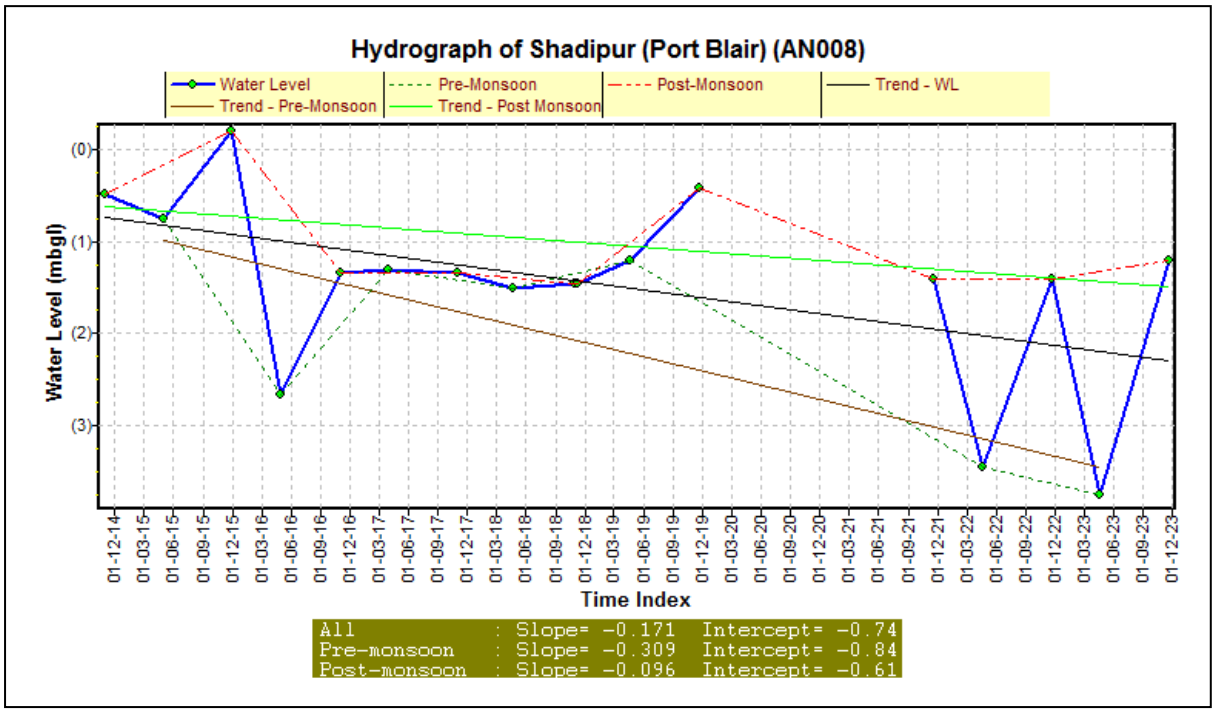


Fig. 5.11 Well Hydrograph of Shadipur DW (AN008), Port Blair City

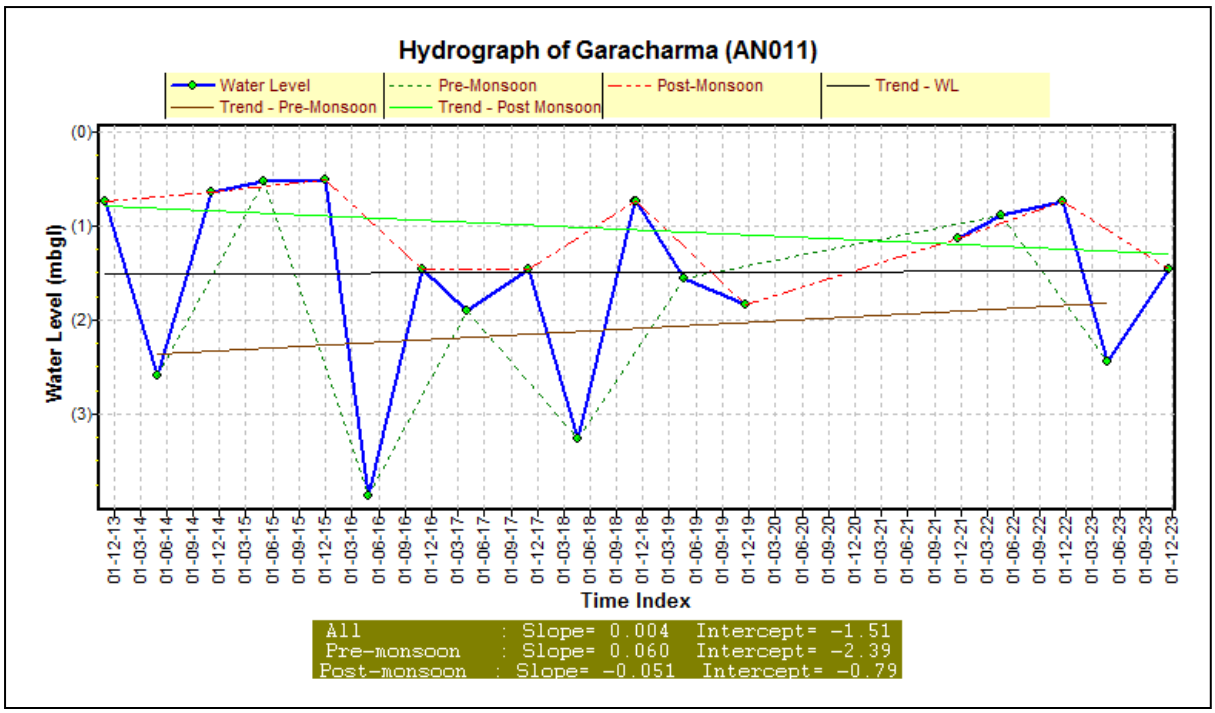


Fig. 5.12 Well Hydrograph of Garacharma DW (AN011), Port Blair City

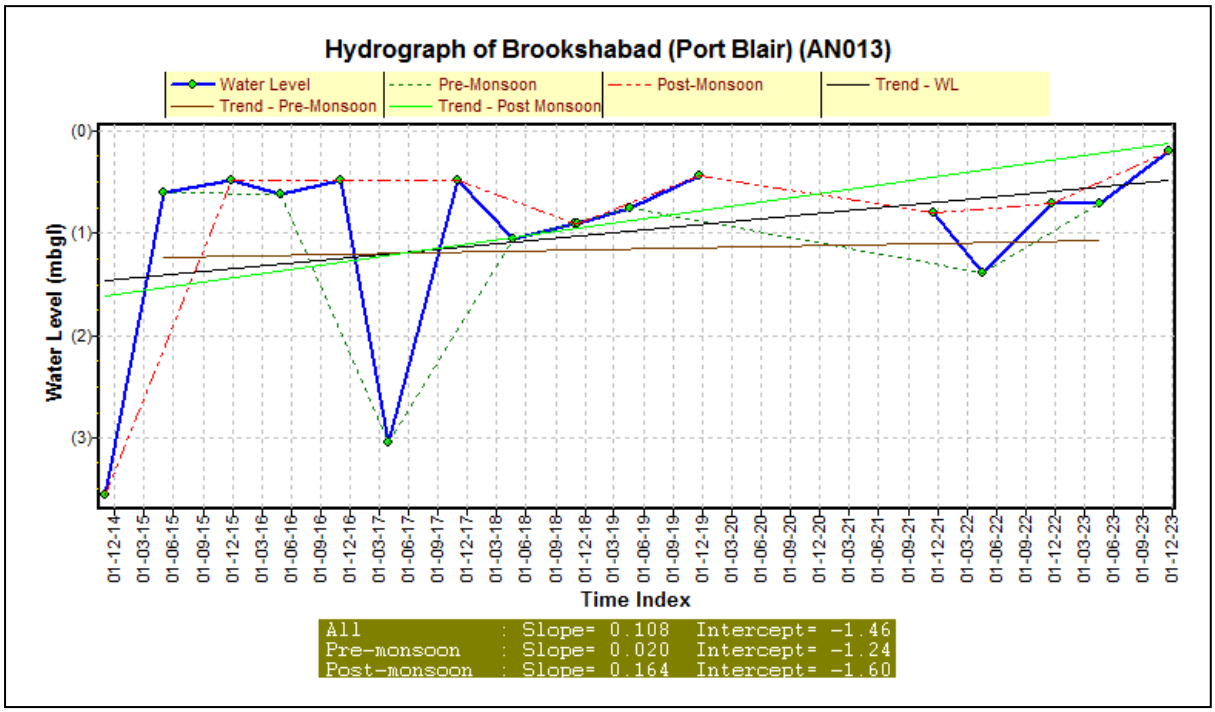


Fig. 5.13 Well Hydrograph of Brooksabad DW (AN013), Port Blair City

2424

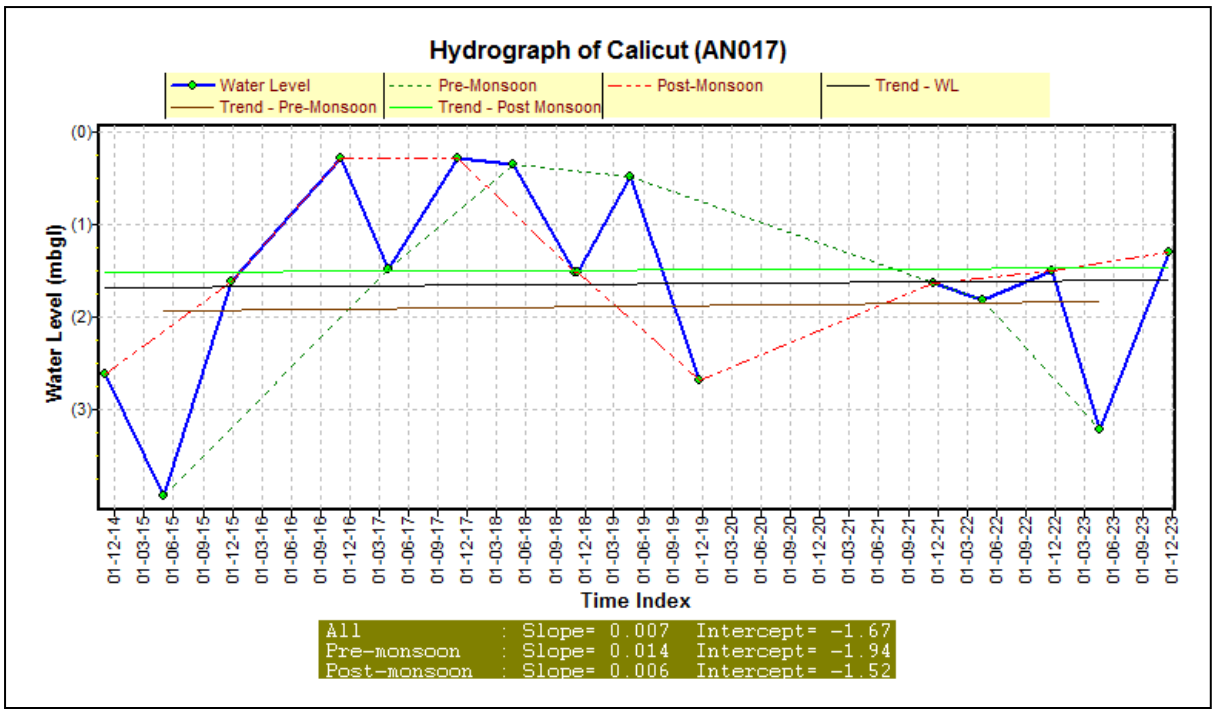


Figure 5.14: Hydrograph of Calicut DW (AN017), Port Blair City

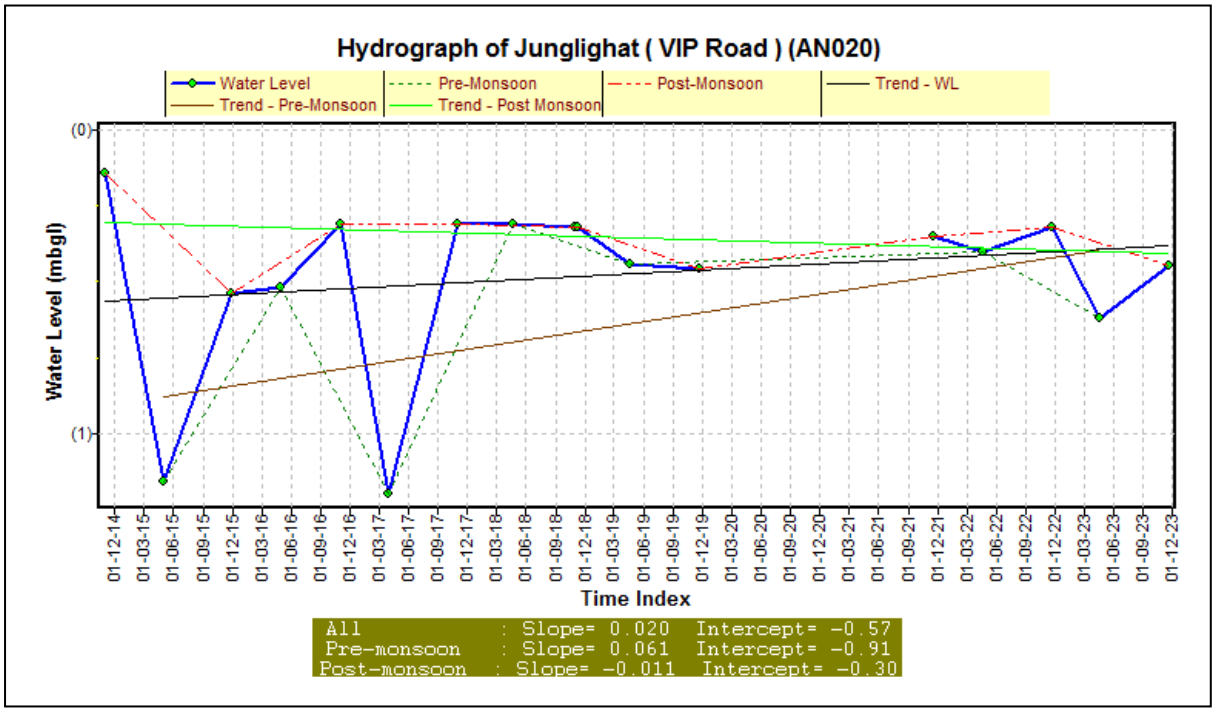


Figure 5.15 Well Hydrograph of Junglighat DW (AN020), Port Blair City

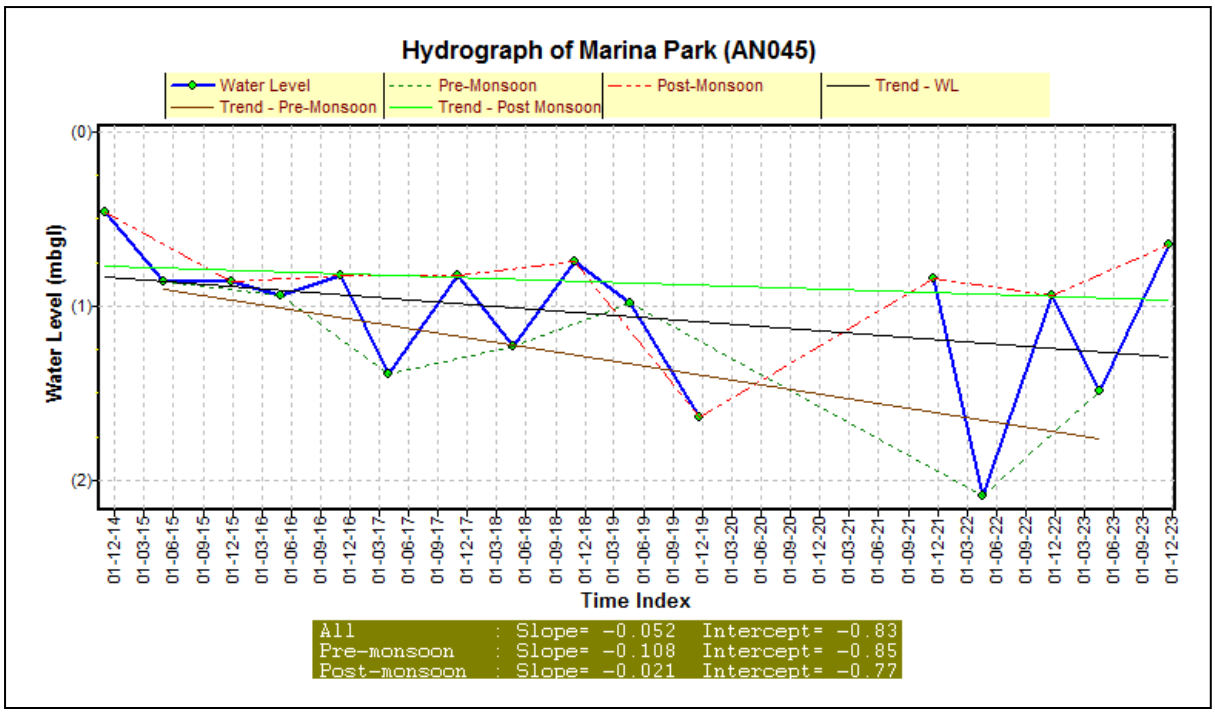


Fig. 5.16 Well Hydrograph of Marina Park DW (AN045), Port Blair City

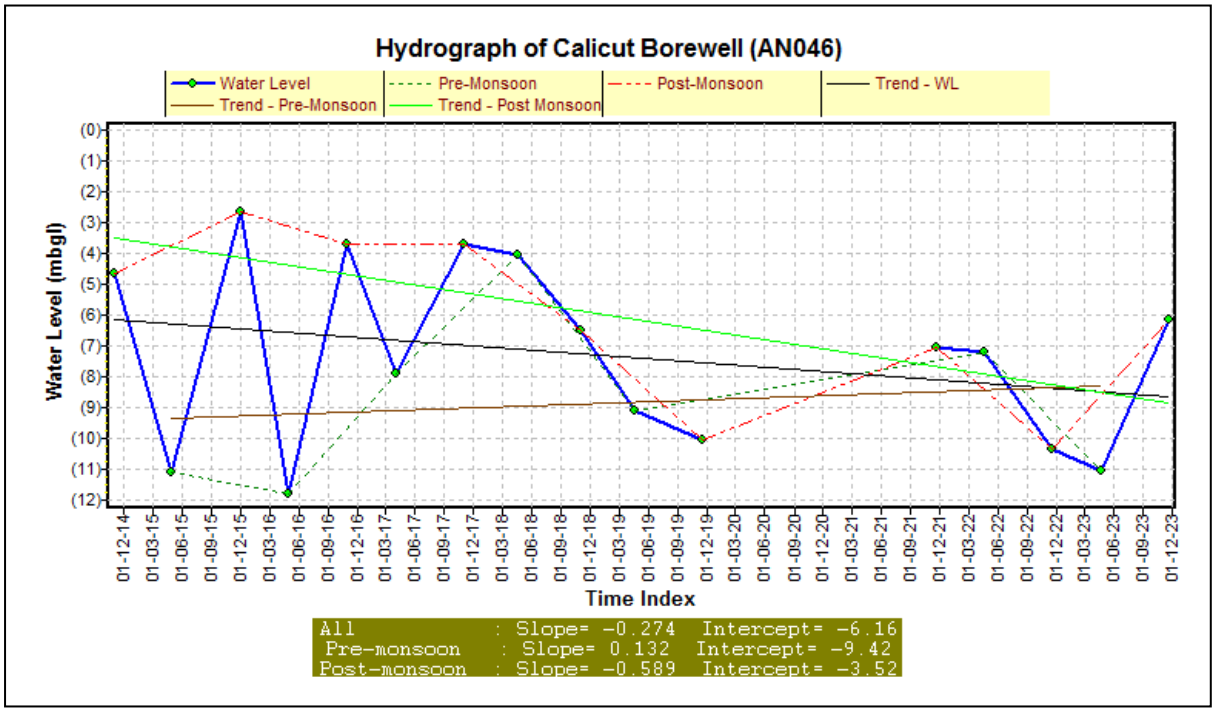


Fig. 5.17 Well Hydrograph of Calicut BW (AN046), Port Blair City

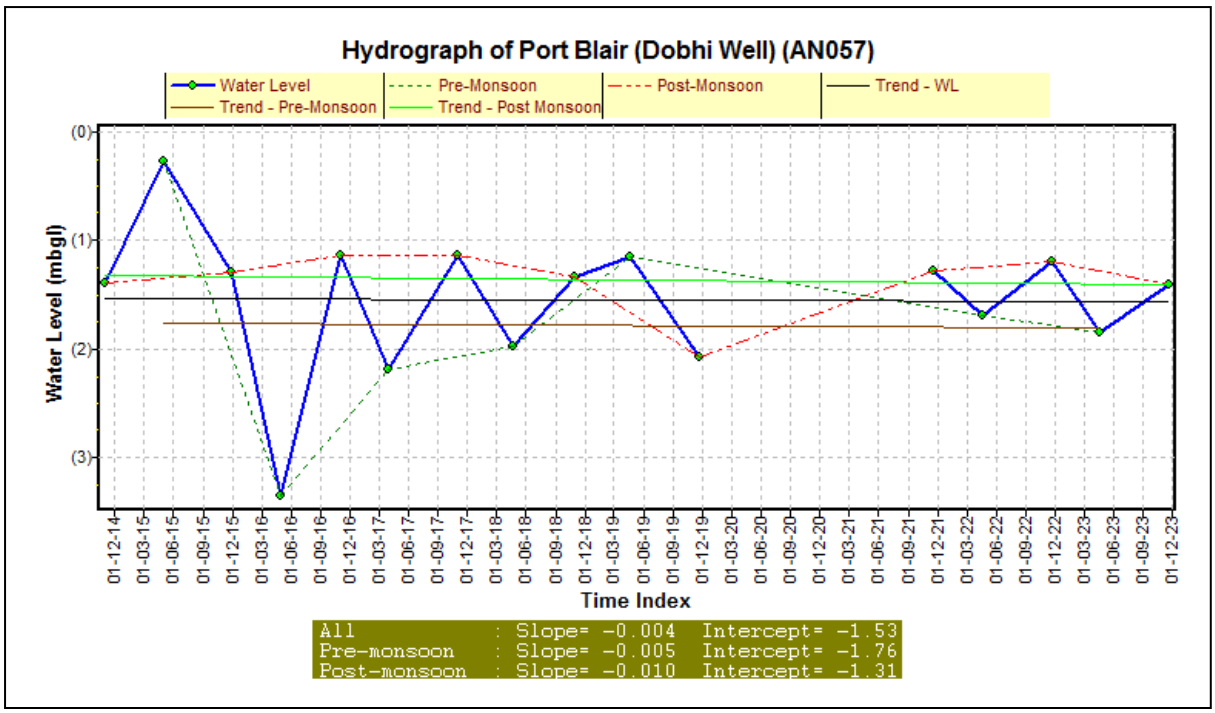


Fig. 5.18 Well Hydrograph of Dhobi Well (AN057), Port Blair City

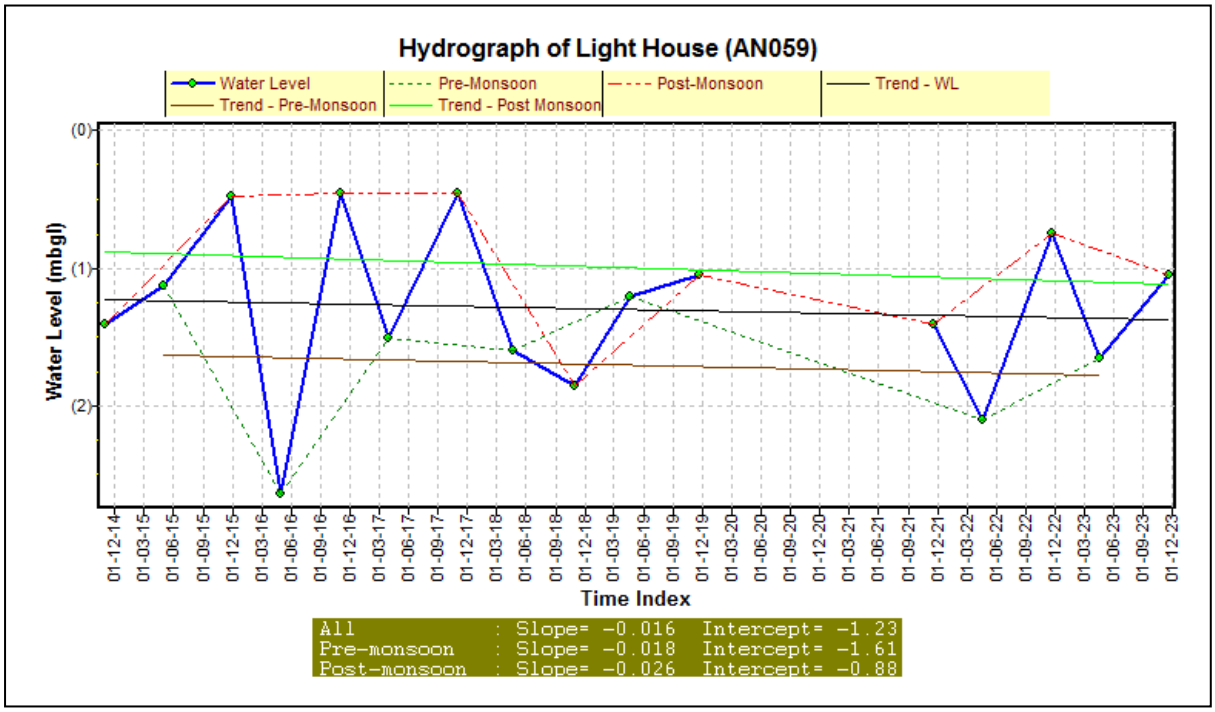


Fig. 5.19 Well Hydrograph of Light House DW (AN059), Port Blair City

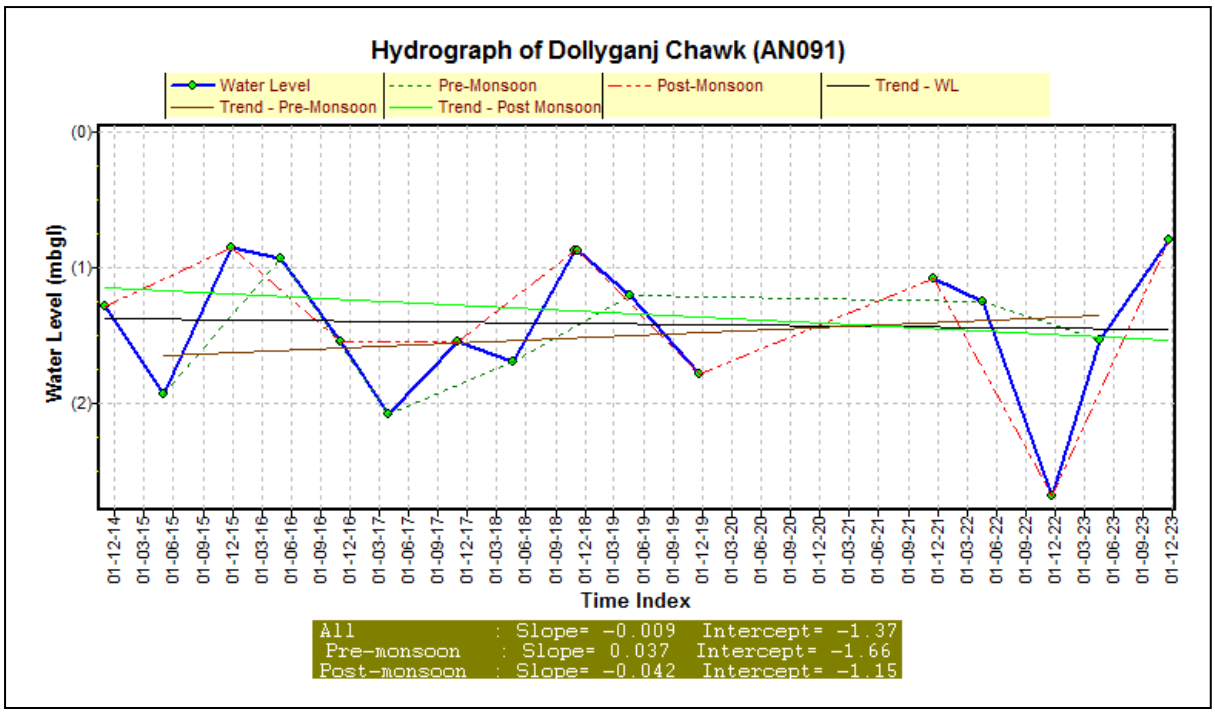


Fig. 5.20 Well Hydrograph of Dollyganj Chowk DW (AN091), Port Blair City

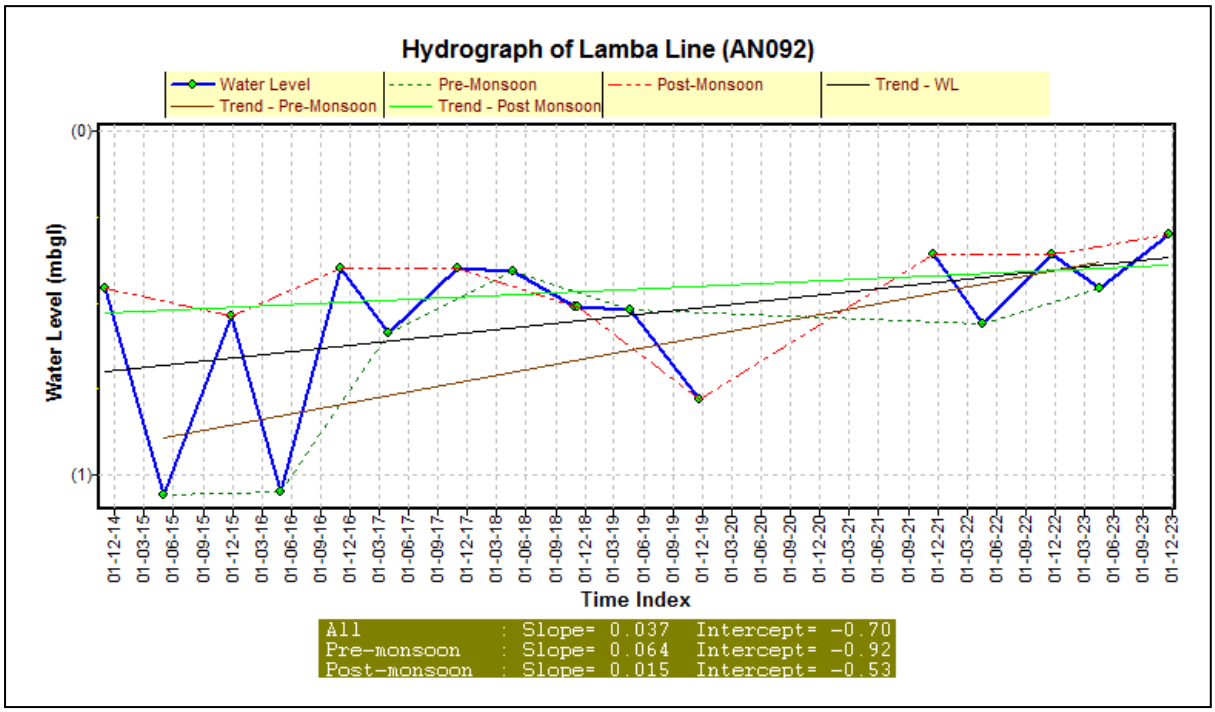


Fig. 5.21 Well Hydrograph of Lambaline DW (AN092), Port Blair City

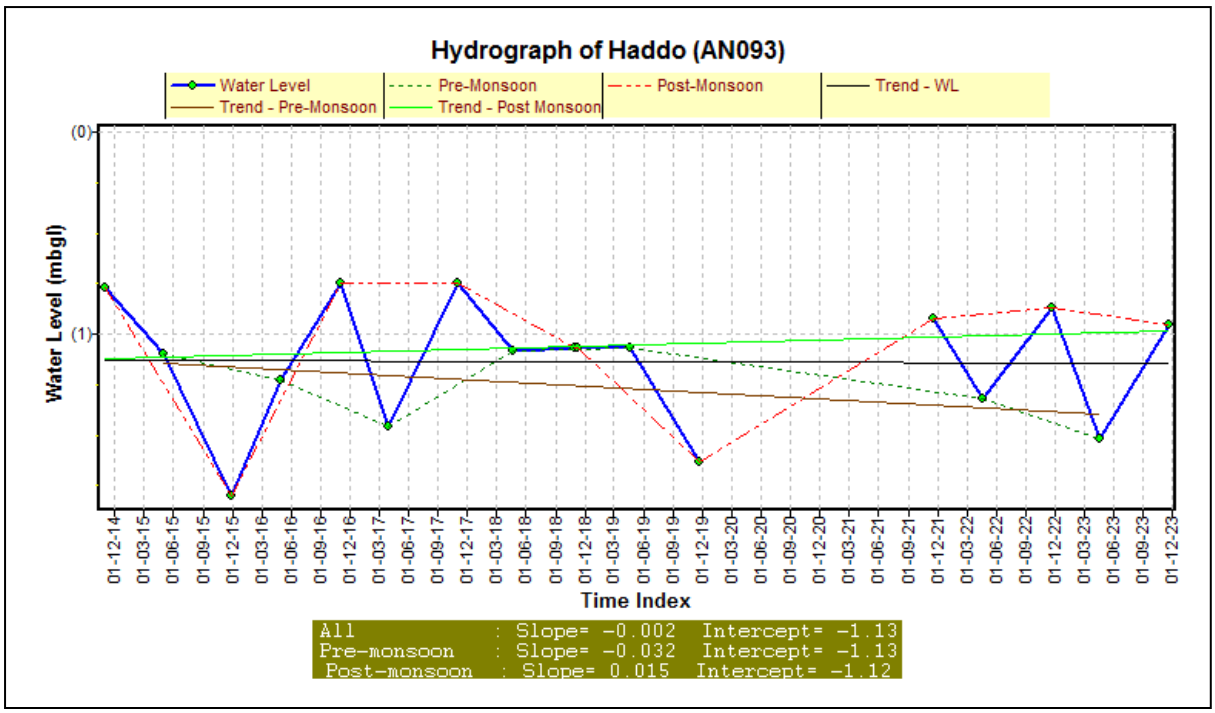


Fig. 5.22 Well Hydrograph of Haddo DW (AN093), Port Blair City

5.6 Interpretation of Well Hydrographs, Port Blair Urban Area

A hydrograph is a way of displaying water level information over time. There are a total of 16 Ground Water Monitoring Wells (GWMW) within the limits of Port Blair Urban Area, all of which are dug wells tapping the shallow, phreatic aquifer (Aquifer-I). Based on monthly monitoring data from April 2023 to March 2024, well hydrographs are prepared for all the GWMWs. The trend analysis from the well hydrographs, both for pre-monsoon and post-monsoon, is discussed hereunder.

5.6.1 Pre-monsoon trend analysis

Out of total 16 monitoring wells, 11 wells at Sampat Lodge (AN001), South Point (AN002), Corbyn's Cove (AN003), Austinabad, (AN005), Brichgunj (AN007), Garacharma (AN011), Brookshabad (AN013), Calicut (AN017), Junglighat (AN020), Dollyganj Chowk (AN091) and Lambaline (AN092) have shown rising trend in depth to water (DTW). The well at Sampat Lodge was replaced by another well in December 2023. Five GWMWS at Shadipur (AN008), Marina Park (AN045), Dhobi Well (AN057), Light House (AN059) and Haddo (AN093) have shown declining trend in DTW level.

5.6.2 Post-monsoon trend analysis

Out of the 16 monitoring wells, 8 wells (50% of total) at Sampat Lodge (AN001), South Point

(AN002), Corbyn's Cove (AN003), Austinabad, (AN005), Brookshabad (AN013), Calicut (AN017), Lambaline (AN092) and Haddo (AN093) have shown a rising trend in groundwater level from April 2023 to March 2024. Eight monitoring wells at Brichgunj (AN007), Shadipur (AN008), Garacharma (AN011), Junglighat (AN020), Marina Park (AN045), Dhobi Well (AN057), Light House (AN059) and Dollyganj Chowk (AN091) have recorded a declining trend.

5.6.3 Time averaged trend analysis

Based on DTW data in 16 monitoring wells, the well hydrographs at Sampat Lodge (AN001), Corbyn's Cove (AN003), Austinabad (AN005), Brichgunj (AN007), Garacharma (AN011), Brookshabad (AN013), Calicut (AN017), Junglighat (AN020) and Lamba Line (AN092) have shown a time averaged rising trend in depth to water level. Well hydrographs of remaining 7 monitoring wells at South Point (AN002), Shadipur (AN008), Marina Park (AN045), Dhobi Well (AN057), Light House (AN059), Dollyganj Chowk (AN091) and Haddo (AN093) have shown a time averaged declining trend. A summary of the pre-monsoon, post-monsoon and time averaged trend analysis of the Well Hydrographs is given in **Table 5.5.**

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Table 5.5 Trend analysis of Well Hydrographs in the study area

Sl No	Ground Water Monitoring Wells (GWMW)	Well ID	Latitude (°N)	Longitude (°E)	Pre-monsoon Trend: Rising/Falling/ No Change	Post-monsoon Trend: Rising/Falling/ No Change	Time Averaged Trend: Rising/Falling/No Change
1	Sampat Lodge	AN001	11.67057	92.74398	Rising Trend	Rising Trend	Rising Trend
2	South Point)	AN002	11.66408	92.75384	Rising Trend	Rising Trend	Falling Trend
3	Corbyn's Cove	AN003	11.64253	92.74598	Rising Trend	Rising Trend	Rising Trend
4	Austinabad	AN005	11.63509	92.73469	Rising Trend	Rising Trend	Rising Trend
5	Brichgunj	AN007	11.61507	92.73758	Rising Trend	Falling Trend	Rising Trend
6	Shadipur	AN008	11.65651	92.74348	Falling Trend	Falling Trend	Falling Trend
7	Garacharma	AN011	11.61367	92.70953	Rising Trend	Falling Trend	Rising Trend
8	Brookshabad)	AN013	11.63799	92.74037	Rising Trend	Rising Trend	Rising Trend
9	Calicut	AN017	11.60738	92.72644	Rising Trend	Rising Trend	Rising Trend
10	Junglighat (V I P Road)	AN020	11.6576	92.73523	Rising Trend	Falling Trend	Rising Trend
11	Marina Park	AN045	11.67113	92.74633	Falling Trend	Falling Trend	Falling Trend
12	Dhobhi Well	AN057	11.67096	92.73487	Falling Trend	Falling Trend	Falling Trend
13	Light House	AN059	11.66814	92.73775	Falling Trend	Falling Trend	Falling Trend
14	Dollyganj Chowk (Old Pahargaon)	AN091	11.63425	92.72282	Rising Trend	Falling Trend	Falling Trend
15	Lamba Line	AN092	11.65928	92.7495	Rising Trend	Rising Trend	Rising Trend
16	Haddo	AN093	11.67938	92.72803	Falling Trend	Rising Trend	Falling Trend

5.7 Estimation of in-situ groundwater storage in large-diameter dug wells

As part of the detailed study, a total of 25 dug wells were selected in the urban area of Port Blair to estimate the groundwater storage in the neighborhoods. Out of the 25 wells, 12 wells (48% of the total number) are the GWMW of CGWB while the remaining 13 are the Key Observation Wells (KOW) constructed as part of this study. The KOWs are also used for public water supply in Port Blair City. The total volume of in-situ groundwater storage was estimated to be 437.80 m^3 during the pre-monsoon, while it was 515.40 m^3 during the post-monsoon period. In-situ storage increased by about 18% in 2023 post-monsoon compared to the pre-monsoon, primarily due to the increased depth of the water column in the dug wells in the post-monsoon caused by the monsoon rains. In the pre-monsoon period, the volume of in-situ storage varied from 0.11 m^3 in Ward No. 5 to 120.87 m^3 in Ward No. 22. In the post-monsoon 2023, the volume of in-situ storage in the same wards was 1.54 m^3. Corresponding details are summarized in **Table 5.6.**

Table 5.6. Estimation of in-situ groundwater storage volume in pre-monsoon and post-monsoon, 2023

Sl. No.	Location of DW with Ward No.	Volume of GW (m^3), Pre-monsoon	Volume of GW (m^3), Post-monsoon
1	Haddo (W2)	2.96	3.97
2	Phoenix bay (W3)	6.76	5.90
3	Light House (W6)	16.98	25.69
4	Marina Park (W5)	6.24	5.99
5	South Point (W11)	96.24	87.64
6	Shadipur (W10)	16.85	12.78
7	Corbyns Cove (W12)	7.90	9.11
8	Brookshabad (W21)	23.84	23.29
9	Austinabad (W20)	13.15	14.04
10	Brichganj (W22)	7.24	7.77
11	Calicut (W23)	1.51	2.55

Sl. No.	Location of DW with Ward No.	Volume of GW (m^3), Pre-monsoon	Volume of GW (m^3), Post-monsoon
12	Dollygunj (W16)	18.56	19.42
13	Aberdeen Bazar (W5)	0.11	1.54
14	Haddo (W8)	20.48	20.89
15	Birdline (W23)	8.66	85.57
16	Brookshabad (W22)	120.87	103.81
17	Mazar Pahar (W11)	2.53	3.22
18	Mazar Pahar (W11)	5.16	1.83
19	Nayagaon (W12)	27.23	36.76
20	Junglighat VIP Road (W13)	5.21	13.38
21	Dudhline (W12)	5.99	7.15
22	New Pahargaon (W20)	4.75	4.12
23	New Pahargaon (W20)	3.92	4.87
24	New Pahargaon (W20)	5.25	5.99
25	Brichganj (W22)	9.42	8.14
Total in-situ storage volume		**437.80**	**515.40**

5.7.1 Pre-monsoon ward-wise distribution of groundwater storage

The Municipal Ward-wise Distribution of groundwater storage in open dug wells is shown in **Fig. 5.24,** which reveals that in pre-monsoon 2023, the storage volume is greater than 40 m^3 in two dug wells namely, South Point (Ward 11) and Brooksabad (Ward 22). In-situ groundwater storage volume is greater than 20 m^3 in three dug wells namely, Brooksabad (Ward 21), Haddo (Ward 8) and Nayagaon (Ward 12). The rest of 20 dug wells in other Municipal Wards have less than 20 m^3 storage volume in pre-monsoon season.

5.7.2 Post-monsoon ward-wise distribution of groundwater storage

The ward-wise distribution of groundwater storage in open dug wells is shown in **Fig. 5.25.** Analysis of the figure reveals that in post-monsoon, the storage volume is greater than 40 m^3 in three dug wells namely, South Point (Ward 11), Brooksabad (Ward 22) and Birdline (Ward 23), whereas storage volume was greater than 20 m^3 in four dug wells namely, Brooksabad (Ward 21), Haddo (Ward 8), Light House (Ward 6) and Nayagaon (Ward 12). The rest 19 dug wells in other Municipal Wards have less than 20 m^3 in-situ groundwater storage volume in post-monsoon 2023.

5.7.3 Change in groundwater storage due to monsoon rainfall

A detailed location of dug wells (ward-wise) along with pre-monsoon and post-monsoon water level and ground water storage calculation is given in **Table 5.27.** In post-monsoon, it is observed that out of 25 dug wells, 16 wells (64% of total) recorded an increase in groundwater storage in the post-monsoon. However, decrease in groundwater storage was observed in 9 dug wells (36% of total), which was marginal. The decrease in in situ storage during post-monsoon may be attributed to increased groundwater withdrawal in the post-monsoon period, which was less than recharge through monsoon rainfall. However, a more detailed and extensive study is required in this direction, keeping in mind the urban water supply and demand relationship in Port Blair City.

5.8 Pumping Test Data Analysis

During the NAQUIM 2.0 study, pumping test was conducted in two open dug wells at Birdline APWD Pump House site and at Brookshabad APWD Pump House. Both the dug wells are used by the Andaman Public Works Department (APWD) for water supply in Port Blair City. The dug wells tap unconfined aquifer (Aquifer-I) developed in the weathered zone of igneous and meta-sedimentary rocks. Another pumping test was attempted in a bore well at Lambaline APWD Pump House, which is adjacent to Veer Savarkar International Airport. During the pumping tests, Garmin Etrex 30 portable, handheld GPS receiver was used to measure the co-ordinates. A brief description of the pumping tests is discussed.

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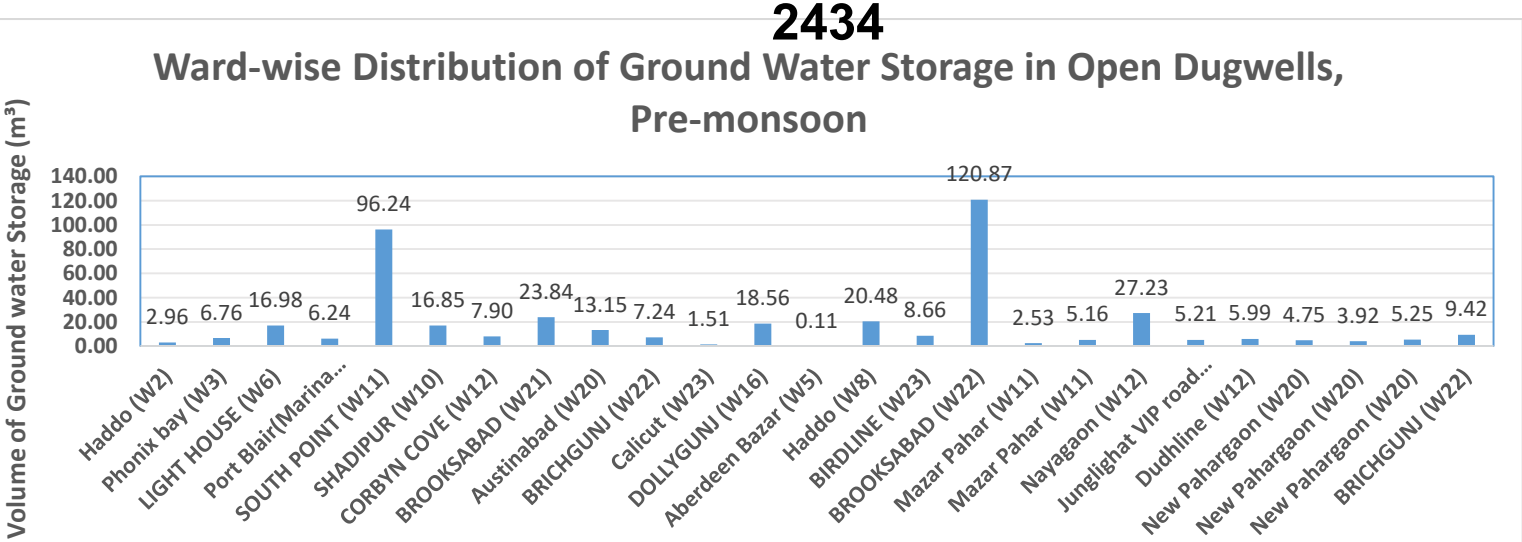


Fig 5.24. Ward-wise distribution of groundwater storage in open dug wells, Pre-monsoon 2023

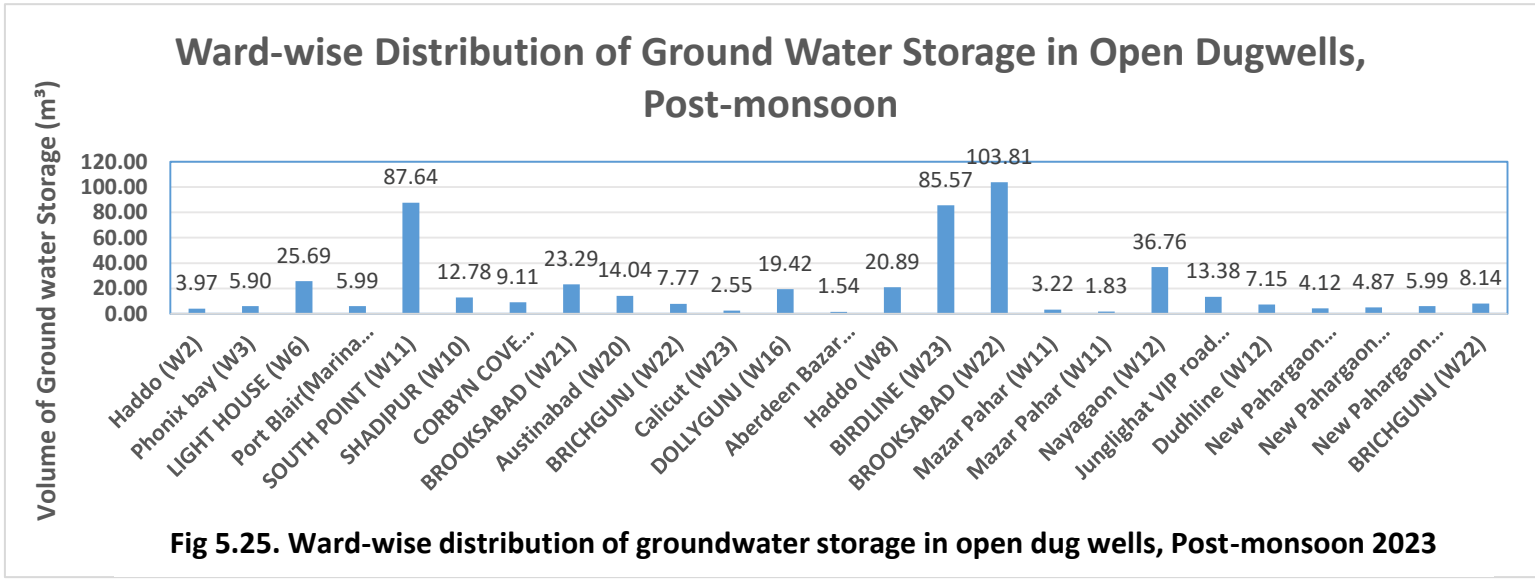


Fig 5.25. Ward-wise distribution of groundwater storage in open dug wells, Post-monsoon 2023

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Table 5.7. Location of dug wells along with pre-monsoon and post-monsoon depth to water level and groundwater storage

Sl. No.	Well ID	Location	Ward No	Diameter (d), m/ Dimension (m x m)	Depth (H) mbmp	Pre-monsoon DTW, d" (mbmp)	Post-monsoon DTW, d' (mbmp)	Well Area (A), ($\pi d^2/4$), m^2	Post-monsoon Water Column (h=H-d'), m	Pre-monsoon Water Column (h'=H-d"), m	Pre-monsoon Volume of GW (A*h), (m^3)	Post-monsoon Volume of GW (A*h), (m^3)	Increase/ Decrease in Volume
1	PB12/W2/DW	Haddo	2	1.25	4.77	2.37	1.55	1.234	3.22	2.4	2.96	3.97	Increase
2	PB26/W3/DW	Phonix bay	3	2.27	3.75	2.09	2.3	4.071	1.45	1.66	6.76	5.90	Decrease
3	PB73/W6/DW	Light House	6	3.07	4.48	2.2	1.03	7.446	3.45	2.28	16.98	25.69	Increase
4	AN045 NHNS Well	Port Blair (Marina Park)	5	1.62	4.5	1.49	1.61	2.073	2.89	3.01	6.24	5.99	Decrease
5	PB114/W11/DW	South Point	11	3.6	11.1	1.7	2.54	10.238	8.56	9.4	96.24	87.64	Decrease
6	PB108/W10/DW	Shadipur	10	1.89	6.57	0.6	2.04	2.822	4.53	5.97	16.85	12.78	Decrease
7	AN003 NHNS Well	Corbyns Cove	12	1.12	6.4	2.07	1.41	1.825	4.99	4.33	7.90	9.11	Increase
8	PB185/W21/DW	Brookshabad	21	4.8 (L) 3.82 (B)	2.65	1.35	1.38	18.336	1.27	1.3	23.84	23.29	Decrease

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Sl. No.	Well ID	Location	Ward No	Diameter (d), m/ Dimension (m x m)	Depth (H) mbmp	Pre-monsoon DTW, d" (mbmp)	Post-monsoon DTW, d' (mbmp)	Well Area (A), ($\pi d^2/4$), m^2	Post-monsoon Water Column (h=H-d'), m	Pre-monsoon Water Column (h'=H-d"), m	Pre-monsoon Volume of GW (A*h), (m^3)	Post-monsoon Volume of GW (A*h), (m^3)	Increase/ Decrease in Volume
9	PB182/W20/DW	Austinabad	20	2.04	5.48	1.48	1.21	3.288	4.27	4	13.15	14.04	Increase
10	PB206/W22/DW	Brichganj	22	2	4.54	2.25	2.08	3.16	2.46	2.29	7.24	7.77	Increase
11	AN017 NHNS Well	Calicut	23	1.32	4.32	3.22	2.47	1.3765	1.85	1.1	1.51	2.55	Increase
12	PB149/W16/DW	Dollygunj	16	2.52	5.3	1.6	1.43	5.017	3.87	3.7	18.56	19.42	Increase
13	PB51/W5/DW	Aberdeen Bazar	5	1.68	2.15	2.1	1.46	2.229	0.69	0.05	0.11	1.54	Increase
14	PB95/W8/DW	Haddo	8	3.22	4.55	2.05	2	8.191	2.55	2.5	20.48	20.89	Increase
15	PB213/W23/DW	Birdline	23	4.99	5.6	5.16	1.25	19.671	4.35	0.44	8.66	85.57	Increase
16	PB188/W22/DW	Brookshabad	22	6.05	5.68	1.5	2.09	28.916	3.59	4.18	120.87	103.81	Decrease
17	PB119/W11/DW	Mazar Pahar	11	1.34	4.38	2.6	2.11	1.419	2.27	1.78	2.53	3.22	Increase

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Sl. No.	Well ID	Location	Ward No	Diameter (d), m/ Dimension (m x m)	Depth (H) mbmp	Pre-monsoon DTW, d" (mbmp)	Post-monsoon DTW, d' (mbmp)	Well Area (A), ($\pi d^2/4$), m^2	Post-monsoon Water Column (h=H-d'), m	Pre-monsoon Water Column (h'=H-d"), m	Pre-monsoon Volume of GW (A*h), (m^3)	Post-monsoon Volume of GW (A*h), (m^3)	Increase/ Decrease in Volume
18	PB118/W 11/DW	Mazar Pahar	11	1.65	4.2	1.8	3.35	2.151	0.85	2.4	5.16	1.83	Decrease
19	PB127/W 12/DW	Nayagaon	12	3	6.78	2.95	1.61	7.11	5.17	3.83	27.23	36.76	Increase
20	PB132/W 13/DW	Junglighat VIP road	13	2.83 (L) 2.83 (B)	2.63	1.98	0.96	8.009	1.67	0.65	5.21	13.38	Increase
21	PB129/W 12/DW	Dudhline	12	1.5	5.67	2.3	1.65	1.778	4.02	3.37	5.99	7.15	Increase
22	PB199/W 20/DW	New Pahargaon	20	1.52	4.65	2.05	2.39	1.825	2.26	2.6	4.75	4.12	Decrease
23	PB200/W 20/DW	New Pahargaon	20	1.52	3.8	1.65	1.13	1.825	2.67	2.15	3.92	4.87	Increase
24	PB203/W 20/DW	New Pahargaon	20	1.53	5.44	2.6	2.2	1.849	3.24	2.84	5.25	5.99	Increase
25	PB208/W 22/DW	Brichganj	22	1.84	5.48	2.55	2.95	3.216	2.53	2.93	9.42	8.14	Decrease

5.8.1 Pumping Test at Birdline, APWD Pump House

The test was conducted on 27-6-2023 by Debasish Bagchi, Scientist-D and Team Leader. The large diameter dug well is used for public water supply by the APWD, thus prolonged test was not possible. Relevant details are given below:

Co-ordinates: N 11.61418°, E 92.72685°, Altitude: 48 ± 3 m.

Diameter of Dug Well: 5.0 m (Inner), 5.5 m (Outer)

Depth of Dug Well: 4.50 m

Pump used: Diesel operated Centrifugal Pump of 20 HP Capacity (Owner: APWD)

Discharge: 0.69 LPS (60 m^3/day)

Diameter of Delivery Pipe: 4” (10.2 cm)

Duration of Test: 180 minutes

Measuring Point: 0.90 magl

Static Water Level (SWL): 1.38 mbmp, 0.48 mbgl

Pumping Water Level (PWL) after 180 minute: 3.11 mbgl

Maximum Drawdown after end of pumping: 2.63 m

After 180 minutes of pumping, water started entering the dug well through two Weep Holes in the perforated well casing, thereby preventing valid measurement of water level data. The change in Drawdown over one log cycle of time (Δs) was 1.30 m. As the chances of both lateral flow (through Weep Holes) and vertical upward flow through bottom of the dug wells could not be ruled out, conventional methods of pumping test data analysis could not be applied.

5.8.2 Pumping Test at Brookshabad (near Corbyns Cove), APWD Pump House

The test was conducted on 29-6-2023 by Debasish Bagchi, Scientist-D and Team Leader. This dug well is also used extensively for public water supply by the APWD, thereby excluding possibility of long duration pumping test. Due to logistic problems, recovery data beyond 15 minutes after stopping the pump could not be recorded. However, the above calculations indicate that the formation has moderately good groundwater potential keeping in mind the local hydrogeological conditions. The standard methods of hydraulic test like Hvorslev Method (1951) or for estimation of yield potential of the large diameter dug well like Romanis Method (1973) could not be applied due to limited recovery data available. However, an empirical method namely Slichter’s Method (1906) was used to calculate Specific Capacity of the dug well. Relevant details are given below:

Co-ordinates: N 11.63982°, E 92.74307°, Altitude: 4 ± 2 m.

Diameter of Dug Well: 6.10 m (Inner), 6.70 m (Outer)

Depth of Dug Well: 6.0 m

Pump used: Diesel operated Centrifugal Pump of 20 HP Capacity (Owner: APWD)

Name of Pump Operator: Mohd. Kaushik Iqbal (APWD)

Discharge: 1.16 LPS (100 m^3/day)

Diameter of Delivery Pipe: 3" (7.62 cm)

Duration of Test: 245 minutes (Pumping: 230 minutes, Recovery: 15 minutes)

Measuring Point: 1.10 magl

Static Water Level (SWL): 1.91 mbmp, 0.81 mbgl

Pumping Water Level (PWL) after 230 minutes: 4.21 mbgl

Maximum Drawdown after end of pumping (s_1): 3.40 m

After 15 minutes of recovery, groundwater started entering the dug well through four Weep Holes in the perforated well casing. The Specific Capacity (C) is determined using the equation:

$$C = 2.303\ (A/t')\ x\ \log\ (s_1/s_2)$$

Where, A = cross sectional area of the well = 148.84 m^2

The plot of log (s_1/s_2) on the X-axis and t' on the Y-axis (by Slichter's Method) for Brookshabad dug well is shown in **Fig. 5.26.**

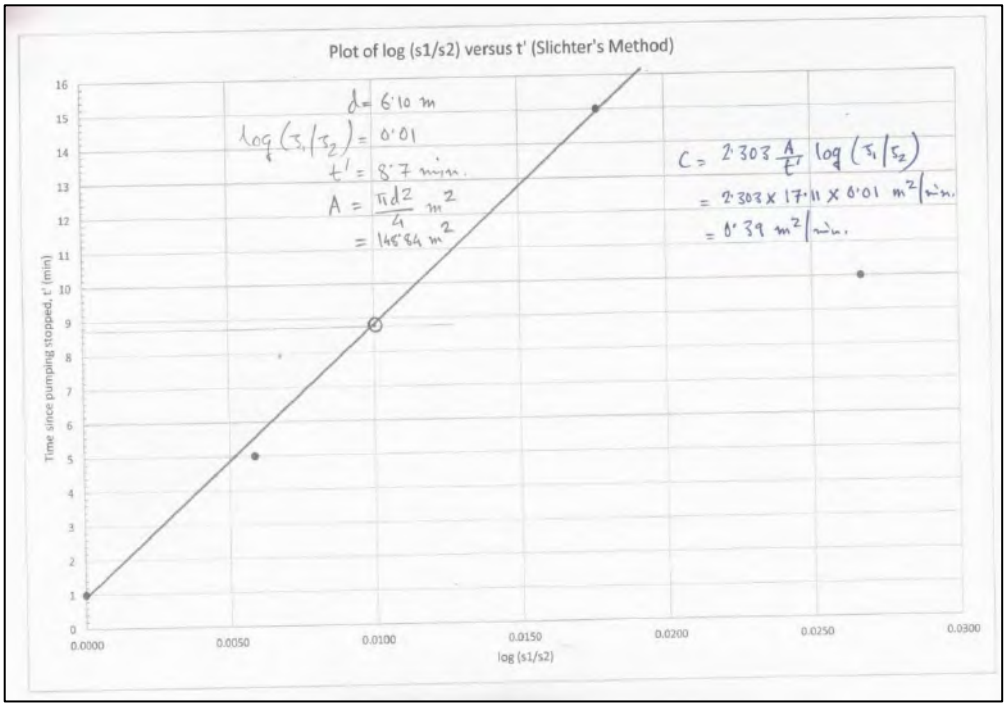


Fig. 5.26 Determination of Specific Capacity of dug well at Brookshabad using Slichter's Method

From the plot, log (s_1/s_2) with corresponding value of t' was calculated.

The values obtained from **Fig. 5.26** are:

log (s_1/s_2) = 0.01

t' = 8.7 minute

Therefore, Specific Capacity (C) of the dug well using Slichter's Method (1906) is estimated as: C = 2.303 x 17.11 x 0.01 m^2/min = 0.39 m^2/min

5.8.3 Pumping Test at Lambaline, APWD Pump House

The test was conducted on 1-7-2023 by Debasish Bagchi, Scientist-D and Team Leader in a Bore Well. Co-ordinates of the site are: N 11.64477°, E 92.72932°, Altitude: 35 ± 3 m. The Bore Well was constructed by Port Blair Municipal Council (PBMC) through a private drilling agency based in Port Blair. The Bore Well is to the west of Veer Savarkar International Airport and lies in Municipal Ward No. 16. Drilled depth of the Bore Well is not available. A submersible pump was lowered into the well in June 2023. At the time of testing, the Bore Well was not utilized for water supply. Relevant details of the Lambaline Bore Well are given below:

Diameter of the Bore Well: 6" (150 mm)

Casing Pipe: PVC Pipe

Type and Capacity of Pump: Submersible (electrically operated), 5 HP

Duration of Test: 30 minutes

Measuring Point: 0.25 magl

Static Water Level (SWL): 1.92 mbmp, 1.67 mbgl

Pumping Water Level (PWL) after 10 minutes: 4.67 mbgl

Drawdown after 10 minutes of pumping: 3.0 m

Water temperature: 29.0 °C

Total Dissolved Solids (TDS): 157 mg/L

Beyond 10 minutes of pumping, the Pumping Water Level (PWL) could not be measured as no distinct "Cut" was recorded. It was suggested that proper well development is required for a sustainable discharge from the bore well. Due to unavailability of long-duration depth to water level data, pumping test data analysis was not possible in the Lambaline bore well. Field photographs of the pumping test are shown in **Fig. 5.27** and in **Fig. 5.28** for Birdline APWD Pump House and Brookshabad APWD Pump House, respectively.

Field photo of pumping test in the bore well at Lambaline is shown in **Fig. 5.29.**

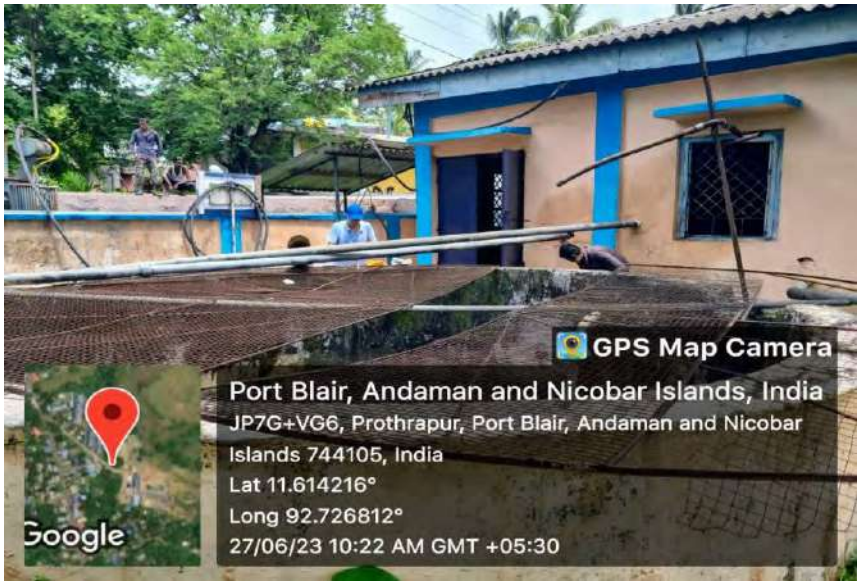


Fig. 5.27 Field photo of pumping test in dug well of APWD, Birdline

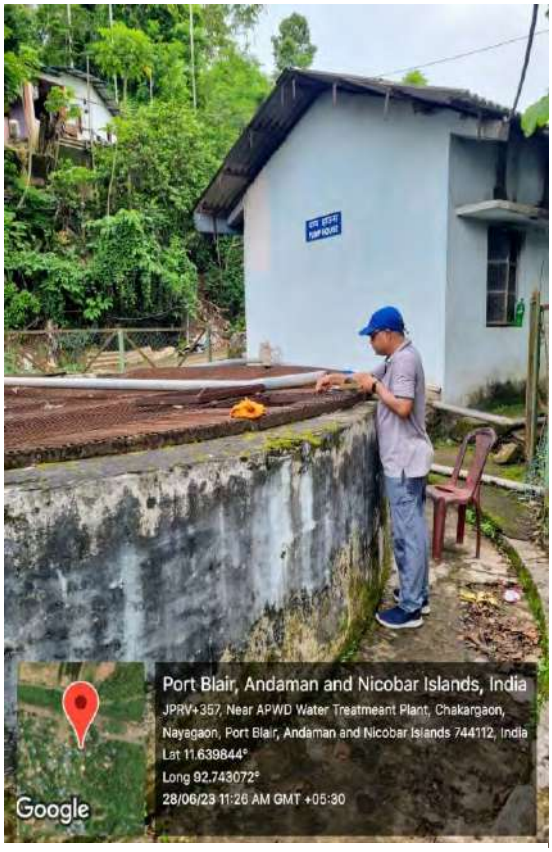


Fig. 5.28 Field photo of pumping test in large diameter dug well in APWD Pump House, Brookshabad (near Corbyns Cove), Port Blair Urban Area



Fig. 5.29 Pumping test in a bore well, constructed by PBMC inside APWD Pump House at Lambaline, Port Blair Urban Area.

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6. GEOPHYSICAL STUDY

During NAQUIM 2.0, a total of 22 vertical electrical soundings (VES) were carried out at 11 locations in the study area. A multi-channel CRM-500 (Auto C) resistivity meter was used for the geophysical survey. The geophysical surveys were carried out at all locations with a maximum electrode spacing (AB) of 200 m using the CRM-500 (Auto C) resistivity meter. The typical resistivity sounding curves in the survey area are of 'H' type, 'K' type, 'A' type, 'HA' type, 'KH' type, 'HK' type and 'QH' type. The VES data were interpreted using the 'IPI2WIN' software by 1-D inversion technique'. Preliminary values of the model parameters are obtained by matching the VES field curves with the theoretical main curves and auxiliary point diagrams. The refined model parameters are then used as input (starting model) in 'IPI2WIN' to further refine the results obtained with the 1-D inversion algorithm. The resistances of the different layers and the corresponding thicknesses are reproduced through a series of iterations until the model parameters of all VES curves are resolved with minimum RMS error. The VES results are interpreted with respect to the subsurface geology and the properties of the aquifer under the prevailing hydrodynamic conditions. Fig. 6.1 shows a Google Earth map with the locations of the VES sites in the Port Blair urban area. The map shows that the VES sites are more or less evenly distributed in the study area.

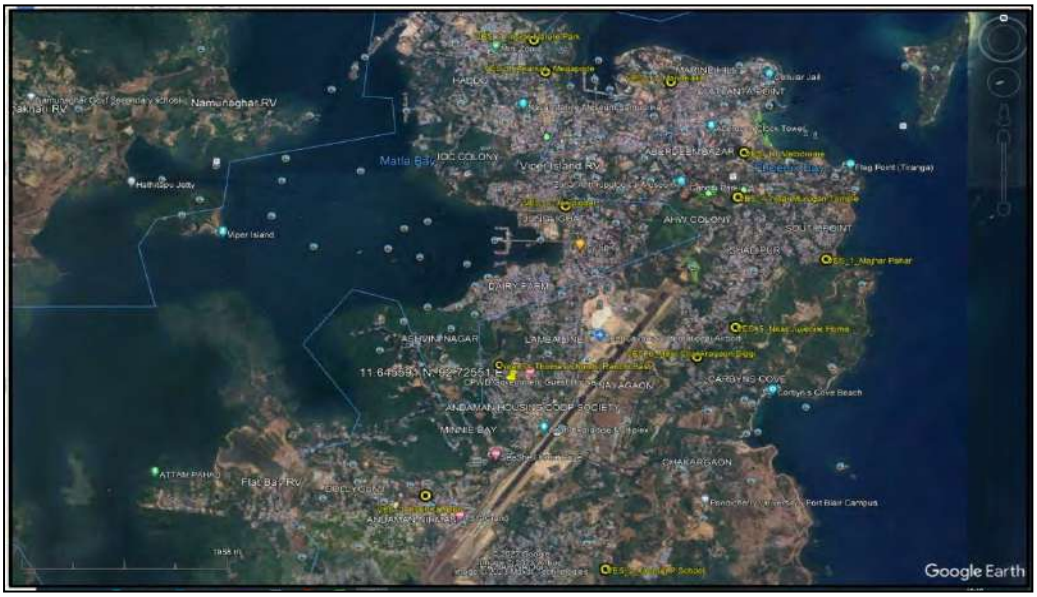


Fig. 6.1. Google Earth map showing location of VES in the study area

After interpretation of VES data, it is found that resistivity of the first geo-electric layer (top soil) was varying from 1.2 to 51.0 ohm-m, whereas the layer thickness was varying from 1.20

to 4.30 m. Resistivity of the second geo-electric layer was ranging from 1.10 to 34.50 ohm-m indicating occurrence of saturated brackish water zones along with freshwater zones. The layer thickness was varying from 2.40 to 15.50 m. Resistivity of the third geo-electric layer was varying from 0.65 to 85.0 ohm-m, indicating both saline and fresh saturated formations. Thickness of the third geo-electric layer was ranging from 7.50 to 33.0 m. Resistivity of the fourth (bottom most) layer was varying from 2.60 to 125.00 ohm-m, which indicates brackish saturated formations (Mithakhari Formation) and fresh saturated formations in the fractured volcanic rocks of the Ophiolite Group.

Relevant details of the VES survey conducted in Port Blair Urban Area along with recommendations from the survey that shows the drilled depth for construction of bore wells for water supply are summarized in **Table 6.1.**

Table 6.1. Summary of the VES Study, Port Blair Urban Area

Sl. No.	Type of source	Location	PBMC Ward No.	Latitude (°N)	Longitude (°E)	Recommendations
1	Bore Well	Inside Govt. Primary School, South Point (Near Mazar)	11	11.6575	92.7533	Recommended for drilling down to a depth of 70.0 m
2	Bore Well	In Ummat Public School	21	11.6283	92.7340	Recommended for drilling down to a depth of 75.0 m
3	Bore Well	Pahargaon, near Second Gate of Dr. Bhimrao Ambedkar Institute of Technology (DBRAIT)	15	11.6352	92.7183	No drilling is recommended in this location
4	Bore Well	Murgan Temple Compound, near Vanvasi Kalyan Ashram, Shadipur	10	11.6633	92.7455	Recommended for drilling down to a depth of 20.0 m. Perforated casing assembly should be used.
5	Bore Well	Back side of Children's Jail, Nayagaon	12	11.6511	92.7452	No drilling is recommended in this location
6	Bore Well	Nayagaon, opposite Forest Nursery and near Pillu House	13	11.6483	92.7419	No drilling is recommended in this location
7	Bore Well	Adjacent to Megapode Road, Anarkali	3	11.6781	92.7278	Recommended for drilling down to a

						depth of 60.0 m
8	Bore Well	Inside Nature Park, Haddo	2	11.6780	92.7277	Recommended for drilling down to the depth of 65.0 m
9	Bore Well	APWD land, behind Kalyana Mandapam	7	11.6625	92.7305	No drilling is recommended in this location
10	Bore Well	Velodrome, Aberdeen Bazar	5	11.6675	92.7461	No drilling is recommended in this location
11	Bore Well	Near Shakti Amman Temple, Old APWD Quarters, Marine Hill	5	11.6741	92.7397	Recommended for drilling down to a depth of 55.0 m
12	Bore Well	Near roadside of Saint Thomas Catholic Church at Ranchi Basti	15	11.6475	92.7247	VES was not possible due to space constraint. However, 30.0 m drilling is recommended based on field study. Perforated casing pipe should be used.
13	Bore Well	Near Police Station, Chatham	2	NA	NA	Permission not given for VES at Chatham Jetty area by the Port Trust Authority.

Analysis of data in **Table 6.1** indicates that drilled depth (proposed) for bore wells varies from 55.0 m at Marine Hill in the northeastern part of the study area to a maximum of 75.0 m in Ummat Public School, Shadipur in the central part of the study area. Field photographs of VES at Government Primary School, South Point is shown in **Fig. 6.2,** whereas the photograph of VES inside Dr. B. R. Ambedkar Institute of Technology, Dollygunj is shown in **Fig. 6.3.** The interpreted results of VES data has indicated presence of potential groundwater bearing formations in the depth range from 55.0 to 75.0 m in five locations within the study area. The locations are:

Location 1: Inside Government Primary School, South Point

Location 2: In Ummat Public School, Shadipur

Location 3: Adjacent to Megapode Road, Anarkali

Location 4: Inside Nature Park, Haddo

Location 5: Near Old APWD Quarters, Marine Hill.

Besides these locations, two locations were identified for construction of shallow bore wells (depth < 30 m) for tapping the potable freshwater aquifer (Aquifer-I) within the weathered zone. The locations are:

Location 6: Near Murugan Temple Compound, Shadipur

Location 7: Near Saint Thomas Church, Ranchi Basti

It is worthwhile to mention that Transient Electromagnetic (TEM) survey was conducted previously for delineation of fresh and saline water interface in coastal aquifers of Carbyn (Balaji et al. 2019). During meetings held in June 2023 and December 2023 in Port Blair City with the representatives of the Port Blair Municipal Council (PBMC), it was reported by PBMC authority that construction of the bore wells and dug wells are under active consideration by the based on provision of budget in the financial year 2023-2024 and 2024-2025. However, no written communication regarding present status of well construction has been received from the Andaman administration at the time of writing this report (March 2024). The **Fig. 6.4,** shows the location of VES sites under NAQUIM 2.0 study in the Port Blair Urban Area (PBUA) which was carried out by the Geophysical Team. The **Fig. 6.4** shows that in 11 locations VES was carried out within the PBUA. Out of these, 2 VES were carried out in each of Ward No. 2 and 12, and 1 VES was carried out in each of Wards 4, 5, 6, 10, 11, 17 and 21. It is observed that most of the VES study (about 82%) was carried out in the north and north-eastern part of the PBUA whereas only 18% of the VES were completed in the central and south-central parts of the PBUA.



Fig. 6.2 VES survey in Government Primary School, South Point (Municipal Ward No. 11)

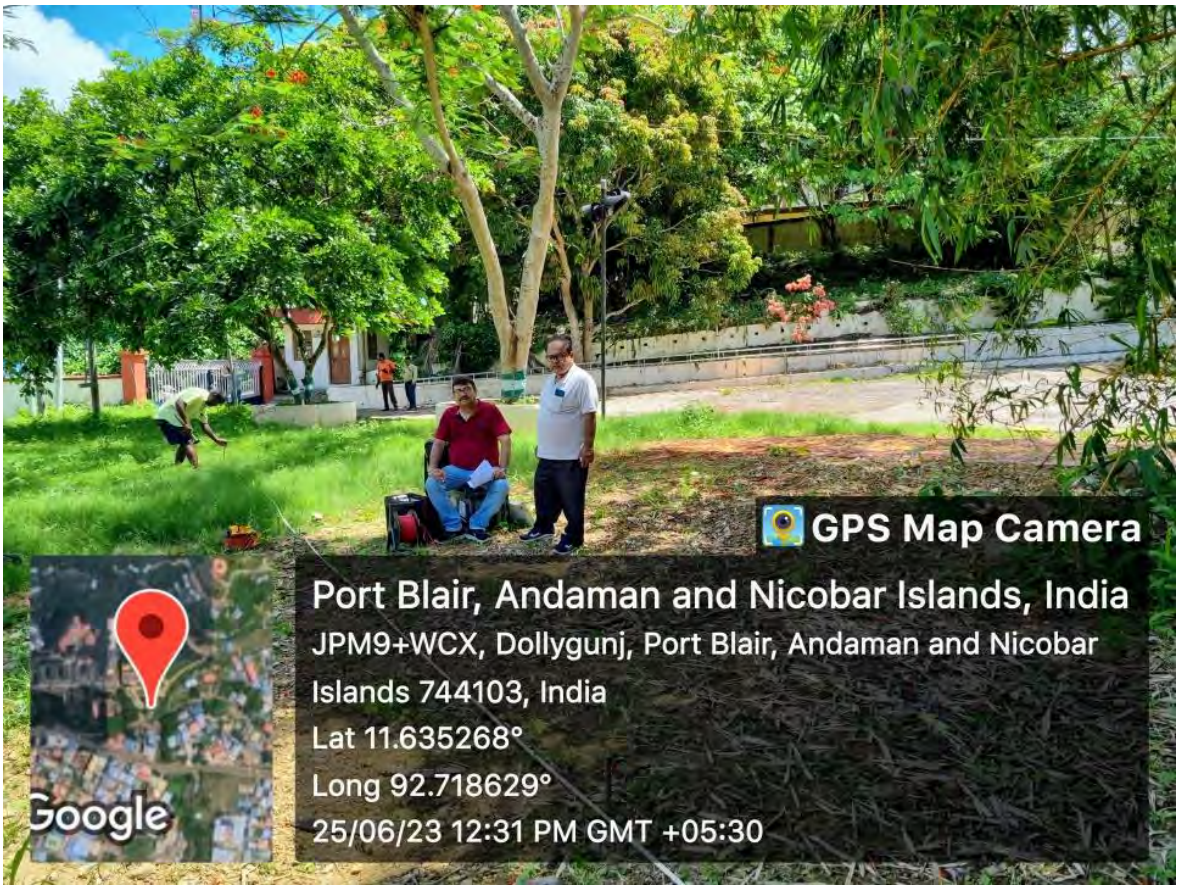


Fig. 6.3 VES survey near 2nd gate of Dr. B.R. Ambedkar Institute of Technology

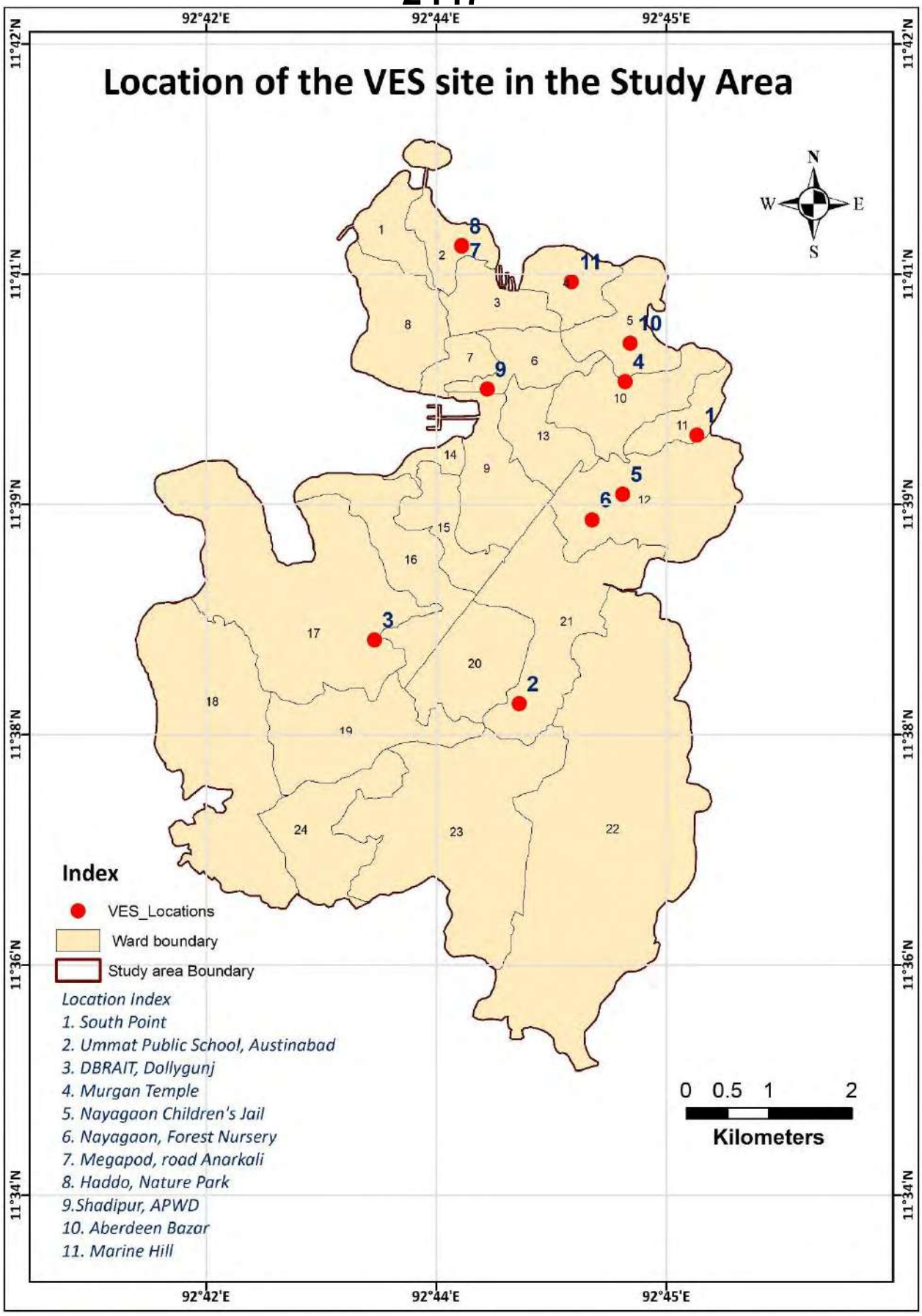


Fig. 6.4. Location of VES sites in NAQUIM 2.0 area, Port Blair City

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7. HYDROCHEMISTRY

To study the geochemical characteristics of groundwater and to assess the extent of groundwater contamination in Port Blair City, water samples were collected both during pre-monsoon (June 2023) and post-monsoon (December 2023) from open dug wells and piped water supply source. In pre-monsoon total 153 samples were collected from 51 sampling points from 24 Municipal Wards of the city. This was followed up by sampling from 49 water quality monitoring stations in post-monsoon period. Total 252 water samples were collected for analysis in the NABL accredited Regional Chemical Lab of Central Ground Water Board, Eastern Region, Kolkata. Analysis result of 153 samples collected in pre-monsoon reveals wide variability in many parameters like Total Dissolved Solids, chloride, Total Hardness, calcium, magnesium, sodium, potassium and iron. The hydrochemical data is summarized in **Table 7.1.**

Table 7.1. Summary of hydrochemistry in the study area vis-à-vis BIS guidelines on drinking water (IS 10500:2012)

Constituents		Value			IS 10500:2012	
		Min	Max	Average	Acceptable Limit	Permissible Limit
pH		6.46	8.22	7.59	6.5-8.5	6.5-8.5
EC (µS/cm) at 25°C		169	5345	653	-	-
TDS	mg/L (ppm)	100	2863	387	500	2000
Carbonate alkalinity as $CaCO_3$		Traces	0.00	0.00	-	-
Bicarbonate alkalinity as $CaCO_3$		49	573	216	-	-
Total alkalinity as $CaCO_3$		40	470	177	200	600
Chloride		11	1397	88	250	1000
Sulphate		Traces	255	22	200	400
Nitrate		Traces	47	16	45	45
Fluoride		0.02	0.56	0.1	1	1.5
Calcium (as Ca)		Trace	240	42	75	200
Magnesium (as Mg)		2	85	24	30	100
Total Hardness (as $CaCO_3$)		60	725	202	200	600
Sodium		9	906	60	-	-
Potassium		Trace	42	5.1	-	-

Iron		Traces	3.23	0.32	1.0	-

The suitability of drinking water was assessed on the basis of pre-monsoon analysis. Relevant details are summarized in **Table 7.2.**

Table 7.2. Drinking water suitability in Port Blair Urban Area (pre-monsoon 2023)

Constituents		Acceptable Limit	Permissible Limit	No of Samples beyond Acceptable Limit	Percent of Samples beyond Acceptable Limit (%)	No of Samples beyond Permissible Limit	Percent of Samples beyond Permissible Limit (%)
pH	mg/L (ppm)	6.5-8.5	No Relaxation	0	-	0	-
TDS		500	2000	6	11.7	1	1.9
Total alkalinity as $CaCO_3$		200	600	14	27.4	0	-
Chloride		250	1000	1	1.9	1	1.9
Sulphate		200	400	1	1.9	0	-
Nitrate		45	No Relaxation	1	1.9	0	-
Fluoride		1	1.5	0	-	0	-
Total Hardness (as $CaCO_3$)		200	600	24	47.0	1	1.9
Calcium (as Ca)		75	200	2	3.9	1	1.9
Magnesium (as Mg)		30	100	9	17.6	0	-
Iron		1	No Relaxation	4	7.8	-	-

A brief description of various parameters and constituents given in **Table 7.2** is given hereunder.

7.1. Hydrogen Ion Concentration (pH)

The groundwater pH of the samples collected from Port Blair during NAQUIM 2023 – 24 shows neutral to mildly alkaline in nature with pH value ranged from 6.46 (Filter bed, Raj Nivas) to 8.22 (Prem Nagar) with an average value of 7.59. No sampling locations were found with pH values beyond the permissible limit of 6.5 - 8.5.

7.2 Electrical Conductivity (EC) and Total Dissolved Solids (TDS)

The wide range of EC as well as TDS values indicates wide variation in dissolved constituents in groundwater of Port Blair city. The minimum conductivity value of 169 µS cm^{-1} was observed in a dug well at Dudhline whereas maximum conductivity value 5345 µS cm^{-1} was observed in another dug well at Mohanpura Market area (near Mutton Market). As

per the salinity hazard classes, only one sample was found unsuitable (i.e. EC >2250 µS cm^{-1}). Only 11.7% of the analysed sample showed TDS values higher than the Acceptable Limit of 500 mg/L and only one sample having TDS higher than the Permissible Limit of 2000 mg/L as per revised BIS guidelines on drinking water (BIS: 2012).

Geo-tagged pictures during pre-monsoon sampling at dug well in Municipal Ward No. 5 and Ward No. 1 and testing of TDS and EC during field work is shown in **Fig 7.1** and post-monsoon sampling of drinking water for testing of Total Coliforms (TC) from a household at Dudhline in Ward No. 12 is shown in **Fig 7.2.**



Fig. 7.1. Pre-monsoon sample collection, Port Blair Urban Area



Fig 7.2. Post-monsoon sample collection, Port Blair Urban Area

7.3. Major Cations

7.3.1 Calcium and Magnesium

Two alkaline earth metals Calcium and Magnesium have been analysed. Concentration of Ca^{2+} in groundwater was found to vary from Trace to 140 mg/L in a Dug

Well at Aberdeen bazar. For magnesium, the concentrations were found to range from 2 mg/L at Filter bed, Raj Nivas to 85 mg/L in a Dug Well at Mohanpura Market.

7.3.2 Sodium and Potassium

The concentration of Sodium ranges from 9 mg/L at Bathu Basti to 906 mg/L at Mohanpura Market. Potassium in groundwater was found to vary from 0.4 mg/L at Raj Niwas Filter Bed to 42 mg/L at Mohanpura Market.

7.4 Total Hardness (TH)

Calcium and Magnesium, Carbonate and Bicarbonate are the important constituents that give a measure to the Total Hardness (TH) in groundwater. TH as calcium carbonate ($CaCO_3$) was found to vary from 60 mg/L in a dug well at Dudhline to 725 mg/L in another dug well at Aberdeen Bazar. Based on Total Hardness as $CaCO_3$ in groundwater, samples from the study area are categorized as “Hard” (56.8% of total samples) to “Moderately Hard” (33.3% of total samples). Only 2.0 % of samples were categorized as “Soft”, whereas only 7.8% of samples were categorized as “Very Hard”. Classification of groundwater based on TH, is given in **Table 7.3.**

Table 7.3: Categorization of groundwater based on Total Hardness (as $CaCO_3$)

Water Class	TH as $CaCO_3$ (mg/L)	No. of Samples	% of Samples
Soft	<75	1	2.0
Moderately Hard	75–150	17	33.3
Hard	150–300	29	56.8
Very Hard	>300	4	7.8

As per BIS (2012), the Permissible Limit of TH in drinking water is 600 mg/L. Only one sample at Aberdeen Bazar was found to have TH of 725 mg/L, which is not significant considering the sample size.

7.5 Major Anions

7.5.1 Chloride

Chloride content of groundwater in Port Blair varies from 11 mg/L at Raj Niwas Filter Bed to 1397 mg/L in Mohanpura Market**.** The concentration of chloride ions in majority of the groundwater samples (78%) has been found to be within the Acceptable Limit for

drinking purpose (250 mg/L) and 22% were found to be within the Permissible Limit for drinking (1000 mg/L). Generally, groundwater with low chloride and sodium content signifies fresh water, which is in turn a characteristic of groundwater being replenished directly from rainwater annually.

7.5.2 Carbonate and Bicarbonate

Carbonate was detected in groundwater of Port Blair City. Bicarbonate concentration was found to vary from 49 mg/L in a dug well at Dudhline to 573 mg/L in a bore well in the Dollygunj Industrial Estate. Almost 27% of the analysed sample showed Total Alkalinity value higher than Acceptable Limit (200 mg/L) and no sample was found to have Total Alkalinity higher than the permissible limit of 600 mg/L in drinking water in the study area.

7.5.3 Sulphate, Nitrate and Fluoride

Nitrate concentration of the analysed samples ranged from traces to 47 mg/L. Only one sample (dug well at Aberdeen Bazar) showed nitrate concentration higher than the Permissible Limit of 45 mg/L. Concentration of sulphate ion ranged from traces to 255 mg/L in a dug well at Aberdeen Bazar. Only 1.9% of the analysed samples showed higher sulphate concentration, which is above the Acceptable Limit of 200 mg/L. Fluoride ion concentration was found to vary from Traces to 0.56 mg/L in a dug well in Mohanpura Market, with average fluoride concentration of 0.1 mg/L. No sample has shown fluoride concentration higher than the BIS recommended Acceptable Limit of 1.0 mg/L.

7.6 Hydrogeochemical facies classification

For demarcating the hydrochemical facies existing in the phreatic and confined aquifer systems Piper Diagram (Piper 1953) and the Modified Piper Diagram (Chadha 1999) were used. The Piper Trilinear Diagram is shown in **Fig. 7.3.** Analysis of the diagram indicates that 64.70% of groundwater samples fall in “No Dominant Cation” type, whereas 19.60% samples fall under the “Calcium Type”, 7.80% samples under the “Magnesium and Sodium and Potassium Type”, respectively under the cation facies. Thus, the Piper diagram shows dominance of mixed ions. Regarding anions, 78.4% of samples fall into bicarbonate type, 11.70% under the chloride type and rest 9.8% samples fall into no dominant type of anion facies. 80% of groundwater samples belong to the calcium-magnesium-bicarbonate (Ca-Mg-HCO_3) facies, which is characterized by recent origin of recharge water, which had little interaction with the bedrock and whose chemistry is controlled by the dissolution of calcite.

Out of total samples, 14% samples are of calcium-magnesium-chloride (Ca-Mg-Cl) type and 4% are of sodium-potassium-chloride (Na-K-Cl) type. Therefore, the hydrochemical facies classification in Port Blair Urban Area indicates that maximum groundwater samples belong to Ca-Mg-HCO_3 type with Temporary Hardness.

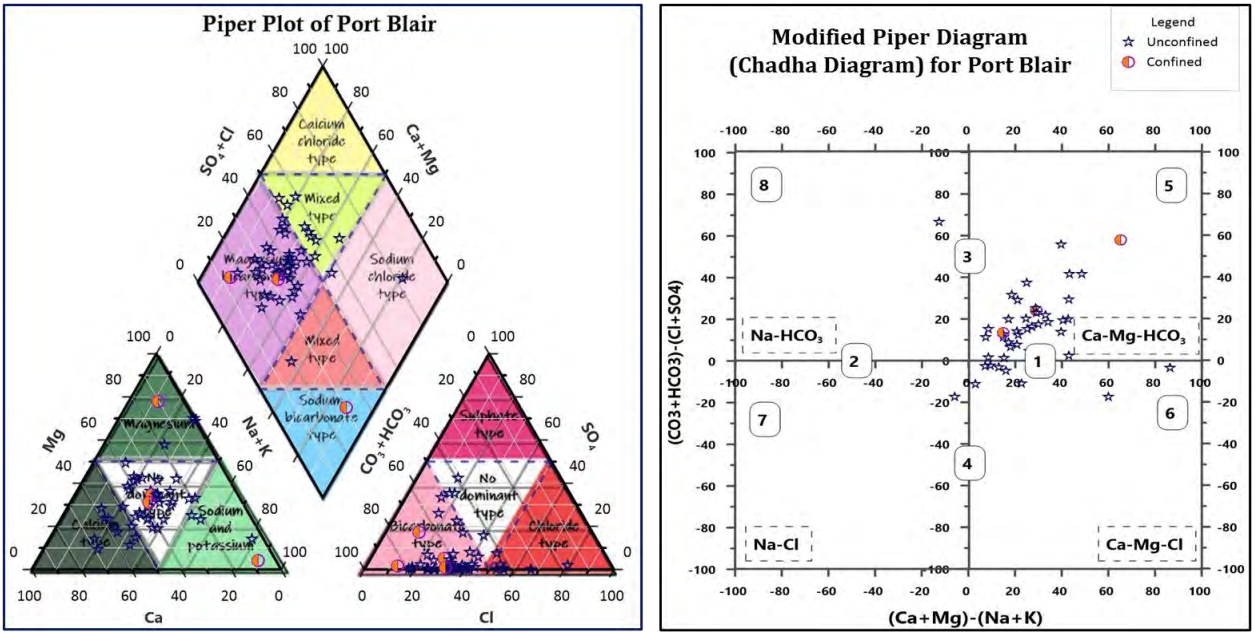


Fig. 7.3 Piper Trilinear Diagram (L) and Modified Piper Diagram (R) showing hydrochemical facies

7.7 Heavy Metals

Concentration of various Heavy Metals like Copper, Total Chromium, Manganese, Zinc and Lead have been analysed from groundwater samples collected in pre-monsoon from Port Blair City. The heavy metal concentration in groundwater is given in **Table 7.4**. Highest concentration of Total Chromium (0.058 mg/L) and Lead (0.114 mg/L) was observed in a dug well at Mohanpura Market area. As high Lead and Total Chromium was observed only in one sample location, chances of geogenic contamination are excluded. The high value of Lead and Total Chromium in Mohanpura Market dug well sample

7.7.1 Iron

In Port Blair City, Iron concentration in groundwater was varying from Traces to a maximum of 3.23 mg/L at Vikas Bhawan, HQ of ANIDCO. Iron beyond the Acceptable Limit (>1.0 mg/L) was recorded in dug wells at Mohanpura Market (1.07 mg/L), at South Point (1.48 mg/L), at Junglighat (1.76 mg/L) and in Dollygunj Industrial Estate (1.25 mg/L). Only 7.8% of samples

have recorded iron concentration beyond the Acceptable Limit (BIS, IS:10500, 2012).

Table 7.4. Range of heavy metal contamination of Port Blair (pre-monsoon 2023)

Constituents		Value		Samples beyond Permissible Limit		IS 10500:2012	
						Acceptable Limit	Permissible Limit
		Min.	Max.	Number	%		
Copper (as Cu)	mg/L (ppm)	Traces	0.188	0	0	0.05	1.5
Total Chromium (as Cr)		Traces	0.058	1	1.9	0.05	No Relaxation
Manganese (as Mn)		Traces	0.290	0	0	0.1	0.3
Zinc (as Zn)		Traces	0.092	0	0	5	15
Lead (as Pb)		Traces	0.114	1	1.9	0.01	No Relaxation
Iron (as Fe)		Traces	3.230	4	7.8	1.00	No Relaxation

Field photo of dug well in Mohanpura Market area, where high concentration of EC, chloride, sodium and lead was recorded in pre-monsoon 2023, is shown in **Fig. 7.4.**

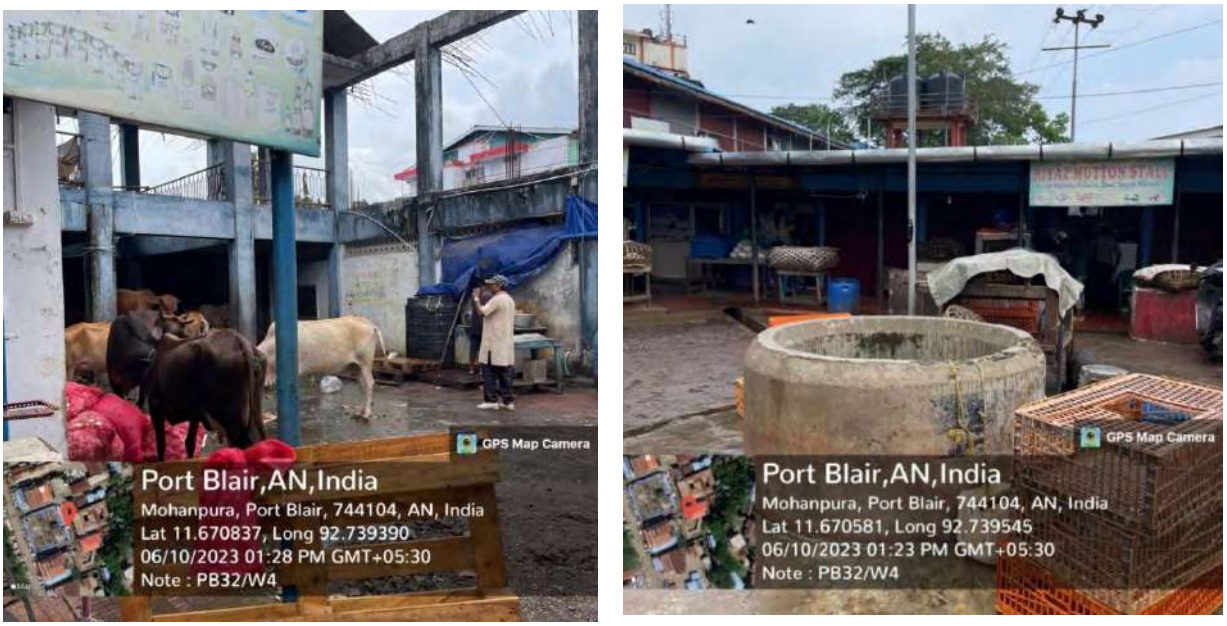


Fig. 7.4. Dug Well at Mohanpura Market, with high Lead and Total Chromium

7.8 Bacteriological analysis from RMRC, Port Blair

A total of 73 water samples (38 in pre-monsoon and 35 in post-monsoon) were collected for bacteriological examination (analysis of Total Coliform) from supply water and dug well sources. The supply water was collected from households, directly from the storage

containers as water supply was provided twice to thrice in a week. This also increases the possibility of secondary contamination due to prolonged storage. Nonetheless, the water samples were immediately transported to Regional Medical Research Centre, Port Blair for bacteriological analysis. The samples were analysed within 24 hours of sample collection. The Total Coliform (TC) is expressed as Most Probable Number (MPN) per 100 mL sample and the results are given in **Annexure-II.** As per the latest BIS guidelines on drinking water, the TC should not be detected in 100 mL sample volume. Variation in TC across the Municipal Wards is shown in **Fig. 7.5,** whereas wards showing high TC are represented in **Fig. 7.6.** The figures reveal that in pre-monsoon 2023, highest TC count in supply water was obtained from Municipal Ward No. 19, whereas highest TC in dug well water was from Ward No. 6. In post-monsoon 2023, 8 out of 24 Municipal Wards (33.33% of total) were found to have high TC content in the supply water. As per revised BIS guidelines on drinking water, the samples were unsuitable for human consumption. The high TC is probably due to secondary contamination from storage vessels in the households.

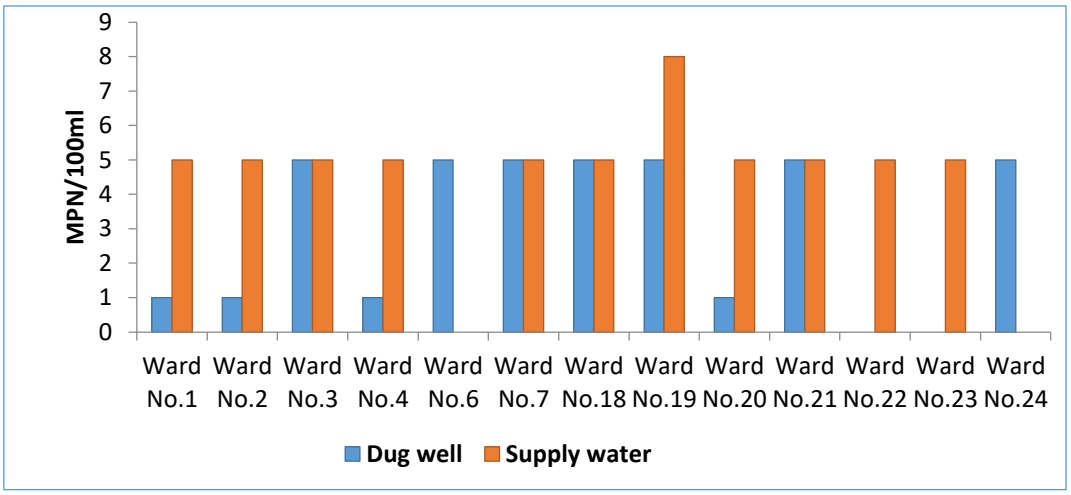


Fig 7.5. Variation in TC across municipal wards, pre-monsoon 2023

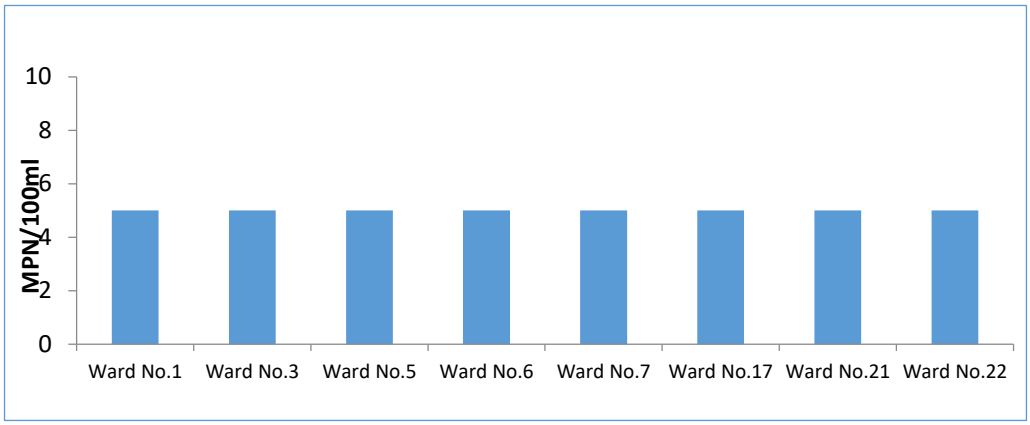


Fig. 7.6. High TC in eight municipal wards, post-monsoon 2023

7.9 Conclusion

- From the basic analysis of water samples, no major groundwater contamination is identified in the shallow aquifers of the study area.
- Groundwater quality in an open dug dell at Mohanpura Market (PB32/W4/DW), which is predominantly used for livestock, was questionable due to high EC, TDS, sodium, chloride and lead. In all probability contamination is due to anthropogenic activities. The dug well is not used for drinking. Supply water collected from households around Mohanpura Market was found to be safe during post-monsoon, as Total Coliform was within the BIS recommended limit.
- Except high iron, groundwater was found to be suitable for industrial use as per analysis results of samples collected from bore wells in Dollygunj Industrial Estate.
- Bacteriological analysis of samples collected during pre-monsoon reveals majority of samples (28 out of 38, or 73.70 % of total) was contaminated having TC 1≤10 MPN/100 mL indicating that water is safe for human consumption only after proper disinfection. Remaining 10 samples (26.32 % of total) in pre-monsoon showed TC of 0 MPN/100 mL, indicating their suitability for human consumption. In post-monsoon, 8 out of 24 Municipal Wards (33.33% of total) had supply water with TC >5 (MPN/100 mL), which require proper disinfection before human consumption. Majority of supply water samples (23 out of 35, 65.80% of total) was found to be suitable and fit for drinking based on analysis of Total Coliforms.
- In the bacteriological analysis of Total Coliform, only the Point of Use (POU) at individual households was tested in RMRC, Port Blair. There is high probability of secondary contamination in the household water samples due to storage in contaminated vessels as water supply is erratic due to water scarcity problem.

8. AQUIFER MANAGEMENT PLAN

8.1 General

The management of aquifers goes hand in hand with the mapping of aquifers. It is a very important component in formulating a sustainable initiative for integrated management of groundwater resources with the participation of the people. The main objectives of the National Aquifer Mapping and Management Programme are, according to the Aquifer Information and Management System portal of the Central Ground Water Board (http://aims-cgwb.org):

- Delineation and characterization of aquifers in three dimensions (3-D)
- Identification and quantification of groundwater problems
- Development of management plans to ensure the sustainability of groundwater resources.

Two important components in the development of an Aquifer Management Plan (AMP) are Supply Side Management (SSM) and Demand Side Management (DSM). The SSM of an Aquifer Management Plan (AMP) focuses on increasing the volume of water available by a) developing new resources, b) increasing storage capacity, c) diverting water to increase the water supply in a given location, and d) using technology to extract clean drinking water from a previously unused source. Demand management of an AMP focuses on reducing the amount of water used by stakeholders for a specific purpose, e.g. for domestic, agricultural, municipal or industrial needs. The main objective of DSM is to increase water use efficiency (WUE) throughout the year. Preventing the waste of potable water is an important part of DSM in the Port Blair Municipality.

8.2 Supply Side Management

8.2.1 Water conservation and scope of recharge through open dug wells

Recharge of groundwater is possible through large diameter, existing dug wells throughout the Municipal Wards of Port Blair City. However, as all the dug wells tap the shallow, unconfined aquifers (Aquifer-I) in the depth range of ~5 m to ~15 m, the effect of local-scale groundwater recharge will be manifested over a period of time (at least 2 years or more) in the study area. Rehabilitation and subsequent re-development (rejuvenation) would be essential for existing defunct dug wells. Managed aquifer recharge is also feasible for dug wells that are actively used by the local populace. Departments like the PBMC has already

initiated recharge in active dug wells through the “Blue Pipe Project” at locations like Haddo, Anarkali, Brichganj, Dollyganj, Pathergudda and Brookshabad. Under this project, roof top rainwater is collected and put into existing, active dug wells through a “Blue Pipe”. Photographs of a few such dug wells are shown in **Fig. 8.1.**



Fig. 8.1 Supply Side Aquifer Management: recharge through active dug wells in Port Blair

8.2.2 Water conservation and scope of recharge defunct dug wells

The recharge of the groundwater is possible through several existing large diameter dug wells throughout the Municipal Wards. However, since all of these wells tap the shallow, unconfined aquifers (Aquifer-I) in the depth range of ~5 m to ~15 m, the effect of local-scale groundwater recharge will only become apparent over a longer period of time (at least 2 years or more). Rehabilitation and subsequent redevelopment (rejuvenation) of existing abandoned wells and ponds would be essential. The quality of the source water should meet the prescribed guidelines for drinking water of the Bureau of Indian Standards (BIS). The abandoned dug wells that can be developed as potential recharge structures for point sources. Fig. 8.2 shows a field photograph of the potential recharge well (now disused) at Garacharma, which was earlier used as groundwater monitoring wells by the regional office of CGWB, Eastern Region, Kolkata.



Fig. 8.2 Defunct dug well at Garacharma, which is suitable for recharge to the shallow (<20 m) aquifers after proper well rehabilitation

8.2.3 Water conservation and scope of recharge through existing ponds

A total of seven ponds were studied to assess the cumulative water conservation potential for a sustainable water supply. All the ponds could be developed as model Amrit Sarovars by PBMC as per the recommended guidelines of National Water Mission, Ministry of Jal Shakti. The ponds are located in the Municipal Wards at Bathu Basti, Garacharma, Old Pahargaon, New Pahargaon, Brichgunj, Dollygunj and Shadipur. The cumulative annual water supply potential of the ponds was estimated at 771 million litres (ML) which was done based on ground survey and dimensional analysis using Google Earth software. The average number of filings in each of the ponds was assumed to be four per year as the study area receives rainfall during both monsoon and winter. The annual water supply potential of the ponds was found to vary from 4.2 ML near Teachers Training Institute, Garacharma in Ward No. 18 to a maximum of 272.0 ML near Dollygunj Segregation Centre in Ward No. 17. The pond near Bathu Basti Vegetable Market also has a good water supply potential of 160.0 ML, followed by another pond near Dollygunj Shiv Temple (128.0 ML), which needs to be constructed preferably with a mechanical dredger.

8.2.4 Roof Top Rain Water Harvesting

Groundwater recharge can be done through Roof Top Rain Water Harvesting (RTRWH) in the Port Blair Urban Area. During detailed study, thirty one sites were visited where RTRWH has been implemented by the Andaman Public Works Department (APWD). Operation and maintenance (O&M) of the structures is also being done by the APWD. Prior to September 2021, the RTRWH structures were constructed using the traditional design. From September 2021, the design was changed with retrofitting of the structures. RTRWH has been implemented in 31 buildings in the study area by the APWD. The scheme has been implemented in locations like Rani Laxmi Bai B. Ed. Hostel, South Point government School, Bungalow of the Chief Secretary, JNRM Boys Hotel at Shadipur, Directorate of Civil Supplies and Consumer Affair in Rajiv Gandhi Nagar, and Marine Hill Circuit House.

As on December 2023, the Roof Top RWH structures for water conservation have been implemented by the APWD in 31 buildings in the Port Blair Urban Area. A few field photos of the RWH sites visited in June 2023 and in August 2023 are shown below:



Figure – A : RWH Structure at JNRM Boys Hostel Port Blair, UT of A & N Islands

Figure – B : RWH Structure at Chief Secretary Bungalow Port Blair, UT of A & N Islands

Figure – C : RWH Structure at Rani Laxmi Bai Bed Hostel Port Blair, UT of A & N

Figure – D : RWH Structure at Govt school South Point Port Blair, UT of A & N Islands

Figure – E : RWH Structure at Civil supply office Port Blair, UT of A & N Islands

Figure – F : RWH Structure at Marine Hill Circuit House Port Blair, UT of A & N Islands

8.3 Field Photos of Roof Top Rain Water Harvesting in the study area

8.2.5 Water conservation and recharge through Check Weir

A Check Weir (CW), also known as Check Dam in CGWB parlance, is constructed across

streams that range in width from 5 to 15 m. CWs are constructed in tracts with a moderate slope for groundwater recharge, both in hard rock and alluvial formations. A sufficiently thick permeable bed or weathered formation must be present at the check weir construction site in order to facilitate the rapid recharge of stored water (CGWB 2021). Based on integrated hydrogeological, topographical, geomorphological and geological survey in the study area, two sites for CW construction were recommended. A brief description of the proposed CWs across perennial streams is given below.

8.2.5.1 Check Weir at Hathi Nallah (Municipal Ward No. 23)

The Hathi Nallah orginates from a group of springs in the wooded hills near the southeastern periphery of the PBMC urban area and is a perennial second-order stream. The stream turns towards west and flows into Dhanikhari stream, a third order stream on which Dhanikhari dam has been constructed for the municipal water supply of Port Blair. The hydrogeological survey in the upstream section of the Hathi Nallah shows that the construction of total six CWs about 100 m east of the Andaman Trunk Road is possible. The fractured rock aquifers in this area would benefit from shallow recharge if a series of these check weirs were constructed from the upper to the lower portion of the Hathi Nallah. Sufficient vegetation is present in the stream catchment to stop soil erosion during peak flows and maintain soil moisture in the vadose zone. Vegetative check weirs, also known as vegetative barriers, can be constructed in place of RCC check weirs. Stainless steel wire can be used to wrap locally accessible boulders, and plantation should be used to effectively seal intervening voids. A field photo of the construction site is shown in **Fig. 8.4.**



Fig. 8.4 Hydrogeological survey for assessing feasibility of construction of Check Weirs along section of the Hathi Nallah.

8.2.5.2 Check Weir at Attam Pahad, Birsa Nagar (Municipal Ward No. 18)

In July 2023, a hydrogeological assessment was conducted at the location to determine its suitability for the construction of two check weirs. The location may be accessed via the ICMR Road from Pahargaon and C Park from Birsa Nagar Colony. Here, two Check Weirs can be built alongside Attam Pahad Nallah, a second-order perennial stream. The proposed site's coordinates, as determined by a handheld GPS receiver (Garmin E Trex 30) are 11.63637 °N, 92.70213 °E, and its elevation is 1 ± 3 m.

The planned site has a 500 m long segment of stream, along which two Check Weirs (height: 2 m) may be constructed. The average width of the stream channel in the proposed site is about 3 m, which is adequate for construction of two Reinforced Concrete Cement (RCC) Check Weirs, spaced about 50 m apart. Situated along the left bank of the perennial *nallah* is an open dug well with a diameter of 4 m. The adjacent pump house, which was not yet operational on the field visit during December 2023, is how the APWD planned to feed water to the dug well. Following the installation of the Check Weirs, it is necessary to routinely check the level of groundwater in the Dug Well. At least twice a year, during the pre-monsoon and post-monsoon, measurement of depth to water levels should be made to assess the impact of artificial recharge on the shallow, fractured aquifer in the Attam Pahad Nallah catchment. As groundwater recharge is a naturally slow process, the real effect of recharge would show up as a slow rise in groundwater level in the dug well, may be within a period of two to three years. Instead of RCC Check Weirs, construction of two Vegetative Check Weirs using boulders, stainless steel wire mess and local plantation is recommended. Field photo of the site is shown in **Fig. 8.5.**



Fig. 8.5 Hydrogeological survey at Attam Pahad (Birsa Nagar Colony) site. The *nallah* section for proposed Check Weir construction is on the left.

8.3 Demand Side Management (DSM)

Demand side water management can be defined as reducing the amount of water that is being used by people for specific purpose such as domestic, irrigational and commercial use and municipal or industrial needs. It mainly includes the adoption of techniques to enhance water use efficiency for reducing groundwater draft. As per Dynamic Ground Water Resources Assessment, 2023, stage of groundwater extraction is very low (3.48%) in Port Blair tehsil. Hence, demand side aquifer management is of secondary importance as compared to the supply side management.

8.3.1 Prioritization of wards for implementing DSM

A comprehensive analysis of ward-wise water supply in Port Blair City (**Fig.8.8**) reveals that water supply through the pipeline by PBMC in Ward No. 5, 6, 7 and 17 are 2140 KLD, 1947 KLD (combined in ward 6 and 7), and 2120 KLD respectively, which is more compared to the other wards. The number of commercial establishments is higher in wards 4, 5, 6, 7 and 17. The commercial establishment is highest (269) in wards 6 and 7 followed by 2nd highest (126) in ward 5, followed by 3rd highest (125) in ward 17 and lastly 4th highest (111) in ward 4. Hence, Wards 4, 5, 6, 7 and 17 are the priority wards in terms of demand side management as number of commercial establishments are higher in these wards. Again among these wards, Ward 4 is of the top most priority as water supplied by PBMC is much less (100 KLD) compared to the number of commercial establishments (111). The top priority areas of Ward 4 are Mohanpur, Aberdeen Bazar, Marina Hill, Sristynagar, Dignabad, and Babulane. The top priority areas of ward 5 are Dignabad, Atlanta Point, Aberdeen Bazar, Macchiline, Gandhi Park, ANIIDCO HQ and Supplyline. The top priority areas of ward 6 are Light House, Junglighat, Premnagar, Phoenix Bay and Aberdeen Bazar. The top priority areas of ward 7 are Delanipur and Premnagar. The top priority area of ward 17 is Dollygunj. **Fig. 8.8** shows the ward-wise variation in population and commercial units in the PBUA.

8.3.2 Utilization of harvested rainwater through refilling of tankers

The district administration must enforce Roof Top Rainwater Harvesting (RTRWH) for all commercial establishments, starting with Ward No. 5, 6, and 7. The RTRWH mandate extends to legal bulk water suppliers also. Suppliers must prioritize refilling tankers with properly filtered water collected through RTRWH and subsequently stored in storage tanks. Abstraction of groundwater indiscriminately through the bore wells by the bulk water suppliers must be prohibited. A check is also required to monitor the illegal groundwater

abstraction by many bulk water suppliers, who are operating unscrupulously in the peri-urban areas of Port Blair city.

8.3.3 NOC from CGWA for extraction of groundwater through bore wells and dug wells

Commercial units using groundwater must obtain the No Objection Certificate (NOC) from the Central Ground Water Authority (CGWA), and illegal abstractors extracting groundwater should be banned by the UT of Andaman & Nicobar Administration.

8.3.4 Green Building initiative

Implementing a 'Green Building' initiative with RTRWH in all commercial establishments can help in sustainable water management in Port Blair City.

8.3.5 Ponds and check weirs versus dug wells and bore wells

The daily estimated water supply from suggested bore wells and dug wells is 1.33 MLD. The daily estimated water supply from suggested Ponds and Check Weirs is 11.51 MLD. Hence, water supply potential from ponds and check weirs is 8.7 times higher than the combined water supply potential from the dug wells and the bore wells. Hence, the construction of water conservation structures and structures for managed aquifer recharge is more beneficial compared to groundwater abstraction in the context of Port Blair City.

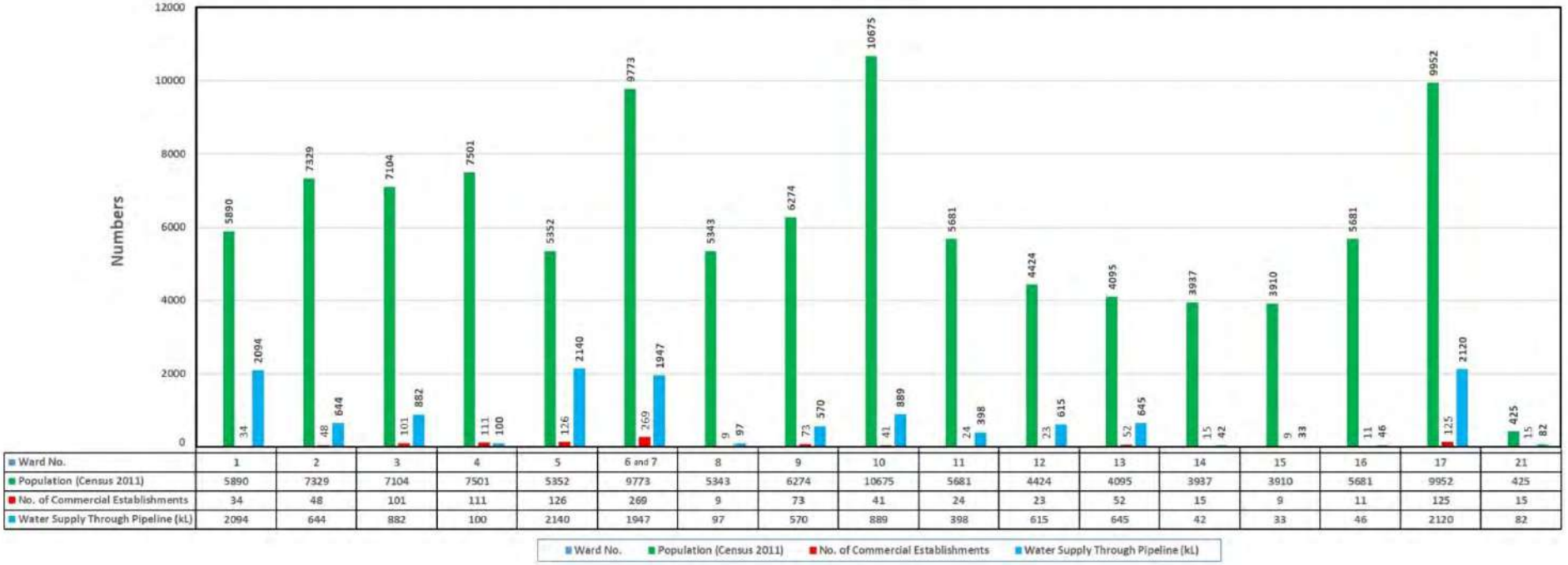
8.3.6 People's perception on drinking water and sanitation

During the detailed survey, Feedback Forms were collected from 13 users in Port Blair City. Out of the 13 user feedback reviews received, 100% of people did not give any response about their current satisfaction regarding the water supply status and 100 % of people responded that they receive water from the Water Treatment Plant of PBMC. The distance of the supplied sources for 13 respondents was between 0 km to >2.0 km from their household. Out of 13 respondents, 39% people received their water from nearby supply water sources within 0-1.0 km distance, 23% received their water from supply water sources within 1.0-2.0 km distance from their household and 38% people received their water from supply water sources at a distance of >2.0 km from their household. 15% of respondents have pipeline connections for water supply from PBMC while 85% of respondents had to collect water manually. 85% of respondents had proper tank storage, while 15% of respondents had no proper storage facilities in their households and they collect and store water in buckets, increasing the probability of bacteriological contamination. 8% of people have syntax tanks of 0-100 litre capacity, 69% of people have syntax tanks of 100-200 litre capacity, while 23% of people have storage tanks of greater than 200 litre capacity. In the Survey, it was found that 69% of people store and use rainwater in households, 19% of

people gave no response regarding this, and 12% of people do not store and use rainwater in households. Regarding the sustainability of the existing sources, only 8% of people were aware of the source sustainability, 92% of people were not aware about the source sustainability at present. Only 8% of people were aware of future water scarcity rest 92% are not at all aware and concerned.

Out of the respondents (users), 31% had to purchase water from outside while the rest 69% got their regular supply managed by PBMC water supply. 77% of people responded that the water supplied by PBMC is clean, 15% responded that the supplied water is unclean and 8% gave no response. The sample survey showed that 92% of the population consumes supply water for drinking after boiling, while 8% do not boil the supply water. It is also observed that 69% of the city population did not give any response (or feedback) to the most common water-borne diseases in Port Blair City, whereas 15% of the population reported fever and dengue, although both the diseases are not water-borne. More relevant was the response regarding other health related issues like hair fall and kidney stone. The problem of hair fall was reported by 8% of the population in Port Blair, while another 8% have reported the problem of kidney stones and attributed the disease to unsuitable drinking water. Out of the sample survey population, 69% did not revealed any information regarding the most common diseases in the family. According to the survey the respondents said that 77% of males suffer in the family, with 7% of women & 8% of children while 8% did not respond to this survey. 8% of respondents said that they have lined drains in their house while 92% did not respond to this question. 8% of respondents said that they have Soak pits constructed in their houses, 31% said no to this survey question and 61% did not respond to this question. 8% of respondents said that their municipality area is an Open Defecation Free (ODF) Area, 31% said no to this survey question and 61% did not respond to this question. 100% of respondents said that they have septic tanks in their house. 8% of respondents said that they should use water judiciously while 92% of people gave no response to this survey question. The user feedback responses received are given in pie diagrams in **Fig. 8.9**. The summarized data based on user feedback forms is given in **Annexure-VI.**

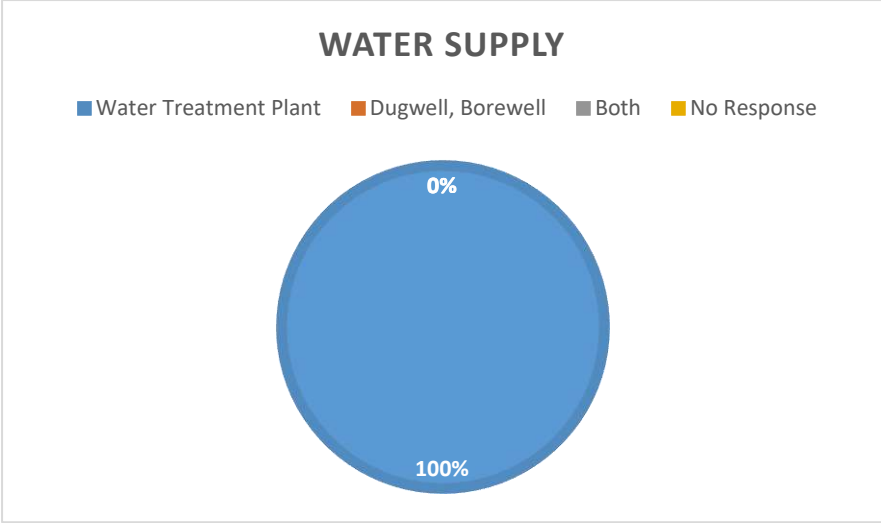
2466

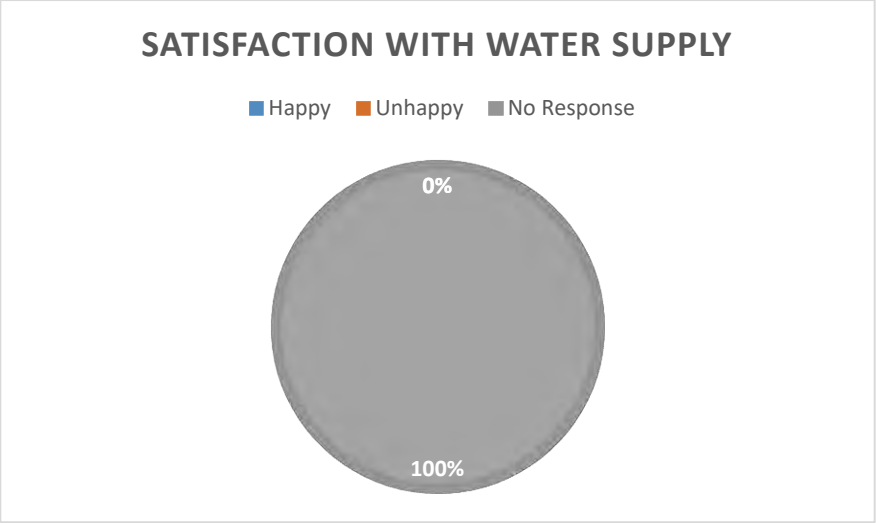


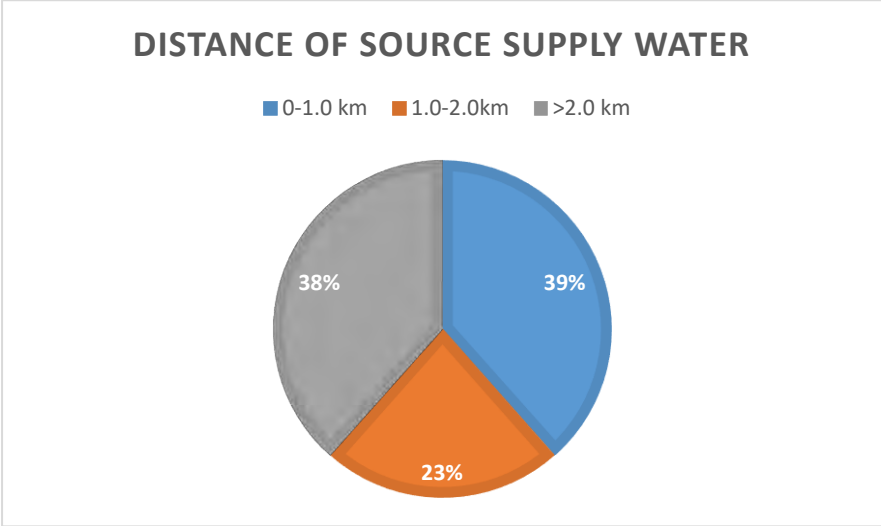
Ward No.	1	2	3	4	5	6 and 7	8	9	10	11	12	13	14	15	16	17	21
Population (Census 2011)	5890	7329	7104	7501	5352	9773	5343	6274	10675	5681	4424	4095	3937	3910	5681	9952	425
No. of Commercial Establishments	34	48	101	111	126	269	9	73	41	24	23	52	15	9	11	125	15
Water Supply Through Pipeline (kL)	2094	644	882	100	2140	1947	97	570	889	398	615	645	42	33	46	2120	82

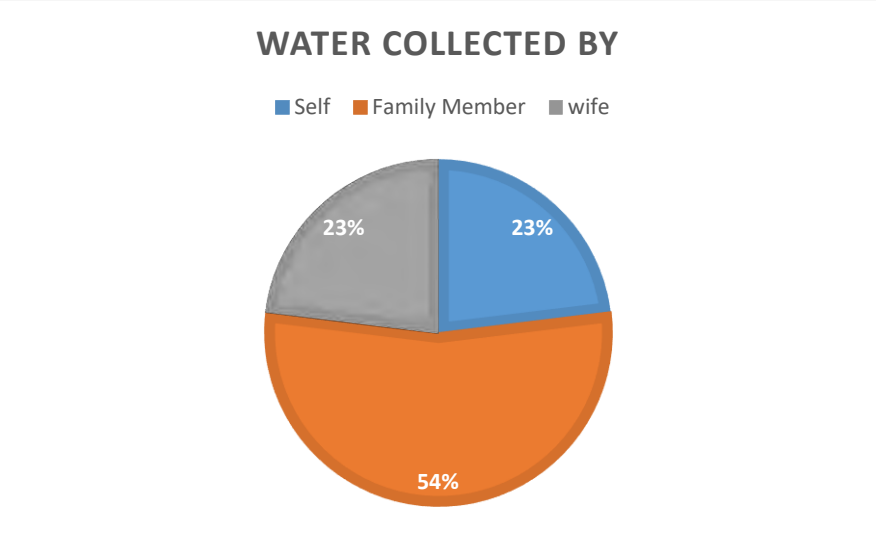
Fig. 8.6 Ward-wise variation in population and no. of commercial units vis-a-vis water supply, Port Blair Urban Area

2467

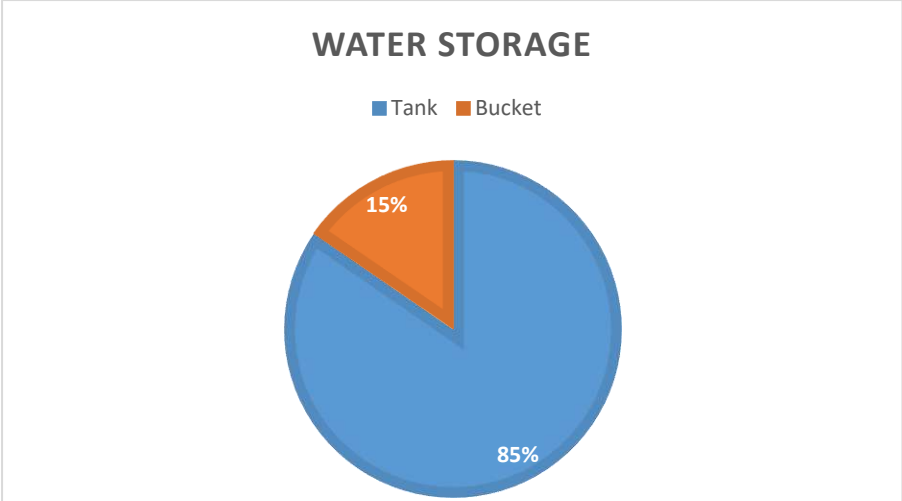

WATER SUPPLY
Water Treatment Plant
Dugwell, Borewell
Both
No Response
0%
100%

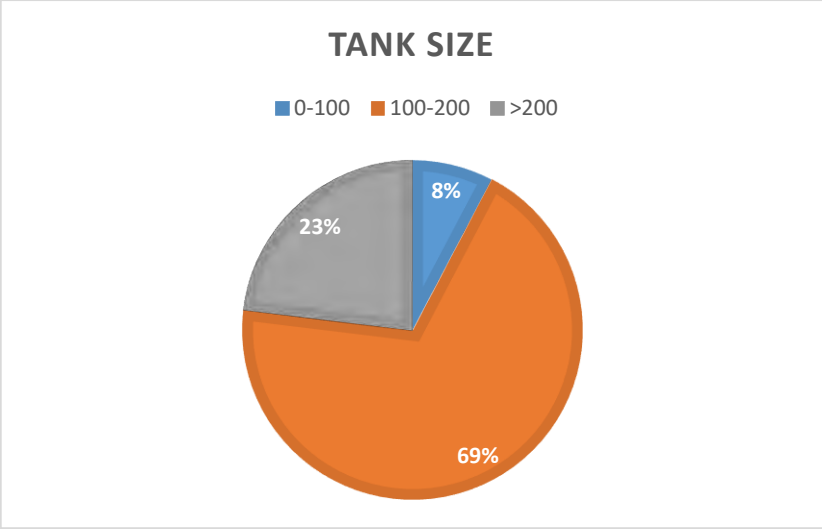

SATISFACTION WITH WATER SUPPLY
Happy
Unhappy
No Response
0%
100%

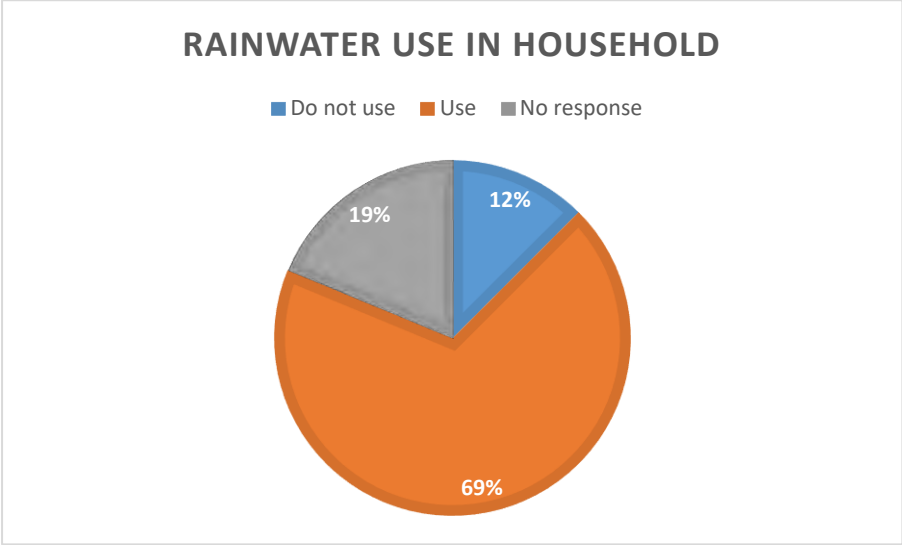

DISTANCE OF SOURCE SUPPLY WATER
0-1.0 km
1.0-2.0km
>2.0 km
39%
23%
38%

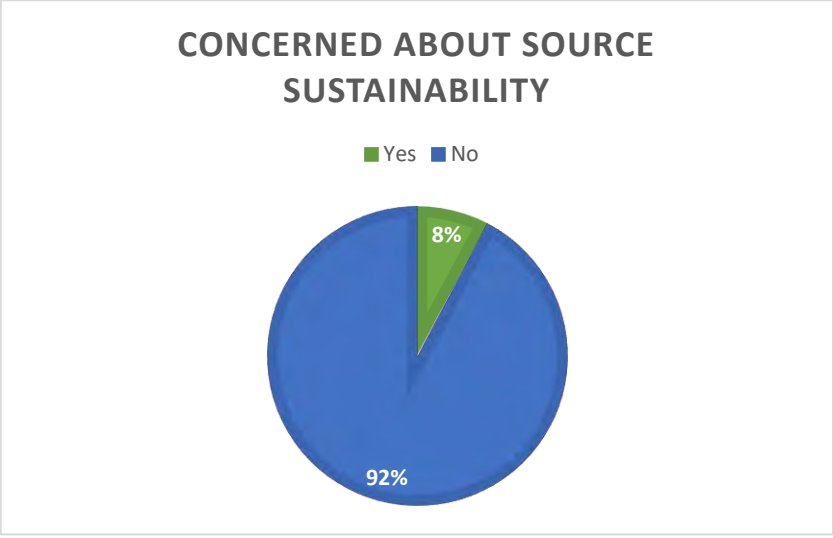

WATER COLLECTED BY
Self
Family Member
wife
23%
54%
23%

2468

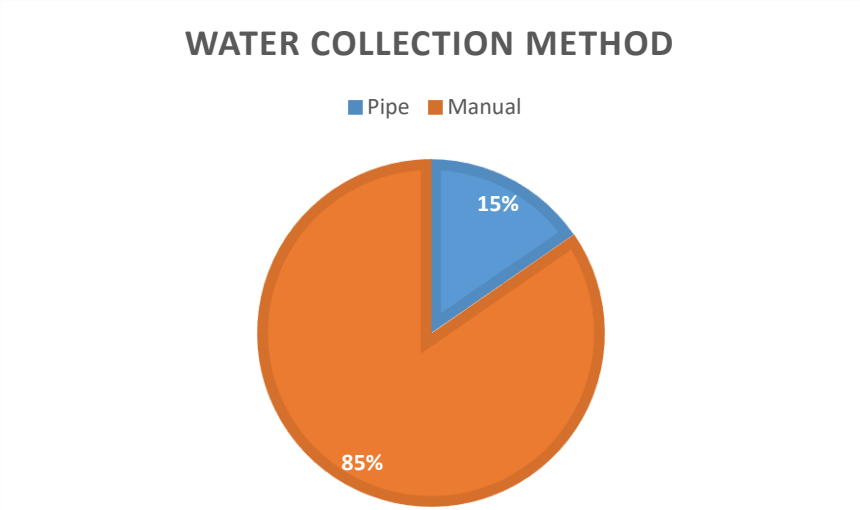

WATER STORAGE
Tank
Bucket
15%
85%

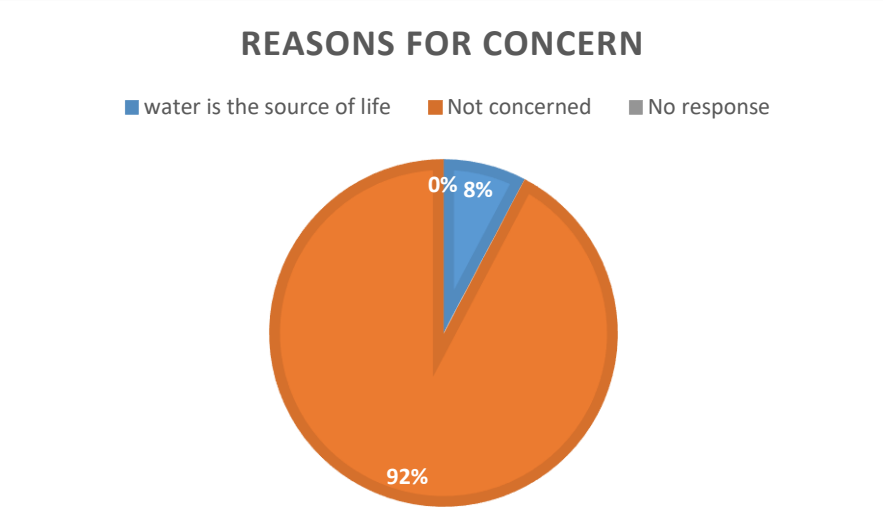

TANK SIZE
0-100
100-200
>200
8%
23%
69%

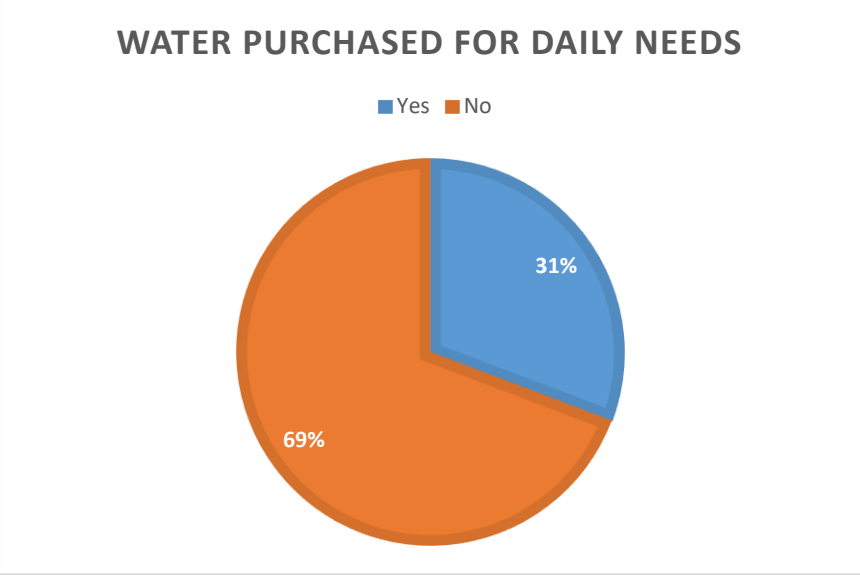

RAINWATER USE IN HOUSEHOLD
Do not use
Use
No response
12%
19%
69%

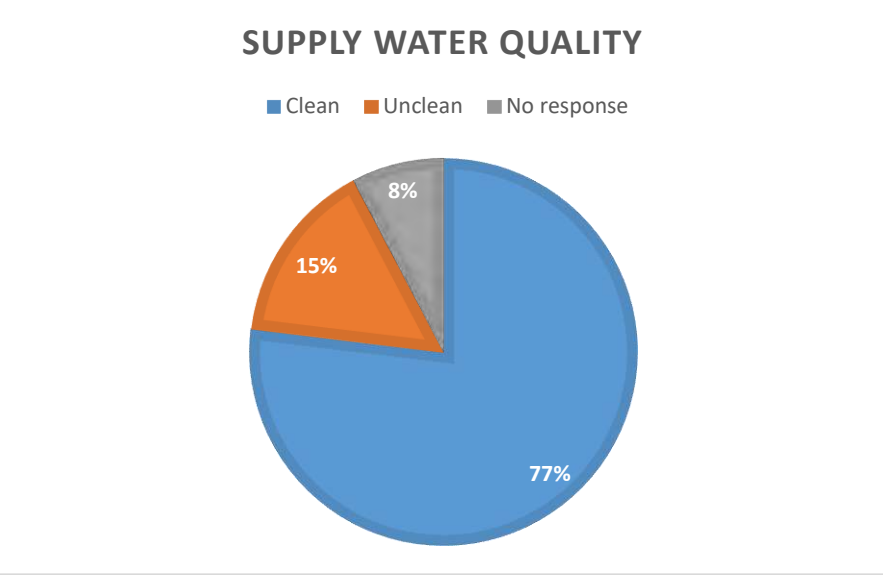

CONCERNED ABOUT SOURCE SUSTAINABILITY
Yes
No
8%
92%

2469

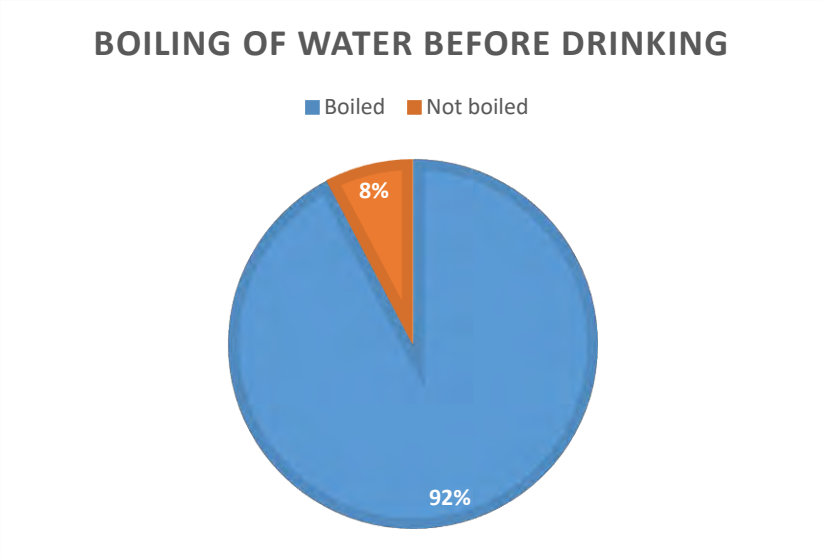

WATER COLLECTION METHOD
Pipe
Manual
15%
85%

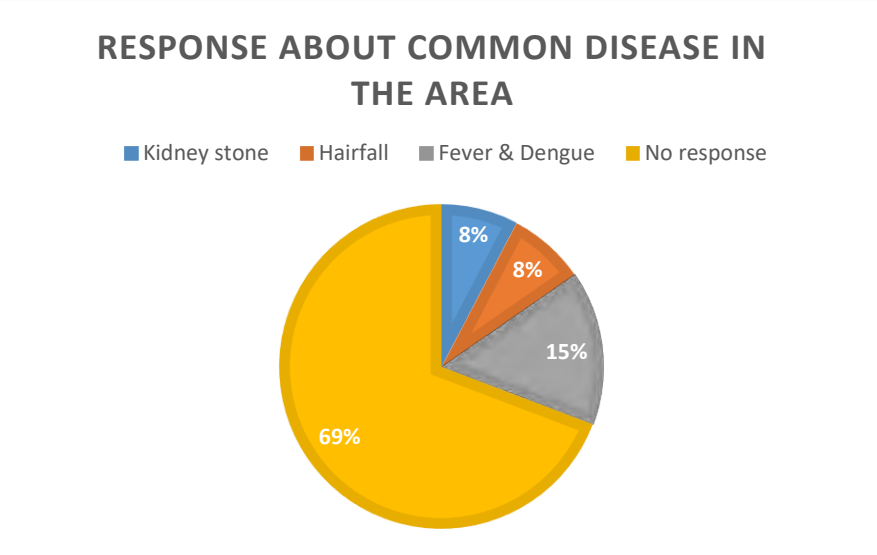

REASONS FOR CONCERN
water is the source of life
Not concerned
No response
0%
8%
92%

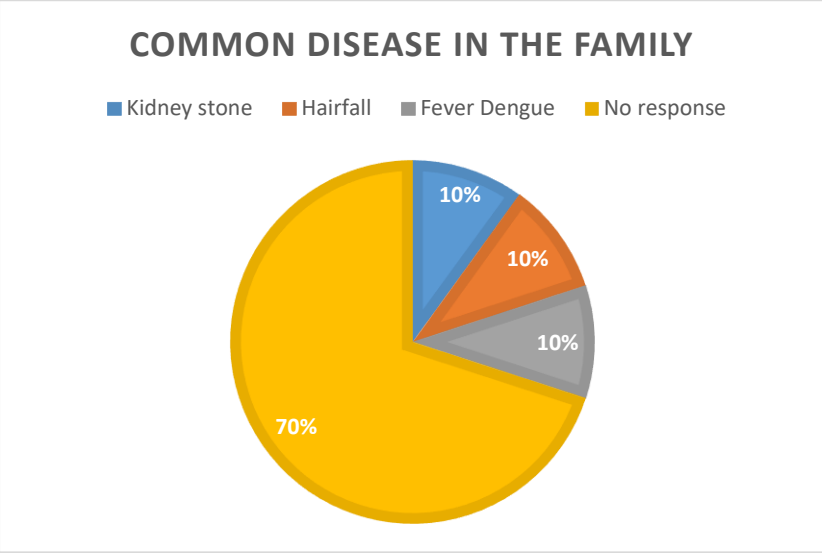

WATER PURCHASED FOR DAILY NEEDS
Yes
No
31%
69%

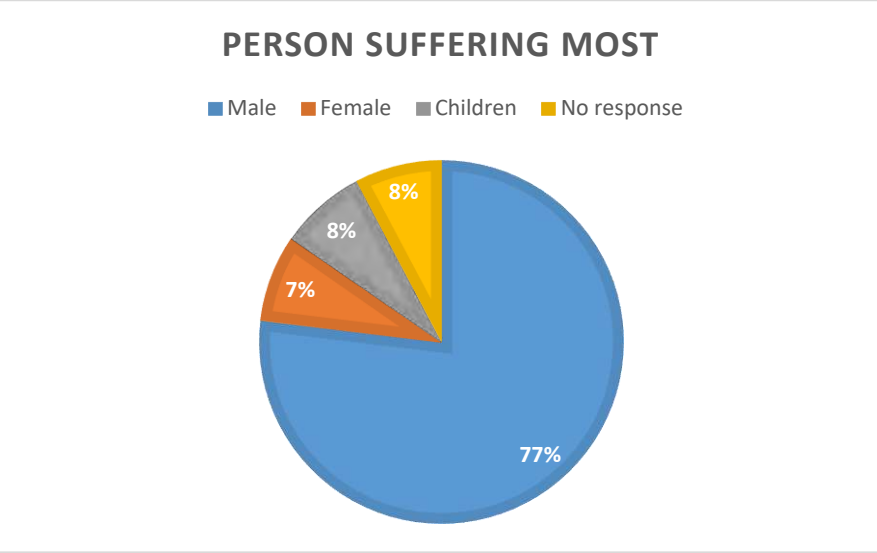

SUPPLY WATER QUALITY
Clean
Unclean
No response
8%
15%
77%

2470


BOILING OF WATER BEFORE DRINKING
Boiled
Not boiled
8%
92%


RESPONSE ABOUT COMMON DISEASE IN THE AREA
Kidney stone
Hairfall
Fever & Dengue
No response
8%
8%
15%
69%


COMMON DISEASE IN THE FAMILY
Kidney stone
Hairfall
Fever Dengue
No response
10%
10%
10%
70%


PERSON SUFFERING MOST
Male
Female
Children
No response
8%
8%
7%
77%

2471

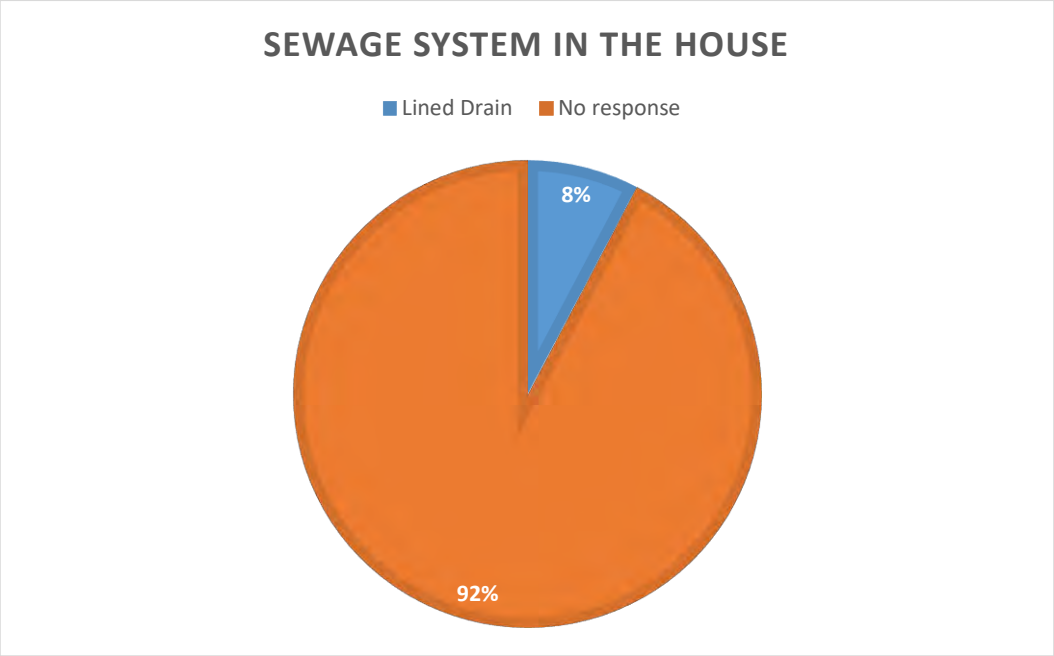


Fig. 8.7 Pie diagrams on feedback surveys on 16 Parameters by the stakeholders, Port Blair Urban Area

9. Conclusions and Recommendations

Based on the integrated review of the hydrogeological, geophysical, hydrochemical and climatological studies and the recommendations of the 12th meeting of the National Level Expert Committee (NLEC) chaired by the Chairman, CGWB on 4-4-2024 and subsequently, as per the comments received from the Minutes of the Meeting of the NLEC received on 13-5-2024, the following conclusions and recommendations are made.

9.1 Conclusions

- Groundwater Table Contour Maps: The delineation of recharge and discharge areas resulting from the analysis of groundwater table contour maps (pre and post monsoon) 2023 shows that there is localised discharge of groundwater in the north, northeast, southwest, east, south and southeast of Port Blair. The discharge areas are located in Municipal Ward No. 3, 5, 8, 11, 12, 15, 16, 17, 18, 20, 21, 22 and 23.
- Rising and falling trend of hydrographs: There are a total of 16 groundwater monitoring wells (GWMW) within the limits of Port Blair municipal area. All these 16 wells are dug wells indicating the water level of the phreatic aquifer. Based on the monthly monitoring data from April 2023 to March 2024, hydrographs have been prepared for all the GWMWs. Of the total of 16 monitoring wells, 69% of the wells show a rising trend in the pre-monsoon season, while 31% show a falling trend. In the post-monsoon period, 50% of the wells show an increasing trend, while 50% show a decreasing trend. The time-averaged trend analysis shows that a total of 56% of the wells show an increasing trend, while 44% show a decreasing trend.
- In-situ storage of large diameter dug wells in the post-monsoon: A total of 25 dug wells in the urban area of Port Blair were selected for estimation of groundwater storage (in dug wells). In post monsoon season, it is observed that 64% of the wells (16 wells) show increase in groundwater storage while 36% of the wells (9 wells) show decrease in groundwater storage. The insitu storage before the monsoon is calculated to be 437.80 m^3, which then increases to 515.40 m^3 after the monsoon. Thus, after the monsoon, the in-situ storage in the large diameter wells increases by 1.18 times, indicating groundwater recharge.

- Analysis of the pumping test data: Pumping tests were conducted in two open dug wells at the site of Birdline APWD pump house and Brookshabad APWD pump house. Both the dug wells are used by Andaman Public Works Department (APWD) for supplying water to Port Blair City. The analysis of pumping test data was carried out using the straight line Cooper-Jacob method. The transmissivity (T) values of Birdline dug well and Brookshabad dug well are 8.46 m^2/day and 14.0 m^2/day, respectively. The values indicate that these dug wells have limited groundwater potential. However, due to prevailing water scarcity problem, both the dug wells are extensively used by the APWD for water supply.
- Geophysical study: A comprehensive analysis of the Vertical Electrical Sounding (VES) survey, ground hydrogeologic, geologic, and topographic survey in conjunction with Google Earth map interpretation and analysis of available CGWB exploratory well data has determined that drilled well construction is feasible at seven (07) locations in PBMC Ward No. 2, 3, 5, 10, 11, 14, and 21. Using the True Resistivity Contour Map, potential groundwater bearing zones were identified at five locations in the study area at depths ranging from 55.0 m to 75.0 m. The locations are within Government Primary School, South Point (near Mazar), Ummat Public School, Megapode Road, Anarkali, within Nature Park, Haddo and near old APWD Quarters, Marine Hill. In addition to these sites, based on the interpreted VES results, two sites were identified for the construction of shallow wells (depth <30 m) to tap the potable freshwater aquifer within the weathered zone. The sites are located near Murugan Temple in Shadipur and near Saint Thomas Church in Ranchi Basti.
- Inorganic hydrochemical analysis: From the basic analysis of the water samples, no major groundwater contamination was found in the shallow aquifers of the study area as per the recommended guidelines of BIS for drinking water. Only the quality of the groundwater in an open pit at Mohanpura Market (PB32/W4/DW), which is mainly used for livestock, was questionable due to high levels of EC, TDS, sodium, chloride and lead. In all likelihood, the contamination is due to anthropogenic activities. The dug well is not used for drinking. The water from households in the vicinity of Mohanpura market proved to be safe in the post-monsoon season, as the total coliforms were within the limit recommended by the BIS. With the exception of the high iron content, the

groundwater was found to be suitable for industrial use, as shown by the analytical results of the samples from the bore wells in the Dollygunj industrial area.

- Bacteriological analysis: Bacteriological analysis of the samples collected during the pre-monsoon revealed that the majority of the samples (28 out of 38 or 73.70% of the total) were contaminated with TC 1≤10 MPN/100 mL, indicating that the water is safe for human consumption only after proper disinfection. The remaining 10 samples (26.32% of the total) in the pre-monsoon period had a TC of 0 MPN/100 mL, indicating that they were suitable for human consumption. In the post-monsoon testing, 8 out of 24 municipal wards (33.33% of the total) were found to have provided water with a TC of >5 (MPN/100 mL), which requires proper disinfection before human consumption. Majority of the water samples (23 out of 35 or 65.80% of the total) were found suitable and potable based on TC analysis. In the bacteriological analysis of TC, only Point of Use (POU) was tested at RMRC, Port Blair at individual households. Since the water supply is irregular due to water scarcity, there is a high probability of secondary contamination of water samples in households due to storage in contaminated containers.
- Climatological study: The climatological study shows that the PBUA has no increasing or decreasing trend in rainfall (RF). The seasonal analysis of total evapotranspiration (TET) shows a positive trend in winter and pre-monsoon, but no trend in monsoon and post-monsoon. The analysis of RF and TET shows that groundwater recharge occurs between April and December. The projected RF (2024-2030) is lower than the observed RF (2000-2023) during the pre-monsoon and monsoon periods, which is a matter of concern. The projected TET during 2024-2030 is higher than the observed TET during 2000-2023, which indicates increase in TET. Combined with less projected monsoon rainfall, the predicted rise in TET indicates less groundwater recharge, which may be a direct consequence of the effect of climate change.
- Based on the response of stakeholders on 16 defined parameters following the NAQUIM 2.0 Toolkit (CGWB, 2024) on water supply, storage, conservation through rainwater harvesting, problems on sanitation and issues on water borne diseases, a widely varying response pattern was observed. Majority of the stakeholders (69%) have reported water use through conserved rainwater. Surprisingly, 69% of the families have reported the necessity of tanker-based water supply, which may be a measure of the problem of water scarcity in Port Blair Urban Area.

9.2 Recommendations

- **Augmentation of recharge through abandoned dug wells through PBMC's "Blue Pipe Project":** The Port Blair Municipal Council has launched the "Blue Pipe Project" for urban rainwater harvesting. This is a novel community-based rainwater harvesting initiative that utilizes existing rooftops and existing dug wells for groundwater recharge. In this project, neighborhood rooftops are connected to nearby community wells in the area so that rainwater flows directly into the well instead of into the sewer system. This water replenishes the groundwater table by slowly seeping from the well into the ground. In this way, citizens with older buildings can also participate in rainwater harvesting. The abandoned dug wells in the PBMC area can easily be expanded as part of this project, allowing the recharge of groundwater through several existing dug wells in the urban districts. However, since all these wells tap the near-surface unconfined aquifers (Aquifer-I) in the depth range of ~5 m to ~15 m, the effect of groundwater recharge at the local level will only be evident after 2 years or more. Rehabilitation and subsequent re-development (rejuvenation) of existing abandoned dug wells would be essential. The quality of the well water should meet the prescribed guidelines for drinking water of the Bureau of Indian Standards (BIS). The abandoned dug wells like CGWB wells (now abandoned) at Sampat Lodge and Garacharma, which were earlier used as groundwater monitoring wells of CGWB, should be included in the "Blue Pipe Project" of PBMC.
- **Prioritization of municipal wards for implementation of demand side management:** A comprehensive analysis of water supply in Port Blair shows that water supply through the pipeline of PBMC in districts 5, 6, 7 and 17 is higher than the other districts at 2140 KLD, 1947 KLD (in districts 6 and 7 together) and 2120 KLD respectively. The number of commercial establishments is higher in districts 4, 5, 6, 7 and 17. The number of commercial establishments is highest in districts 6 and 7 (269), followed by the second highest number (126) in district 5, the third highest (125) in district 17 and the fourth highest (111) in district 4. Therefore, districts 4, 5, 6, 7 and 17 are the priority districts in terms of demand management as the number of commercial establishments is higher in these districts. Among these districts, again district 4 has the highest priority as the

quantity of water supplied by PBMC is much less at 100 KLD compared to the number of commercial establishments (111) in this district. The priority areas of district 4 are Mohanpur, Aberdeen Bazar, Marina Hill, Sristynagar, Dignabad, Babulane and Dignabad. The priority areas of ward 5 are Dignabad, Atlanta Point, Aberdeen Bazar, Macchiline, Gandhi Park, ANIIDCO HQ and Supplyline. The priority areas of ward 6 are Light House Junglighat, Premnagar, Phoenix Bay and Aberdeen Bazar. The priority areas of ward no. 7 are Delanipur and Premnagar. The priority area in ward no. 17 is Dollygunj, including the Integrated Industrial Estate.

- **Roof Top Rainwater Harvesting to be mandatory for commercial establishments:** The UT of Andaman administration must enforce Roof Top Rain Water Harvesting (RTRWH) for all commercial establishments, with highest priority being given to municipal ward no. 4, 5, 6, 7 and 17.
- **No Objection Certificate (NOC) from CGWA for extraction of groundwater through bore wells, dug wells or both:** Commercial units using groundwater must obtain NOC from Central Ground Water Authority (CGWA) and illegal groundwater extractors should be banned by the UT of Andaman & Nicobar Administration.
- **Green Building Initiative:** Implementation of 'Green Building' initiative with RTRWH in all commercial establishments can help in sustainable water management in Port Blair City. Although this concept is relatively new in the context of Andaman Islands, the PBMC has started to make the city dwellers aware on this issue.
- **Sustainability of groundwater quality and quantity prior to new construction in Port Blair City:** As per the recommendations of 12th NLEC meeting held on 4th April 2024 and the Minutes of the Meeting dated 13-5-2024, it is very important to quantify the sustainability of groundwater quality and quantity before any new conservation or extraction facilities are constructed in Port Blair City. Ground truthing, sustainability, and environmental impact assessment are very important before any new construction is undertaken. Before construction, a detailed hydrogeological survey needs to be carried out within 1-2 km radius of the site to check the quality of groundwater and the productivity of existing extraction structures like the dug wells and the bore wells.
- **Possibility of constructing Subsurface Dykes (SSD) downstream of the Dug Wells**: As per the recommendations of the 12th NLEC meeting held in April 2024 and the minutes of the NLEC meeting, it was recommended to explore the possibility of constructing

Subsurface Dykes (SSD) downstream of dug wells to arrest base flow of groundwater. An SSD is an underground barrier (or hidden retention dam) above a stream or river that slows the natural base flow and stores water below the earth's surface to meet demands during times of need. The SSD also stops or minimizes the groundwater flow in the sand bed near the valley section to increase the groundwater storage on the upstream side. The most suitable site for an SSD should have a shallow impermeable layer with a wide valley and a narrow outlet that has a limited thickness of loose soil or porous rock on top and solid or impermeable rock underneath. After a detailed survey, it was determined that the construction of SSDs within the city limits was not feasible due to the lack of suitable drainage channels. There is no major stream or river flowing through the Port Blair City, on which the SSD could be constructed.

- **Possibility of saline water upconing in dug wells and bore wells during pumping:** Aquifer systems containing freshwater and saltwater are typically layered, with the denser saltwater underlying the freshwater. A groundwater well that is drained from the freshwater zone causes the saltwater to migrate upwards towards the well. This phenomenon is called saltwater impoundment. The city of Port Blair is an area surrounded by saline water originating from the Andaman Sea and the Bay of Bengal, and saline aquifers are located between the freshwater aquifers, so there is a possibility of saline water rising when groundwater is pumped out of the dug wells and bore wells. As per the recommendations of the 12th NLEC meeting held on 4-4-2024 and its minutes dated 13-5-2024, it was recommended to take precautionary measures to prevent excessive pumping of groundwater which may lead to saline water rising. Here too, the pumps must be put into operation in good time to prevent the fresh aquifer from being polluted and thus prevent the possibility of saline water upconing.
- **Refilling tankers with water from the RTRWH through storage tanks is mandatory for legal bulk water suppliers:** The RTRWH mandate extends to the legal bulk water suppliers. Suppliers must prioritize filling tankers with properly filtered water that has been collected by RTRWH, instead of over-abstraction of the bore wells using high capacity submersible pumps. This will alleviate the stress created on the fractured rock aquifers in the periphery of Port Blair City.
- **Supply side management is more important than demand side management:** the estimated daily water supply from the proposed bore wells and dug wells is 1.33 MLD.

The estimated daily water supply from the proposed ponds and check weirs is 11.51 MLD. Thus, the combined water supply potential of ponds and check dams is 8.7 times higher than the combined supply potential of the large-diameter dug wells and the bore wells. Therefore, the supply-side management is more important than the demand side management, which means water resources conservation through surface storage and managed aquifer recharge is more beneficial than groundwater abstraction.

- **Feedback from the stakeholders:** A sample survey of selected households was done on sixteen parameters on water supply profile, importance of rainwater harvesting and awareness on health and sanitation. Due to lack of awareness on water resources conservation and sustainable management among the residents of Port Blair City, a staggering 92% of the stakeholders showed “no concern” on the importance of sustainability of drinking water sources. Although high variation in response pattern is evident, more detailed socio-economic survey across all the 24 Municipal Wards of Port Blair City is required for a holistic appraisal of the issues and challenges on sustainable water resources management in the urban agglomerate of Port Blair.

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Annexure-I: Details of Key Observation Wells established in NAQUIM 2.0 study area, Port Blair

Sl. No.	Well ID	Location	Ward No.	Well Type (DW/BW)	WL (mbgl)	Well Depth (m)	Post Monsoon WL (mbgl)	Pre-Monsoon WL (mbgl)	Well Diameter (m)	Latitude °N	Longitude °E	Elevation GPS Visualizer (m)
1	PB02/W1/DW	Haddo	1	Dug Well	2.5	5	1.8	2.5	1.6	11.678823	92.720327	27.4
2	PB03/W1/DW	Haddo	1	Dug Well	3.3	7	1.8	3.3	2.4	11.679846	92.720196	25.6
3	PB04/W1/DW	Haddo	1	Dug Well	2.11	7	1.62	2.11	1.5	11.680784	92.719625	21
4	PB05/W1/DW	Haddo	1	Dug Well	2.97	6	1.74	2.97	2	11.6818	92.720227	12.5
5	PB06/W1/DW	Haddo	1	Dug Well	1.28	3.5	0.78	1.28	1.2x1.2	11.681736	92.720396	13.3
6	PB07/W1/DW	Haddo	1	Dug Well	4.4	7	1.67	4.4	2	11.681341	92.72106	22.1
7	PB08/W1/DW	Haddo	1	Dug Well	3.85	7	1.98	3.85	2	11.681276	92.721205	24.3
8	PB09/W1/DW	Lilipur, Haddo	1	Dug Well	0.97	7	0.59	0.97	1.3	11.67985	92.721041	31.4
9	PB10/W2/DW	Haddo	2	Dug Well	2.53	7	0.87	2.53	2.4	11.681556	92.723824	21.5
10	PB11/W2/DW	Haddo	2	Dug Well	1.56	7	0.97	1.56	3	11.681333	92.724362	15.4

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Sl. No.	Well ID	Location	Ward No.	Well Type (DW/BW)	WL (mbgl)	Well Depth (m)	Post Monsoon WL (mbgl)	Pre-Monsoon WL (mbgl)	Well Diameter (m)	Latitude °N	Longitude °E	Elevation GPS Visualizer (m)
11	PB12/W2/DW	Haddo	2	Dug Well	1.52	6	0.97	1.52	1.25	11.679383	92.728029	13.6
12	PB13/W2/DW	Haddo	2	Dug Well	1.16	4.5	0.75	1.16	1	11.681223	92.724636	13.4
13	PB14/W2/DW	Haddo	2	Dug Well	1.12	5	0.4	1.12	5.2x5.2	11.680226	92.723679	39.4
14	PB15/W2/DW	Haddo	2	Dug Well	1.64	3.5	0.53	1.64	1.3	11.680499	92.723746	35.8
15	PB16/W2/DW	Haddo	2	Dug Well	4.75	7	1.42	4.75	1.3	11.6812037	92.7242278	18.9
16	PB17/W2/DW	Haddo	2	Dug Well	2.2	7	1.83	2.2	1.6	11.6812059	92.7242571	0
17	PB18/W2/DW	Haddo	2	Dug Well	2.63	4.5	1.28	2.63	1.5	11.6806723	92.7249562	17.8
18	PB19/W2/DW	Haddo	2	Dug Well	1.11	4.5	1.86	1.11	1.35	11.6804412	92.7250409	22.9
19	PB20/W2/BW	Haddo	2	Bore Well		83	NA		6.5"	11.6774824	92.7238148	60.3
20	PB21/W3/DW	Megapod	3	Dug Well	1.56	5	0.62	1.56	1.3	11.675807	92.730064	29.2
21	PB22/W3/DW	Megapod	3	Dug Well	1.5	3.5	0.75	1.5	1.3	11.676042	92.727738	37.5

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Sl. No.	Well ID	Location	Ward No.	Well Type (DW/BW)	WL (mbgl)	Well Depth (m)	Post Monsoon WL (mbgl)	Pre-Monsoon WL (mbgl)	Well Diameter (m)	Latitude °N	Longitude °E	Elevation GPS Visualizer (m)
22	PB23/W3/DW	Megapod	3	Dug Well	1.95	3	0.84	1.95	1.3	11.675034	92.727565	42.7
23	PB24/W3/BW	Anarkali	3	Bore Well	7.2	67	-0.1	7.2	6.5 inch	11.671968	92.728317	53.5
24	PB25/W3/DW	Phoenix Bay	3	Dug Well	2.05	4.5	1.1	2.05	1.25	11.670779	92.73461	10.1
25	PB26/W3/DW	Phoenix Bay	3	Dug Well	1.34	7	1.04	1.34	2.35	11.670915	92.734936	10.2
26	PB27/W3/DW	Phoenix Bay	3	Dug Well	2.7	6	1.95	2.7	3.43	11.670866	92.735849	13.6
27	PB28/W3/DW	Phoenix Bay	3	Dug Well	1.1	6	0.84	1.1	6x4.3	11.670656	92.734557	11.1
28	PB29/W3/DW	Phoenix Bay	3	Dug Well	3.67	6	1.58	3.67	2.9	11.669557	92.733693	22
29	PB30/W3/DW	Delanipur	3	Dug Well	1.2	6	0.71	1.2	1.9x1.9	11.669639	92.727167	66.1
30	PB31/W3/DW	Anarkali	3	Dug Well	1.38	3.5	0.25	1.38	1	11.669386	92.728394	57
31	PB32/W4/DW	Mohanpur	4	Dug Well	3.5	6	2.74	3.5	1.4	11.670581	92.739545	8.4
32	PB33/W4/DW	Mohanpur	4	Dug Well	1.69	5	1.3	1.69	1.2	11.6712256	92.7397951	8.4
33	PB34/W4/DW	Mohanpur	4	Dug Well	1.17	5	1.16	1.17	1.2	11.6711728	92.7400958	10.3

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Sl. No.	Well ID	Location	Ward No.	Well Type (DW/BW)	WL (mbgl)	Well Depth (m)	Post Monsoon WL (mbgl)	Pre-Monsoon WL (mbgl)	Well Diameter (m)	Latitude °N	Longitude °E	Elevation GPS Visualizer (m)
34	PB35/W4/DW	Mohanpur	4	Dug Well	1.5	5	0.99	1.5	1.3	11.671979	92.739622	6.8
35	PB36/W4/DW	Aberdin Bazar	4	Dug Well	1.5	4	1.34	1.5	1.3	11.669292	92.73819	6.7
36	PB37/W4/DW	Aberdin Bazar	4	Dug Well	1.3	6	1.81	1.3	3.2	11.674258	92.738258	11.4
37	PB38/W4/DW	Marine Hill	4	Dug Well	1.4	6	0.49	1.4	3.1	11.674272	92.738735	14.4
38	PB39/W4/DW	Sristy Nagar	4	Dug Well	1.66	8	0.8	1.66	3	11.673397	92.740654	18.9
39	PB40/W4/DW	Dignabad	4	Dug Well	1.2	7	0.68	1.2	0.50x0.50	11.674325	92.74241	37.1
40	PB41/W4/DW	Aberdeen	4	Dug Well	1.8	5	0.11	1.8	1.25	11.6709279	92.7420194	19.5
41	PB42/W4/DW	Aberdeen Bazar	4	Dug Well	1.85	7	0.59	1.85	1.1	11.6712837	92.7425595	23.1
42	PB43/W4/DW	Aberdeen Bazar	4	Dug Well	1.95	7	0.68	1.95	2.35	11.671434	92.7432187	29

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Sl. No.	Well ID	Location	Ward No.	Well Type (DW/BW)	WL (mbgl)	Well Depth (m)	Post Monsoon WL (mbgl)	Pre-Monsoon WL (mbgl)	Well Diameter (m)	Latitude °N	Longitude °E	Elevation GPS Visualizer (m)
43	PB44/W4/DW	Babulane	4	Dug Well	1.73	5	1.27	1.73	2	11.670858	92.740863	16.2
44	PB45/W4/DW	Babulane	4	Dug Well	2.45	9	2.23	2.45	2.2	11.670527	92.740485	13.3
45	PB46/W5/DW	Dignabad	5	Dug Well	1.35	4	0.67	1.35	1.4	11.67385	92.74338	17
46	PB47/W5/DW	Dignabad	5	Dug Well	2.4	6	0.97	2.4	2	11.673001	92.742258	26.3
47	PB48/W4/DW	Dignabad	4	Dug Well	1.3	4	0.63	1.3	1	11.67423	92.74352	15.3
48	PB49/W4/DW	Dignabad	4	Dug Well	1.37	4	1.86	1.37	1.2	11.67469	92.74388	15.7
49	PB50/W5/DW	Atlanta point	5	Dug Well	1.7	5	1.02	1.7	1.7	11.67199	92.74458	36.4
50	PB51/W5/DW	Aberdeen Bazar	5	Dug Well	1.2	5	0.56	1.2	1.55	11.66781	92.74646	15.8
51	PB52/W5/DW	Aberdeen Bazar	5	Dug Well	1.13	4	0.51	1.13	1.6	11.66816	92.74614	11.7
52	PB53/W5/DW	Aberdeen	5	Dug Well	0.79	6	1.23	0.79	1.5	11.670739	92.745377	8.1

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Sl. No.	Well ID	Location	Ward No.	Well Type (DW/BW)	WL (mbgl)	Well Depth (m)	Post Monsoon WL (mbgl)	Pre-Monsoon WL (mbgl)	Well Diameter (m)	Latitude °N	Longitude °E	Elevation GPS Visualizer (m)
		Bazar										
53	PB54/W5/DW	Dignabad	5	Dug Well	1.7	4	1.31	1.7	1.4	11.67489	92.74447	13.3
54	PB55/W5/DW	Dignabad	5	Dug Well	2	5	0.98	2	1.5	11.673997	92.743852	18.5
55	PB56/W5/DW	Dignabad	5	Dug Well	0.8	5	1.34	0.8	1.5	11.675235	92.745212	13.3
56	PB57/W5/DW	Dignabad	5	Dug Well	1.75	5	0.68	1.75	1.3	11.674829	92.745314	22.3
57	PB58/W5/DW	Dignabad	5	Dug Well	1.25	5	0.66	1.25	1.3	11.674666	92.745019	21.7
58	PB59/W5/DW	Atlanta point	5	Dug Well	1.2	5	0.59	1.2	1.2	11.673125	92.74369	29.5
59	PB60/W5/DW	Atlanta point	5	Dug Well	3	7	2.32	3	1.9	11.673535	92.74437	3.6
60	PB61/W5/DW	Macchiline	5	Dug Well	1.1	5	0.56	1.1	2	11.66594	92.74966	30.2
61	PB62/W5/DW	Macchiline	5	Dug Well	1	5	0.57	1	1.3	11.665864	92.74924	6.9

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Sl. No.	Well ID	Location	Ward No.	Well Type (DW/BW)	WL (mbgl)	Well Depth (m)	Post Monsoon WL (mbgl)	Pre-Monsoon WL (mbgl)	Well Diameter (m)	Latitude °N	Longitude °E	Elevation GPS Visualizer (m)
62	PB63/W5/DW	Macchiline	5	Dug Well	1.35	5	0.83	1.35	1.3	11.6649979	92.749334	6.8
63	PB64/W5/DW	Macchiline	5	Dug Well	1.4	5	1.01	1.4	1.6	11.665366	92.749075	7.5
64	PB65/W5/DW	Gandhi Park	5	Dug Well	1.45	5	0.53	1.45	1.2	11.664021	92.743617	42
65	PB66/W5/DW	Near Gandhi Park	5	Dug Well	1.65	3	1.28	1.65	1.3	11.66434	92.745024	45.7
66	PB67/W5/BW	ANIDCO HQ	5	Bore Well	12.9	83	0	12.9	6.1 inch	11.666911	92.745997	35.5
67	PB68/W5/DW	Supplyline	5	Dug Well	1	5	0.82	1	1.7	11.666306	92.744104	39.6
68	PB69/W5/DW	Supplyline	5	Dug Well	0.9	7	0.52	0.9	1.9	11.669.63	92.74357	28.1
69	PB70/W5/DW	Supplyline	5	Dug Well	1.3	6.6	1.04	1.3	1.7	11.668676	92.744184	23.9
70	PB71/W5/DW	Supplyline	5	Dug Well	1.67	4	0.83	1.67	2	11.668516	92.740915	11
71	PB72/W5/DW	Aberdeen Bazar	5	Dug Well	2.1	7	1.61	2.1	1.4	11.669432	92.741476	12.6

2489

Sl. No.	Well ID	Location	Ward No.	Well Type (DW/BW)	WL (mbgl)	Well Depth (m)	Post Monsoon WL (mbgl)	Pre-Monsoon WL (mbgl)	Well Diameter (m)	Latitude °N	Longitude °E	Elevation GPS Visualizer (m)
72	PB73/W6/DW	Light House	6	Dug Well	1.95	7	1.03	1.95	2.5	11.668006	92.737578	9.4
73	PB74/W6/DW	Jungligjhat	6	Dug Well	1.5	7	1.97	1.5	2.9	11.664522	92.738151	38
74	PB75/W6/DW	Premnagar	6	Dug Well	1.2	4	0.73	1.2	1.1	11.663197	92.731293	8.5
75	PB76/W6/DW	Junglighat	6	Dug Well	1.2	5	0.25	1.2	1.3	11.662512	92.727828	9.7
76	PB77/W6/DW	Prem Nagar	6	Dug Well	0.5	5	0.8	0.5	2.5	11.6662712	92.7329107	35.2
77	PB78/W6/DW	Prem Nagar	6	Dug Well	0.65	5	0.66	0.65	2.5	11.6662713	92.7329108	35.2
78	PB79/W6/DW	Prem Nagar	6	Dug Well	0.65	5	0.28	0.65	2.5	11.6662714	92.7329109	35.2
79	PB80/W6/DW	Prem Nagar	6	Dug Well	1.5	5	1.81	1.5	2.5	11.6656502	92.7329143	28.9
80	PB81/W6/DW	Phoenix Bay	6	Dug Well	3	5	3	3	2.2	11.6689768	92.7329143	32.9
81	PB82/W6/BW	Phoenix Bay	6	Bore Well	6.4	60	3.2	6.4	6.5"	11.6689768	92.7350574	22.6
82	PB83/W6/DW	Aberdeen Bazar	6	Dug Well	1.8		2.16	1.8	1.3	11.6663994	92.734499	17.4

2490

Sl. No.	Well ID	Location	Ward No.	Well Type (DW/BW)	WL (mbgl)	Well Depth (m)	Post Monsoon WL (mbgl)	Pre-Monsoon WL (mbgl)	Well Diameter (m)	Latitude °N	Longitude °E	Elevation GPS Visualizer (m)
83	PB84/W6/BW	Light House	6	Bore Well	0.8	65	0.24	0.8	6.5"	11.6678677	92.7389911	8.4
84	PB85/W6/BW	Light House	6	Bore Well	1	50	0.4	1	6.5"	11.6688449	92.7378245	8.6
85	PB86/W6/BW	Light House	6	Bore Well		50	NA		6.5"	11.6686696	92.7364498	16.4
86	PB87/W6/DW	Light House	6	Dug Well	1.5	5	1.88	1.5	2.1	11.6686649	92.7361156	17.9
87	PB88/W7/DW	Jarawa Road	7	Dug Well	0.98	5	1.08	0.98	1.9	11.666535	92.724633	81.4
88	PB89/W7/DW	Delanipur	7	Dug Well	2.34	5	1.74	2.34	1.9	11.667422	92.726957	71.6
89	PB90/W7/DW	Prem Nagar	7	Dug Well	1.6	3	1	1.6	1.9	11.664085	92.727997	29.9
90	PB91/W7/DW	Prem Nagar	7	Dug Well	1.35	3	1.21	1.35	1.7	11.663743	92.727397	26
91	PB92/W7/DW	Prem Nagar	7	Dug Well	0.9	4	0.44	0.9	2	11.666027	92.72981	49.7
92	PB93/W7/DW	Prem Nagar	7	Dug Well	1.1	5	0.73	1.1	1.1	11.66486	92.72986	32.4
93	PB94/W8/DW	Buniadabad	8	Dug Well	3	5	2.69	3	1.2	11.671682	92.725118	75.8
94	PB95/W8/DW	Haddo	8	Dug Well	1.45	5	1.4	1.45	3.1	11.67471	92.72212	47.7

2491

Sl. No.	Well ID	Location	Ward No.	Well Type (DW/BW)	WL (mbgl)	Well Depth (m)	Post Monsoon WL (mbgl)	Pre-Monsoon WL (mbgl)	Well Diameter (m)	Latitude °N	Longitude °E	Elevation GPS Visualizer (m)
95	PB96/W8/DW	Haddo	8	Dug Well	1.2	5	0.78	1.2	2	11.669075	92.725893	66.4
96	PB97/W8/DW	Buniadabad	8	Dug Well	1	4	0.68	1	2.2	11.668988	92.724743	60.3
97	PB98/W8/DW	Junglighat	8	Dug Well	0.8	5	0.12	0.8	1.3	11.660765	92.731481	8.7
98	PB99/W9/DW	Junglighat	9	Dug Well	1.1	4	0.41	1.1	1.3	11.659458	92.730907	8
99	PB100/W9/DW	Junglighat	9	Dug Well	1.1	3	0.4	1.1	1.3	11.659458	92.730907	8
100	PB101/W9/DW	Junglighat	9	Dug Well	1	4	-0.65	1	1.35	11.659405	92.731068	8.9
101	PB102/W9/DW	Junglighat	9	Dug Well	1.3	5	0.62	1.3	1.5	11.658533	92.731192	11.8
102	PB103/W9/DW	Dairy Farm	9	Dug Well	1	5	0.91	1	1.2	11.653778	92.729192	31.8
103	PB104/W9/DW	Dairy Farm	9	Dug Well	1.2	5	0.42	1.2	1.2	11.65113	92.728878	45.3
104	PB105/W14/DW	Dairy Farm	14	Dug Well	1.5	7	1.64	1.5	1.3	11.65301	92.726858	52.6
105	PB106/W15/DW	Dairy Farm	14	Dug Well	1.5	4	0.61	1.5	1.3	11.653643	92.72694	52
106	PB107/W9/DW	Shadipur	10	Dug Well	3.2	5	2.61	3.2	1.3	11.663002	92.74878	19.5

2492

Sl. No.	Well ID	Location	Ward No.	Well Type (DW/BW)	WL (mbgl)	Well Depth (m)	Post Monsoon WL (mbgl)	Pre-Monsoon WL (mbgl)	Well Diameter (m)	Latitude °N	Longitude °E	Elevation GPS Visualizer (m)
107	PB108/W10/DW	Shadipur	10	Dug Well			1.44			11.656478	92.743363	60.7
108	PB109/W10/DW	Macchiline	10	Dug Well	1.9	4	1.58	1.9	1.4	11.662973	92.749172	17.1
109	PB110/W10/DW	Macchiline	10	Dug Well	1.6	6	1.67	1.6	2.2	11.661395	92.749345	42.9
110	PB111/W10/DW	Shadipur	10	Dug Well	1.5	5	1.03	1.5	1.4	11.662598	92.750725	25.2
111	PB112/W10/DW	Shadipur	10	Dug Well	1.4	5	1.49	1.4	1.3	11.660282	92.745135	38.8
112	PB113/W10/DW	Shadipur	10	Dug Well	1.3	5	0.76	1.3	1.4	11.66216	92.74506	36.5
113	PB114/W11/DW	South Point	11	Dug Well	0.9	7	1.74	0.9	3.5	11.664082	92.753878	30.1
114	PB115/W10/DW	South Point	10	Dug Well	1.4	5	1.18	1.4	2.7	11.661458	92.750867	41.3
115	PB116/W10/BW	South Point	10	Bore Well	4.2	50	NA	4.2	6.50"	11.661313	92.750865	43.3
116	PB117/W11/DW	South Point	11	Dug Well	1.5	6	3.75	1.5	3	11.669432	92.755793	0
117	PB118/W11/DW	Mazar Pahar	11	Dug Well	1	5	2.55	1	1.6	11.657998	92.7530212	17.3
118	PB119/W11/DW	Mazar Pahar	11	Dug Well	1.8	5	1.31	1.8	1.2	11.65801	92.75145	0

2493

Sl. No.	Well ID	Location	Ward No.	Well Type (DW/BW)	WL (mbgl)	Well Depth (m)	Post Monsoon WL (mbgl)	Pre-Monsoon WL (mbgl)	Well Diameter (m)	Latitude °N	Longitude °E	Elevation GPS Visualizer (m)
119	PB120/W12/DW	Dudhline	12	Dug Well	0.9	5	1.79	0.9	1.3	11.652888	92.745785	55.7
120	PB121/W12/DW	Dudhline	12	Dug Well	0.9	5	0.43	0.9	1.2	11.652472	92.746043	59.8
121	PB122/W12/DW	Police line	12	Dug Well	1.4	5	0.35	1.4	1.3	11.65708	92.739722	65.1
122	PB123/W12/DW	Police line	12	Dug Well	1	4	NA	1	1	11.657013	92.737793	60.9
123	PB124/W12/DW	Police line	12	Dug Well	1.2	4	0.78	1.2	1.3	11.656503	92.736802	50.5
124	PB125/W12/DW	Nayagaon	12	Dug Well	1.2	6	0.49	1.2	2.2	11.651818	92.743748	72.2
125	PB126/W12/DW	Nayagaon	12	Dug Well	1.3	3	0.67	1.3	6	11.653078	92.743022	61.5
126	PB127/W12/DW	Nayagaon	12	Dug Well	2	6	0.66	2	2.6	11.649048	92.740895	51.7
127	PB128/W12/DW	Nayagaon	12	Dug Well	1.8	5	1.35	1.8	1.3	11.64732	92.74006	45.4
128	PB129/W12/DW	Dudhline	12	Dug Well	1.7	5	1.05	1.7	1.4	11.654652	92.748162	30.6
129	PB130/W12/DW	Bahadurline	12	Dug Well	1.5	3	1.07	1.5	3	11.65413	92.740678	33

2494

Sl. No.	Well ID	Location	Ward No.	Well Type (DW/BW)	WL (mbgl)	Well Depth (m)	Post Monsoon WL (mbgl)	Pre-Monsoon WL (mbgl)	Well Diameter (m)	Latitude °N	Longitude °E	Elevation GPS Visualizer (m)
130	PB131/W12/DW	Bahadurline	12	Dug Well	1.65	3	2.02	1.65	2.5	11.654042	92.740595	31.7
131	PB132/W13/DW	Junglighat VIP road	13	Dug Well	1.1	5	0.08	1.1	2.8	11.65751	92.735375	49
132	PB133/W13/DW	Junglighat	13	Dug Well	2.5	5	0.82	2.5	2	11.657947	92.733245	28.7
133	PB134/W13/DW	Junglighat	13	Dug Well	1.7	5	1.73	1.7	2	11.65821	92.733145	27.7
134	PB135/W13/DW	Junglighat	13	Dug Well	1.4	5	0.76	1.4	1.3	11.658437	92.734407	42.7
135	PB136/W13/DW	Junglighat	13	Dug Well	1.1	4	1.72	1.1	1.5	11.66088	92.734687	39.4
136	PB137/W14/DW	Dairy Farm	14	Dug Well	1.2	6	1.97	1.2	2.2	11.654867	92.724363	30.8
137	PB138/W14/DW	Dairy Farm	14	Dug Well	1.2	4	0.51	1.2	2.5	11.65546	92.725048	16.2
138	PB139/W14/DW	Dairy Farm	14	Dug Well	1.6	5	0.92	1.6	1	11.653645	92.721835	11.3
139	PB140/W15/DW	Ranchi Basti School Line	15	Dug Well	1.3	4	0.78	1.3	1.3	11.645093	92.728073	46.8

2495

Sl. No.	Well ID	Location	Ward No.	Well Type (DW/BW)	WL (mbgl)	Well Depth (m)	Post Monsoon WL (mbgl)	Pre-Monsoon WL (mbgl)	Well Diameter (m)	Latitude °N	Longitude °E	Elevation GPS Visualizer (m)
140	PB141/W15/DW	Ranchi Basti School Line	15	Dug Well	1.5	4	1.04	1.5	1.3	11.646178	92.725303	38.7
141	PB142/W15/DW	Ranchi Basti School Line	15	Dug Well	1	5	0.54	1	1.4	11.646365	92.72516	39.2
142	PB143/W15/DW	Ranchi Basti School Line	15	Dug Well	1.3	5	0.7	1.3	1.3	11.645378	92.72565	33.3
143	PB144/W15/DW	Ranchi Basti School Line	15	Dug Well	0.8	5	0.53	0.8	1.3	11.646973	92.724273	44.7
144	PB145/W15/DW	Ranchi Basti School Line	15	Dug Well	0.8	4	1.26	0.8	1.5	11.646855	92.724258	45
145	PB146/W15/DW	Ranchi Basti School Line	15	Dug Well	1.55	4	0.96	1.55	2.3	11.647053	92.724367	44.2
146	PB147/W15/DW	Ranchi Basti School Line	15	Dug Well	1.6	5	0.28	1.6	1.8	11.6474561	92.7245427	43.9

2496

Sl. No.	Well ID	Location	Ward No.	Well Type (DW/BW)	WL (mbgl)	Well Depth (m)	Post Monsoon WL (mbgl)	Pre-Monsoon WL (mbgl)	Well Diameter (m)	Latitude °N	Longitude °E	Elevation GPS Visualizer (m)
147	PB148/W19/DW	Bathu Basti	19	Dug Well	1.6	5	3.85	1.6	2.5	11.621887	92.713793	12.3
148	PB149/W16/DW	Dollygunj	16	Dug Well	1.1	5	0.93	1.1	2.3	11.634177	92.72268	25.2
149	PB150/W17/DW	Dollygunj	17	Dug Well	1.16	5	0.46	1.16	1.6	11.632928	92.715347	26.7
150	PB151/W16/DW	New Pahargaon	16	Dug Well	1.8	5	1.3	1.8	1	11.635297	92.7235	16.7
151	PB152/W16/DW	Old Pahargaon	16	Dug Well	1.3	5	0.43	1.3	1.8	11.635598	92.72192	28.6
152	PB153/W16/DW	Old Pahargaon	16	Dug Well	1.5	5	1.32	1.5	1.8	11.63693	92.727992	15.7
153	PB154/W16/DW	Old Pahargaon	16	Dug Well	1.5	5	0.13	1.5	1.3	11.63678	92.721522	17.5
154	PB155/W16/DW	Old Pahargaon	16	Dug Well	0.9	5	1.03	0.9	2	11.636638	92.721018	17.1

2497

Sl. No.	Well ID	Location	Ward No.	Well Type (DW/BW)	WL (mbgl)	Well Depth (m)	Post Monsoon WL (mbgl)	Pre-Monsoon WL (mbgl)	Well Diameter (m)	Latitude °N	Longitude °E	Elevation GPS Visualizer (m)
155	PB156/W16/DW	School Line	16	Dug Well	0.9	5	0.26	0.9	2.5	11.640787	92.726123	21.1
156	PB157/W16/DW	School Line	16	Dug Well	1.6	5	1	1.6	2	11.642597	92.726597	17.5
157	PB158/W17/DW	Dollygunj	17	Dug Well	1.2	5	0.85	1.2	1.8	11.633897	92.708627	9.2
158	PB159/W17/DW	Dollygunj	17	Dug Well	1.3	5	0.74	1.3	1.3	11.62384	92.712232	12.2
159	PB160/W17/DW	Dollygunj	17	Dug Well	2	5	1.36	2	2.3	11.633868	92.712222	35.1
160	PB161/W17/DW	Dollygunj	17	Dug Well	1.9	5	1.23	1.9	1.3	11.63868	92.712222	40.6
161	PB162/W17/DW	Dollygunj	17	Dug Well	1.6	5	1.98	1.6	1	11.631893	92.711147	34.7
162	PB163/W17/DW	Dollygunj	17	Dug Well	1.65	5	1.54	1.65	1	11.631937	92.721117	30.1
163	PB164/W17/DW	Dollygunj	17	Dug Well	2.4	5	2.98	2.4	2	11.640137	92.707078	15.8
164	PB165/W17/DW	Dollygunj	17	Dug Well	1	6	0.44	1	1.8	11.634203	92.713663	28.4
165	PB166/W18/DW	Garacharma	18	Dug Well	1.6	6	0.77	1.6	2	11.61442	92.705898	16.7

2498

Sl. No.	Well ID	Location	Ward No.	Well Type (DW/BW)	WL (mbgl)	Well Depth (m)	Post Monsoon WL (mbgl)	Pre-Monsoon WL (mbgl)	Well Diameter (m)	Latitude °N	Longitude °E	Elevation GPS Visualizer (m)
166	PB167/W18/DW	Garacharma	18	Dug Well	1.8	5	0.34	1.8	2	11.613632	92.704902	16.7
167	PB168/W18/DW	Garacharma	18	Dug Well	1.1	5	0.57	1.1	1.5	11.613835	92.705988	23.3
168	PB169/W18/DW	Garacharma	18	Dug Well	0.7	5	0.3	0.7	1.3	11.614968	92.706903	18.8
169	PB170/W18/DW	Garacharma	18	Dug Well	0.9	5	0.68	0.9	1.3	11.692928	92.702595	0
170	PB171/W18/DW	Garacharma	18	Dug Well	1.3	5	0.67	1.3	1.8	11.609057	92.705148	27.9
171	PB172/W18/DW	Garacharma	18	Dug Well	2	5	0.97	2	2	11.60742	92.706735	27.7
172	PB173/W18/DW	Garacharma	18	Dug Well	1.3	5	0.69	1.3	2	11.61638	92.707485	5.1
173	PB174/W18/DW	Garacharma	18	Dug Well	0.9	5	0.74	0.9	1	11.613478	92.702843	14.6
174	PB175/W19/DW	Pathargudda	19	Dug Well	1.65	5	1.13	1.65	1.4	11.623818	92.718905	22.6
175	PB176/W18/DW	Pathargudda	19	Dug Well	0.8	5	0.29	0.8	1.5	11.625724	92.721336	40.4
176	PB177/W18/DW	Pathargudda	19	Dug Well	1.8	5	0.98	1.8	2	11.625263	92.790162	0

2499

Sl. No.	Well ID	Location	Ward No.	Well Type (DW/BW)	WL (mbgl)	Well Depth (m)	Post Monsoon WL (mbgl)	Pre-Monsoon WL (mbgl)	Well Diameter (m)	Latitude °N	Longitude °E	Elevation GPS Visualizer (m)
177	PB178/W19/DW	Pothrapur	19	Dug Well	1.6	5	0.21	1.6	1.8	11.625265	92.921915	0
178	PB179/W19/DW	Bathu Basti	19	Dug Well	1	5	1.86	1	2	11.621258	92.714588	20
179	PB180/W19/DW	Bathu Basti	19	Dug Well	3.8	4	2.01	3.8	1.6	11.623648	92.714447	24.9
180	PB181/W19/DW	Bathu Basti	19	Dug Well	1.1	5	0.32	1.1	1.9	11.62435	92.713537	24.8
181	PB182/W20/DW	Austinabad	20	Dug Well	0.9	5	0.57	0.9	2	11.635247	92.73481	14.3
182	PB183/W20/DW	Corbyns Cove	20	Dug Well	1.5	5	NA	1.5	1.3	11.640765	92.739248	21.3
183	PB184/W12/DW	Corbyns Cove	12	Dug Well	1.4	4	1.1	1.4	1.4	11.645412	92.948565	0
184	PB185/W21/DW	Brookshabad	21	Dug Well	0.8	5	0.5	0.8	4.5	11.638147	92.740142	17.1
185	PB186/W21/DW	Brookshabad	21	Dug Well	1.5	4	0.79	1.5	1.3	11.640145	92.74239	16.4
186	PB187/W21/DW	Brookshabad	21	Dug Well	1.8	5	0.46	1.8	1.3	11.63957	92.941972	0

2500

Sl. No.	Well ID	Location	Ward No.	Well Type (DW/BW)	WL (mbgl)	Well Depth (m)	Post Monsoon WL (mbgl)	Pre-Monsoon WL (mbgl)	Well Diameter (m)	Latitude °N	Longitude °E	Elevation GPS Visualizer (m)
187	PB188/W22/DW	Brookshabad	22	Dug Well	1	5	1.43	1	4	11.639912	92.74305	15.6
188	PB189/W20/DW	Brookshabad	20	Dug Well	0.75	4	1.55	0.75	1.1	11.639075	92.746995	19.5
189	PB190/W21/DW	Brookshabad	21	Dug Well	3	4	2.77	3	1.6	11.637988	92.740333	23.9
190	PB191/W21/DW	Brookshabad	21	Dug Well	0.9	5	0.16	0.9	1.5	11.63806	92.759183	0
191	PB192/W21/DW	Brookshabad	21	Dug Well	1.1	4	1.09	1.1	1.8	11.637605	92.739073	15.5
192	PB193/W21/DW	Chakkargaon	21	Dug Well	1.2	5	0.22	1.2	1.4	11.638248	92.934868	0
193	PB194/W21/DW	Chakkargaon	21	Dug Well	1.4	5	0.94	1.4	1.3	11.643258	92.737973	42.5
194	PB195/W21/DW	Chakkargaon	21	Dug Well	1.52	5	0.4	1.52	1.3	11.64266	92.737912	44.7
195	PB196/W20/DW	New Pahargaon	20	Dug Well	1	5	0.24	1	1.9	11.62453	92.724425	24
196	PB197/W20/DW	New Pahargaon	20	Dug Well	1.5	6	1.88	1.5	3.2	11.632452	92.725143	31.4

2501

Sl. No.	Well ID	Location	Ward No.	Well Type (DW/BW)	WL (mbgl)	Well Depth (m)	Post Monsoon WL (mbgl)	Pre-Monsoon WL (mbgl)	Well Diameter (m)	Latitude °N	Longitude °E	Elevation GPS Visualizer (m)
197	PB198/W20/DW	New Pahargaon	20	Dug Well	1.3	5	0.76	1.3	1.2	11.634283	92.726567	29.5
198	PB199/W20/DW	New Pahargaon	20	Dug Well	1.3	5	1.64	1.3	1.3	11.630387	92.729387	42.8
199	PB200/W20/DW	New Pahargaon	20	Dug Well	0.8	5	0.28	0.8	1.4	11.630587	92.72927	46.3
200	PB201/W20/DW	Austinabad	20	Dug Well	1.4	5	2.48	1.4	1.2	11.629693	92.729487	34
201	PB202/W20/DW	New Pahargaon	20	Dug Well	2	5	1.98	2	1.4	11.632092	92.727642	53.8
202	PB203/W20/DW	New Pahargaon	20	Dug Well	1.8	5	1.4	1.8	1.4	11.63221	92.72646	0
203	PB204/W21/DW	Austinabad	21	Dug Well	1.9	5	1.42	1.9	1.3	11.627033	92.730108	13
204	PB205/W22/DW	Brichgunj	21	Dug Well	1.7	5	1.93	1.7	2	11.614873	92.737765	82.1

2502

Sl. No.	Well ID	Location	Ward No.	Well Type (DW/BW)	WL (mbgl)	Well Depth (m)	Post Monsoon WL (mbgl)	Pre-Monsoon WL (mbgl)	Well Diameter (m)	Latitude °N	Longitude °E	Elevation GPS Visualizer (m)
205	PB206/W22/DW	Brichgunj	22	Dug Well	1.5	5	1.3	1.5	1.8	11.615065	92.737577	82.4
206	PB207/W22/DW	Brichgunj	22	Dug Well	1	4	0.39	1	1.4	11.615583	92.739938	67.8
207	PB208/W22/DW	Brichgunj	22	Dug Well	1.7	6	2.1	1.7	1.8	11.61662	92.746687	26.3
208	PB209/W22/DW	Brichgunj	22	Dug Well	1.5	4	1.33	1.5	3	11.61872	92.746402	23.9
209	PB210/W22/DW	Brichgunj	22	Dug Well	0.6	3	0.48	0.6	2	11.62004	92.746052	17.8
210	PB211/W23/DW	Pothrapur	23	Dug Well	2.03	5	1.33	2.03	2.1	11.619158	92.721807	18.5
211	PB212/W23/DW	Pothrapur	23	Dug Well	1.73	5	0.86	1.73	1.7	11.62285	92.721197	15.9
212	PB213/W23/DW	Birdline	23	Dug Well	4.3	5	0.77	4.3	4.5	11.614152	92.726682	27
213	PB214/W23/DW	Birdline	23	Dug Well	1.8	5	1.65	1.8	4.5	11.612635	92.727863	30.9
214	PB215/W23/DW	Birdline	23	Dug Well	0.88	4	0.32	0.88	1.3	11.602123	92.726687	58.3
215	PB216/W23/DW	Birdline	23	Dug Well	1.6	5	1.13	1.6	2	11.613612	92.724473	31.5

2503

Sl. No.	Well ID	Location	Ward No.	Well Type (DW/BW)	WL (mbgl)	Well Depth (m)	Post Monsoon WL (mbgl)	Pre-Monsoon WL (mbgl)	Well Diameter (m)	Latitude °N	Longitude °E	Elevation GPS Visualizer (m)
216	PB217/W23/DW	Birdline	23	Dug Well	1.92	5	1.4	1.92	1.8	11.613565	92.72664	28
217	PB218/W23/DW	Birdline	23	Dug Well	1.3	4	0.05	1.3	0.81	11.613565	92.72664	28
218	PB219/W23/DW	Birdline	23	Dug Well	1	4	0.16	1	1	11.616425	92.722365	25
219	PB220/W23/DW	Bathu Basti	23	Dug Well	2.5	6	2.04	2.5	2	11.617602	92.719643	30.9
220	PB221/W23/DW	Bathu Basti	23	Dug Well	1	7	0.37	1	3	11.617658	92.717755	38.2
221	PB222/W24/DW	Garacharma	24	Dug Well	2	6		2	3	11.619438	92.710798	9.1
222	PB223/W24/DW	Bathu Basti	24	Dug Well	1.8	4	1.29	1.8	1.3	11.610115	92.709563	73.5
223	PB224/W24/DW	Bathu Basti	24	Dug Well	3.5	6	2.75	3.5	2	11.615505	92.712578	34.2
224	PB225/W24/DW	Bathu Basti	24	Dug Well	1.9	7	1.07	1.9	2	11.616723	92.712973	17.2
225	PB226/W19/DW	Bathu Basti	19	Dug Well	1	4	0.85	1	1	11.62095	92.711602	7.6
226	PB227/W24/DW	Bathu Basti	24	Dug Well	1.94	5	1.15	1.94	1.85	11.618348	92.713962	15.1

2504

Sl. No.	Well ID	Location	Ward No.	Well Type (DW/BW)	WL (mbgl)	Well Depth (m)	Post Monsoon WL (mbgl)	Pre-Monsoon WL (mbgl)	Well Diameter (m)	Latitude °N	Longitude °E	Elevation GPS Visualizer (m)
227	PB228/W24/DW	Bathu Basti	24	Dug Well	2.2	5	1.37	2.2	2	11.618668	92.715728	26.5
228	PB229/W24/DW	Bathu Basti	24	Dug Well	1.7	5	1.22	1.7	2	11.618508	92.715913	27.4
229	PB230/W23/BW	Calicut	23	Bore Well	46	60	0	46	6.5"	11.594765	92.726317	43.1
230	PB231/W24/BW	Garacharma	24	Bore Well	28.7	52	26.91	28.7	6.5"	11.615428	92.711363	36.8
231	PB232/W17/BW	Dollygunj	17	Bore Well	6.5	53	9.8	6.5	6.5"	11.639468	92.707457	11.9

2505

Annexure-II: Analysis result of basic chemical parameters, Port Blair Urban Area (Pre-monsoon 2023)

S.No.	Location	Wel ID	Source	Latitude	Longitude	pH	EC µS/cm at 25°C	TH as $CaCO_3$	Ca^{2+} as Ca	Mg^{2+} as Mg	Na^{+}	K^{+}	Cl^{-}	TA as $CaCO_3$	CO_3^{2-}	HCO_3^{-}	SO_4^{2-}	NO_3^{-}	F^{-}	TDS
								mg/L												
1	Port Blair	PB01/W5/FB	Filter Bed	11.66434	92.74187	6.46	199	85	30	2	11	0.4	11	55	0	67	33	0	0.05	129
2	Haddo	PB03/W1/DW	Dug Well	11.67985	92.72020	6.70	447	155	40	13	35	4.8	64	120	0	146	4	32	0.07	283
3	Lilipur (Haddo)	PB09/W1/DW	Dug Well	11.67985	92.72104	6.82	685	225	38	32	60	3.8	113	140	0	171	23	22	0.13	395
4	Haddo	PB15/W2/DW	Dug Well	11.68050	92.72375	6.93	530	205	40	26	35	7.0	64	160	0	195	2	44	0.07	337
5	Phoenix bay	PB25/W3/DW	Dug Well	11.67078	92.73461	7.41	811	275	72	23	51	3.9	64	320	0	390	9	11	0.15	472
6	Anarkali	PB31/W3/DW	Dug Well	11.66939	92.72839	7.73	393	160	48	10	20	4.3	53	105	0	128	15	23	0.11	252
7	Mohanpur	PB32/W4/DW	Dug Well	11.67058	92.73955	7.78	5345	470	48	85	907	42.5	1397	425	0	519	47	20	0.56	2863
8	Marina hill	PB38/W4/DW	Dug Well	11.67427	92.73874	7.87	569	205	42	24	42	4.7	67	180	0	220	20	17	0.10	351
9	Dignabad	PB47/W5/DW	Dug Well	11.67300	92.74226	7.69	678	220	44	27	59	17.9	96	215	0	262	2	25	0.10	431
10	Aberdeen Bazar	PB53/W5/DW	Dug Well	11.67074	92.74538	7.86	426	180	34	23	20	3.3	39	150	0	183	8	15	0.15	255
11	Atlanta point	PB59/W5/DW	Dug Well	11.67313	92.74369	7.76	521	185	40	21	35	6.9	32	195	0	238	2	17	0.08	300
12	ANIDCO, Port Blair	PB67/W5/BW	Bore Well	11.66691	92.74600	7.70	557	210	42	26	42	2.2	64	200	0	244	15	0	0.09	339
13	Aberdeen Bazar	PB72/W5/DW	Dug Well	11.66943	92.74148	7.45	1621	725	240	30	60	23.9	99	350	0	427	255	47	0.12	1016
14	Premnagar	PB75/W6/DW	Dug Well	11.66320	92.73129	7.79	1271	320	62	40	155	5.3	230	270	0	329	13	22	0.09	729
15	Prem Nagar	PB77/W6/DW	Dug Well	11.66627	92.73291	8.22	333	130	40	7	18	3.9	35	100	0	122	1	34	0.08	215
16	Phoenix Bay	PB82/W6/BW	Dug Well	11.66898	92.73506	7.87	782	180	34	23	105	1.0	57	345	0	421	1	0	0.09	477
17	Prem Nagar	PB90/W7/DW	Dug Well	11.66409	92.72800	7.14	441	160	36	17	34	2.1	50	175	0	214	0	6	0.11	268
18	Buniadabad	PB94/W8/DW	Dug Well	11.67168	92.72512	7.11	492	230	62	18	15	3.8	32	210	0	256	0	12	0.06	299
19	Junglighat	PB99/W9/DW	Dug Well	11.65946	92.73091	7.69	1060	270	38	43	115	6.0	142	385	0	470	9	2	0.27	631
20	Dairy Farm	PB104/W9/DW	Dug Well	11.65113	92.72888	8.12	318	90	14	13	32	6.8	64	45	0	55	0	24	0.02	187
21	Dairy Farm	PB106/W15/DW	Dug Well	11.65364	92.72694	7.70	384	135	28	16	32	5.5	53	125	0	153	0	7	0.05	234

2506

22	SHADIPUR	PB107/W9/DW	Dug Well	11.66300	92.74878	7.65	344	125	24	16	27	1.6	67	75	0	92	0	6	0.03	198
23	SHADIPUR	PB111/W10/DW	Dug Well	11.66260	92.75073	7.53	381	115	28	11	36	3.2	50	125	0	153	0	23	0.10	240
24	SOUTH POINT	PB116/W10/BW	Dug Well	11.66131	92.75087	7.44	448	170	28	24	32	2.5	57	160	0	195	0	6	0.07	268
25	SOUTH POINT	PB117/W11/DW	Dug Well	11.66943	92.75579	7.51	637	255	24	47	36	3.6	64	250	0	305	0	21	0.08	378
26	Dudhline	PB120/W12/DW	Dug Well	11.65289	92.74579	7.88	169	60	12	7	14	0.6	43	40	0	49	1	0	0.03	100
27	Police line	PB124/W12/DW	Dug Well	11.65650	92.73680	7.60	311	95	18	12	29	2.7	46	105	0	128	1	3	0.05	186
28	Junglighat	PB135/W13/DW	Dug Well	11.65844	92.73441	7.36	536	180	24	29	44	7.7	57	205	0	250	1	3	0.09	318
29	Diary Farm	PB139/W14/DW	Dug Well	11.65365	92.72184	7.45	835	295	0	72	58	6.6	117	245	0	299	3	6	0.09	445
30	Ranchi Basti School Line	PB140/W15/DW	Dug Well	11.64509	92.72807	7.86	236	90	0	22	17	1.9	32	50	0	61	17	18	0.04	144
31	Ranchi Basti School Line	PB146/W15/DW	Dug Well	11.64705	92.72437	7.65	310	95	26	7	26	3.5	32	75	0	92	23	18	0.02	191
32	Batu Basthi	PB148/W19/DW	Dug Well	11.62189	92.71379	7.62	237	105	30	7	9	2.6	28	90	0	110	0	3	0.04	144
33	DOLLYGUNJ	PB150/W17/DW	Dug Well	11.63293	92.71535	7.52	415	125	34	10	39	2.9	67	85	0	104	0	38	0.04	253
34	Old Pahargaon	PB153/W16/DW	Dug Well	11.63693	92.72799	7.44	403	150	38	13	29	3.8	57	110	0	134	0	21	0.04	243
35	Dollygunj	PB165/W17/DW	Dug Well	11.63420	92.71366	7.54	513	225	64	16	24	1.2	50	140	0	171	58	8	0.11	326
36	Garacharma	PB167/W18/DW	Dug Well	11.61363	92.70490	7.45	791	265	52	33	53	10.0	99	220	0	268	7	39	0.10	457
37	Garacharma	PB171/W18/DW	Dug Well	11.60906	92.70515	7.69	659	235	78	10	54	1.5	78	210	0	256	9	3	0.17	390
38	Pathargudda	PB176/W18/DW	Dug Well	11.62572	92.72134	7.68	634	220	56	19	51	7.5	96	195	0	238	0	20	0.13	394
39	Brookshabad	PB186/W21/DW	Dug Well	11.64015	92.74239	7.72	520	225	42	29	25	1.0	67	175	0	214	1	18	0.10	314
40	Brookshabad	PB189/W20/DW	Dug Well	11.63908	92.74700	7.92	237	95	24	9	12	0.6	32	80	0	98	5	0	0.07	138
41	Chakkargaon	PB193/W21/DW	Dug Well	11.63825	92.93487	7.49	753	315	66	36	32	6.0	46	165	0	201	163	10	0.12	482
42	New Pahargaon	PB196/W20/DW	Dug Well	11.62453	92.72443	7.75	281	105	30	7	20	2.2	35	95	0	116	0	8	0.04	173
43	Austinabad	PB204/W21/DW	Dug Well	11.62703	92.73011	7.45	586	245	44	33	27	12.1	43	195	0	238	18	44	0.10	365

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44	Brichgunj	PB209/W22/DW	Dug Well	11.61872	92.74640	7.69	340	140	30	16	16	0.6	64	95	0	116	2	17	0.13	205
45	Birdline	PB213/W23/DW	Dug Well	11.61415	92.72668	7.68	378	155	30	19	17	2.4	35	150	0	183	0	3	0.11	220
46	Birdline	PB216/W23/DW	Dug Well	11.61361	92.72447	7.77	740	280	70	26	55	2.0	46	220	0	268	96	10	0.14	468
47	Bathu Basti	PB225/W24/DW	Dug Well	11.61672	92.71297	7.75	651	225	70	12	51	5.5	89	150	0	183	16	35	0.08	390
48	Bathu Basti	PB228/W24/DW	Dug Well	11.61867	92.71573	7.66	863	405	70	56	27	1.0	50	205	0	250	143	25	0.11	525
49	Calicut	PB230/W23/BW	Bore Well	11.59477	92.72632	7.70	645	300	14	64	18	0.3	28	275	0	336	5	22	0.08	357
50	Garacharma	PB231/W24/BW	Bore Well	11.61543	92.71136	7.94	303	110	24	12	22	1.8	35	105	0	128	1	0	0.06	175
51	Dollygunj	PB232/W17/BW	Bore Well	11.63947	92.70746	8.11	1278	80	20	7	285	2.7	64	470	0	573	112	1	0.34	841

2508

Annexure-III: Analysis results of Heavy metals, Port Blair Urban Area (Pre-monsoon 2023)

S. No.	Lab Code	City	Location	Well ID	Source	Latitude (°N)	Longitude (°E)	Fe	Cu	Zn	Mn	Cr	Pb
								mg/L					
1	C -1158	Port Blair	Raj Niwas	PB01/W5/FB	Filter Bed	11.664339	92.741867	0.00	0.188	0.000	0.000	0.007	0.001
2	C -1159	Port Blair	Haddo	PB03/W1/DW	Dug Well	11.679846	92.720196	0.01	0.188	0.013	0.049	0.006	0.006
3	C -1160	Port Blair	Lilipur, Haddo	PB09/W1/DW	Dug Well	11.67985	92.721041	0.24	0.043	0.022	0.031	0.007	0.006
4	C -1161	Port Blair	Haddo	PB15/W2/DW	Dug Well	11.680499	92.723746	0.06	0.043	0.004	0.014	0.007	0.003
5	C -1162	Port Blair	Phoenix bay	PB25/W3/DW	Dug Well	11.670779	92.73461	0.20	0.043	0.000	0.240	0.009	0.001
6	C -1163	Port Blair	Anarkali	PB31/W3/DW	Dug Well	11.669386	92.728394	0.47	0.000	0.000	0.031	0.007	0.001
7	C -1164	Port Blair	Mohanpur	PB32/W4/DW	Dug Well	11.670581	92.739545	1.07	0.000	0.000	0.000	0.058	0.114
8	C -1165	Port Blair	Marina hill	PB38/W4/DW	Dug Well	11.674272	92.738735	0.01	0.000	0.000	0.250	0.012	0.003
9	C -1166	Port Blair	Dignabad	PB47/W5/DW	Dug Well	11.673001	92.742258	0.11	0.000	0.000	0.239	0.009	0.001
10	C -1167	Port Blair	Aberdeen Bazar	PB53/W5/DW	Dug Well	11.670739	92.745377	0.01	0.043	0.000	0.000	0.000	0.000
11	C -1168	Port Blair	Atlanta point	PB59/W5/DW	Dug Well	11.673125	92.74369	0.06	0.043	0.000	0.101	0.002	0.000
12	C -1169	Port Blair	Port Blair	PB67/W5/BW	Bore Well	11.666911	92.745997	3.23	0.092	0.022	0.200	0.002	0.002
13	C -1170	Port Blair	Aberdeen Bazar	PB72/W5/DW	Dug Well	11.669432	92.741476	0.11	0.092	0.022	0.153	0.007	0.002
14	C -1171	Port Blair	Prem Nagar	PB75/W6/DW	Dug Well	11.663197	92.731293	0.47	0.092	0.092	0.066	0.016	0.000
15	C -1172	Port Blair	Prem Nagar	PB77/W6/DW	Dug Well	11.666271	92.732911	0.24	0.000	0.031	0.000	0.004	0.000
16	C -1173	Port Blair	Phoenix Bay	PB82/W6/BW	Dug Well	11.668977	92.735057	0.38	0.000	0.048	0.240	0.005	0.001
17	C -1174	Port Blair	Prem Nagar	PB90/W7/DW	Dug Well	11.664085	92.727997	0.66	0.000	0.040	0.250	0.007	0.000
18	C -1175	Port Blair	Buniadabad	PB94/W8/DW	Dug Well	11.671682	92.725118	0.11	0.092	0.022	0.000	0.002	0.001
19	C -1176	Port Blair	Junglighat	PB99/W9/DW	Dug Well	11.659458	92.730907	0.56	0.092	0.000	0.220	0.004	0.004
20	C -1177	Port Blair	Dairy Farm	PB104/W9/DW	Dug Well	11.65113	92.728878	0.15	0.092	0.000	0.135	0.000	0.000
21	C -1178	Port Blair	Dairy Farm	PB106/W15/DW	Dug Well	11.653643	92.72694	0.47	0.092	0.000	0.290	0.000	0.001
22	C -1179	Port Blair	Shadipur	PB107/W9/DW	Dug Well	11.663002	92.74878	0.34	0.092	0.000	0.031	0.000	0.000

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23	C -1180	Port Blair	Shadipur	PB111/W10/DW	Dug Well	11.662598	92.750725	0.20	0.043	0.004	0.000	0.000	0.000
24	C -1181	Port Blair	South Point	PB116/W10/BW	Dug Well	11.661313	92.750865	1.48	0.043	0.031	0.260	0.000	0.008
25	C -1182	Port Blair	South Point	PB117/W11/DW	Dug Well	11.669432	92.755793	0.34	0.092	0.031	0.049	0.002	0.004
26	C -1183	Port Blair	Dudhline	PB120/W12/DW	Dug Well	11.652888	92.745785	0.01	0.043	0.040	0.000	0.000	0.000
27	C -1184	Port Blair	Police line	PB124/W12/DW	Dug Well	11.656503	92.736802	0.06	0.092	0.031	0.049	0.000	0.000
28	C -1185	Port Blair	Junglighat	PB135/W13/DW	Dug Well	11.658437	92.734407	1.76	0.092	0.004	0.104	0.012	0.000
29	C -1186	Port Blair	Dairy Farm	PB139/W14/DW	Dug Well	11.653645	92.721835	0.29	0.092	0.013	0.180	0.018	0.000
30	C -1187	Port Blair	Ranchi Basti School Line	PB140/W15/DW	Dug Well	11.645093	92.728073	0.00	0.092	0.000	0.000	0.007	0.000
31	C -1188	Port Blair	Ranchi Basti School Line	PB146/W15/DW	Dug Well	11.647053	92.724367	0.00	0.092	0.000	0.031	0.007	0.000
32	C -1189	Port Blair	Bathu Basti	PB148/W19/DW	Dug Well	11.621887	92.713793	0.15	0.140	0.004	0.000	0.007	0.000
33	C -1190	Port Blair	Dollygunj	PB150/W17/DW	Dug Well	11.632928	92.715347	0.11	0.092	0.013	0.205	0.007	0.000
34	C -1191	Port Blair	Old Pahargaon	PB153/W16/DW	Dug Well	11.63693	92.727992	0.00	0.092	0.013	0.000	0.007	0.000
35	C -1192	Port Blair	Dollygunj	PB165/W17/DW	Dug Well	11.634203	92.713663	0.00	0.092	0.022	0.000	0.007	0.000
36	C -1193	Port Blair	Garacharma	PB167/W18/DW	Dug Well	11.613632	92.704902	0.24	0.140	0.031	0.210	0.008	0.000
37	C -1194	Port Blair	Garacharma	PB171/W18/DW	Dug Well	11.609057	92.705148	0.01	0.140	0.004	0.000	0.013	0.000
38	C -1195	Port Blair	Pathargudda	PB176/W18/DW	Dug Well	11.625724	92.721336	0.01	0.140	0.000	0.101	0.007	0.000
39	C -1196	Port Blair	Brookshabad	PB186/W21/DW	Dug Well	11.640145	92.74239	0.06	0.140	0.000	0.000	0.027	0.000
40	C -1197	Port Blair	Brookshabad	PB189/W20/DW	Dug Well	11.639075	92.746995	0.00	0.140	0.004	0.000	0.008	0.000
41	C -1198	Port Blair	Chakkargaon	PB193/W21/DW	Dug Well	11.638248	92.934868	0.01	0.140	0.013	0.014	0.013	0.000
42	C -1199	Port Blair	New Pahargaon	PB196/W20/DW	Dug Well	11.62453	92.724425	0.00	0.140	0.013	0.000	0.008	0.000
43	C -1200	Port Blair	Austinabad	PB204/W21/DW	Dug Well	11.627033	92.730108	0.01	0.092	0.022	0.000	0.009	0.000
44	C -1201	Port Blair	Brichgunj	PB209/W22/DW	Dug Well	11.61872	92.746402	0.01	0.092	0.022	0.000	0.010	0.000
45	C -1202	Port Blair	Birdline	PB213/W23/DW	Dug Well	11.614152	92.726682	0.56	0.140	0.004	0.220	0.009	0.000
46	C -1203	Port Blair	Birdline	PB216/W23/DW	Dug Well	11.613612	92.724473	0.06	0.140	0.000	0.000	0.008	0.000
47	C -1204	Port Blair	Bathu Basti	PB225/W24/DW	Dug Well	11.616723	92.712973	0.24	0.140	0.000	0.014	0.007	0.000
48	C -1205	Port Blair	Bathu Basti	PB228/W24/DW	Dug Well	11.618668	92.715728	0.11	0.188	0.000	0.000	0.007	0.000
49	C -1206	Port Blair	Calicut	PB230/W23/BW	Bore Well	11.594765	92.726317	0.01	0.188	0.000	0.000	0.014	0.001
50	C -1207	Port Blair	Garacharma	PB231/W24/BW	Bore Well	11.615428	92.711363	0.20	0.188	0.004	0.000	0.021	0.000
51	C -1208	Port Blair	Dollygunj	PB232/W17/BW	Bore Well	11.639468	92.707457	1.25	0.092	0.013	0.030	0.012	0.007

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Annexure-IV: Bacteriological analysis: Total Coliforms in Port Blair Urban Area (Pre-monsoon 2023)

Sl. No.	Location	Latitude (°N)	Longitude (°E)	CGWB Sample ID	RMRC (ICMR) Sample ID	Well Type/Source	Date of collection	Date of analysis	Total Coliform (MPN/100 ml)
1	Shadipur	11.663002	92.74878	PB/W10/DW	RMRC/PB/135	Dug well	13.06.2023	13.06.2023	>5
2	South Point	11.664082	92.753878	PB/W11/DW	RMRC/PB/135	Dug well	13.06.2023	13.06.2023	>5
3	Dudhline	11.652888	92.745785	PB/W12/DW	RMRC/PB/135	Dug well	13.06.2023	13.06.2023	>5
4	Dairy Farm	11.653643	92.72694	PB/W14/DW	RMRC/PB/135	Dug well	13.06.2023	13.06.2023	>5
5	Dairy Farm	11.65113	92.728878	PB/W09/DW	RMRC/PB/135	Dug well	13.06.2023	13.06.2023	>5
6	Buniabad	11.671682	92.725118	PB/W08/DW	RMRC/PB/135	Dug well	13.06.2023	13.06.2023	>5
7	Junglighat VIP Road	11.65751	92.735375	PB/W13/DW	RMRC/PB/135	Dug well	14.06.2023	14.06.2023	>5
8	Ranchi Basti	11.645093	92.728073	PB/W15/DW	RMRC/PB/135	Dug well	14.06.2023	14.06.2023	>5
9	Dollygunj	11.634177	92.735375	PB/W16/DW	RMRC/PB/135	Dug well	14.06.2023	14.06.2023	>5
10	Bathu Basti	11.621887	92.713793	PB/W19/DW	RMRC/PB/135	Dug well	14.06.2023	14.06.2023	>5
11	Dolby Gunj	11.632928	92.715347	PB/W17/DW	RMRC/PB/135	Dug well	14.06.2023	14.06.2023	>5
12	Garacharma	11.613632	92.704902	PB/W18/DW	RMRC/PB/135	Dug well	19.06.2023	19.06.2023	>5
13	Brooksabad	11.640145	92.74239	PB/W21/DW	RMRC/PB/135	Dug well	19.06.2023	19.06.2023	>5
14	Brooksabad	11.639075	92.746995	PB/W20/DW	RMRC/PB/135	Dug well	19.06.2023	19.06.2023	1

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15	Brich Gunj	11.61872	92.746402	PB/W22/DW	RMRC/PB/135	Dug well	19.06.2023	19.06.2023	0
16	Birdline	11.614152	92.726682	PB/W23/DW	RMRC/PB/135	Dug well	19.06.2023	19.06.2023	0
17	Bathu Basti	11.616723	92.712973	PB/W24/DW	RMRC/PB/135	Dug well	19.06.2023	19.06.2023	>5
18	Raj Niwas	11.664338	92.741866	PB/W05/ST	RMRC/PB/135	Supply Tank	19.06.2023	19.06.2023	0
19	Lilipur	11.67985	92.721041	PB/W01/DW	RMRC/PB/135	Dug well	19.06.2023	19.06.2023	1
20	Haddo	11.680499	92.723746	PB/W02/DW	RMRC/PB/135	Dug well	19.06.2023	19.06.2023	1
21	Anarkali	11.669386	92.728394	PB/W03/DW	RMRC/PB/135	Dug well	19.06.2023	19.06.2023	>5
22	Mohanpur	11.670581	92.739545	PB/W04/DW	RMRC/PB/135	Dug well	19.06.2023	19.06.2023	1
23	Prem Nagar	11.663197	92.731293	PB/W06/DW	RMRC/PB/135	Dug well	19.06.2023	19.06.2023	>5
24	Prem Nagar	11.664085	92.727997	PB/W07/DW	RMRC/PB/135	Dug well	19.06.2023	19.06.2023	>5
25	Garacharma	11.61437	92.70582	PB/W18/SW	RMRC/PB/143	Supply Water	20.06.2023	20.06.2023	>5
26	Naushad colony	11.61838	92.71399	PB/W24/SW	RMRC/PB/144	Supply Water	20.06.2023	20.06.2023	0
27	Protharapur	11.61724	92.71795	PB/W23/SW	RMRC/PB/145	Supply Water	20.06.2023	20.06.2023	>5
28	Bricgunj	11.61724	92.71795	PB/W22/SW	RMRC/PB/146	Supply Water	20.06.2023	20.06.2023	>5
29	Corbyns Chowk	11.61501	92.73765	PB/W21/SW	RMRC/PB/147	Supply Water	20.06.2023	20.06.2023	>5
30	Pahargaon	11.63221	92.72509	PB/W20/SW	RMRC/PB/148	Supply Water	20.06.2023	20.06.2023	>5
31	Patharguda	11.62509	92.72215	PB/W19/SW	RMRC/PB/149	Supply Water	20.06.2023	20.06.2023	>8

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32	Dollygunj	11.62993	92.71531	PB/W17/SW	RMRC/PB/136	Supply Water	20.06.2023	20.06.2023	2
33	Prem Nagar	11.66365	92.72718	PB/W07/SW	RMRC/PB/137	Supply Water	20.06.2023	20.06.2023	>5
34	community hall Haddo	11.68062	92.72153	PB/W01/SW	RMRC/PB/138	Supply Water	20.06.2023	20.06.2023	>5
35	Seashore road Haddo	11.68145	92.72451	PB/W02/SW	RMRC/PB/139	Supply Water	20.06.2023	20.06.2023	>5
36	Megapode	11.67569	92.7298	PB/W03/SW	RMRC/PB/140	Supply Water	20.06.2023	20.06.2023	>5
37	Marine Dockyard	11.67437	92.73757	PB/W04/SW	RMRC/PB/141	Supply Water	20.06.2023	20.06.2023	>5
38	BSNL Quarters	11.66669	92.73762	PB/W06/SW	RMRC/PB/142	Supply Water	20.06.2023	20.06.2023	0

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Annexure-V: Bacteriological analysis: Total Coliforms in Port Blair Urban Area (Post-monsoon 2023)

Sl. No.	Location	Latitude (°N)	Longitude (°E)	CGWB Sample ID	RMRC (ICMR) Sample ID	Well Type/Source	Date of collection	Date of analysis	Total Coliform (MPN/100 ml)
1	Dolly Gunj	11.634203	92.713663	PB165/W17/SW	RMRC/PB/504	Supply Water	19.12.2023	19.12.2023	>5
2	Ranchi Basti	11.64705	92.724367	PB146/W15/SW	RMRC/PB/498	Supply Water	19.12.2023	19.12.2023	0
3	Dairy Farm	11.65113	92.728878	PB104/W9/SW	RMRC/PB/499	Supply Water	19.12.2023	19.12.2023	0
4	Prem Nagar	11.664085	92.727997	PB90/W7/SW	RMRC/PB/508	Supply Water	19.12.2023	19.12.2023	>5
5	Lilipur	11.67985	92.721041	PB09/W1/SW	RMRC/PB/507	Supply Water	19.12.2023	19.12.2023	>5
6	Haddo	11.580499	92.723746	PB15/W2/SW	RMRC/PB/501	Supply Water	19.12.2023	19.12.2023	0
7	Anarkali	11.669386	92.728394	PB31/W3/SW	RMRC/PB/506	Supply Water	19.12.2023	19.12.2023	>5
8	Buniabad	11.671682	92.725118	PB94/W8/SW	RMRC/PB/497	Supply Water	19.12.2023	19.12.2023	0
9	Phoenix bay	11.668976	92.735057	PB82/W6/SW	RMRC/PB/505	Supply Water	20.12.2023	20.12.2023	>5
10	Marina Hill	11.674272	92.738735	PB38/W4/SW	RMRC/PB/502	Supply Water	19.12.2023	20.12.2023	0
11	Dairy Farm	11.653645	92.731835	PB139/W14/SW	RMRC/PB/496	Supply Water	20.12.2023	20.12.2023	0
12	Garacharma	11.6643385	92.7418665	PB01/W5/SW	RMRC/PB/503	Supply Water	20.12.2023	20.12.2023	>5
13	Atalanta Point	11.673125	92.74369	PB59/W5/SW	RMRC/PB/509	Supply Water	20.12.2023	20.12.2023	>5
14	Shadipur	11.663002	92.74878	PB107/W17/SW	RMRC/PB/510	Supply Water	20.12.2023	20.12.2023	>5
15	South Point	11.669432	92.755793	PB117/W11/SW	RMRC/PB/495	Supply Water	20.12.2023	20.12.2023	0
16	Bathu Basti	11.621887	92.713793	PB148/W19/SW	RMRC/PB/511	Supply Water	21.12.2023	21.12.2023	0
17	Bathu Basti	11.616723	92.712973	PB225/W24/SW	RMRC/PB/512	Supply Water	21.12.2023	21.12.2023	0
18	Dudhline	11.652888	92.745785	PB120/W12/SW	RMRC/PB/513	Supply Water	21.12.2023	21.12.2023	0
19	Chakkargaon	11.638248	92.934868	PB193/W21/SW	RMRC/PB/514	Supply Water	21.12.2023	21.12.2023	>5
20	Brooksabad	11.639075	92.746995	PB189/W20/SW	RMRC/PB/515	Supply Water	21.12.2023	21.12.2023	0
21	Austinabad	11.627033	92.730108	PB204/W20/SW	RMRC/PB/516	Supply Water	21.12.2023	21.12.2023	0

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22	New Pahargaon	11.632452	92.725143	PB197/W20/SW	RMRC/PB/517	Supply Water	21.12.2023	21.12.2023	>5
23	Pathargudda	11.625754	92.721336	PB176/W19/SW	RMRC/PB/518	Supply Water	21.12.2023	21.12.2023	0
24	Garacharma	11.613632	92.704902	PB167/W18/SW	RMRC/PB/519	Supply Water	22.12.2023	22.12.2023	0
25	Shadipur	11.662598	92.750725	PB111/W10/SW	RMRC/PB/520	Supply Water	22.12.2023	22.12.2023	0
26	Old Pahargaon	11.63693	92.727992	PB153/W16/SW	RMRC/PB/521	Supply Water	22.12.2023	22.12.2023	0
27	Brichgunj	11.61872	92.746402	PB209/W22/SW	RMRC/PB/522	Supply Water	22.12.2023	22.12.2023	>5
28	Birdline	11.614152	92.726682	PB213/W23/SW	RMRC/PB/523	Supply Water	22.12.2023	22.12.2023	0
29	Birdline	11.613612	92.714473	PB216/W23/SW	RMRC/PB/524	Supply Water	22.12.2023	22.12.2023	0
30	Junglighat	11.658437	92.734407	PB135/W13/SW	RMRC/PB/525	Supply Water	22.12.2023	22.12.2023	0
31	Dollygunj	11.63425	92.72266	W17/SW	RMRC/PB/529	Supply Water	24.12.2023	24.12.2023	0
32	Mohanpur	11.671979	92.739622	PB35/W4/SW	RMRC/PB/528	Supply Water	24.12.2023	24.12.2023	0
33	Srishti Nagar	11.673397	92.740654	PB39/W4/SW	RMRC/PB/527	Supply Water	24.12.2023	24.12.2023	0
34	Petrol Pump (Opp PBMC HQ)	11.67187	92.73969	W6/SW	RMRC/PB/526	Supply Water	24.12.2023	24.12.2023	0
35	Delanipur	11.667422	92.726957	PB89/W7/SW	RMRC/PB/531	Supply Water	24.12.2023	24.12.2023	>5

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Annexure-VI: Response received during Feedback Survey, Port Blair Urban Area (post-monsoon 2023)

Parameters for Evaluation	**Water Treatment Plant**	**Dug well, Bore well**	**Both**	**No Response**
	13	0	0	0
Satisfaction with water supply	**Happy**	**Unhappy**		**No Response**
	0	0		13
Distance of source from supply	**Min**	**Max**	**Avg.**	
	0.5	5	2.75	0
	0-1.0 km	1.0-2.0km	>2.0 km	
	5	3	5	
Water collection	**Water supply**	**Water Treatment Plant**		
	2	11		
Water collected by	**Self**	**Family Member**	**Wife**	
	3	7	3	
Water storage	**Tank**	**Bucket**		
	11	2		
Tank size	0-100	100-200	>200	
	1	9	3	
Rainwater Use in Households	Do not use	Use		
	2	11		0
Concerned about source sustainability	Yes	No	No response	
	1	12	0	
Reasons for concern	Water is the source of life		No response	
	1	12	0	
Water purchased for daily needs	Yes	No	No response	
	4	9	0	
Supply water quality	Clean	Unclean	No response	

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	10	2	1	
Boiling water before drinking	Boiled	Not boiled	No response	
	12	1	0	
Response about common diseases in the area	Kidney stone	Hair fall	Fever & Dengue	No response
	1	1	2	9
Common disease in the family	Kidney stone	Hair fall	Fever & Dengue	No response
	1	1	1	10
Person suffering most	Male	Female	Children	No response
	10	1	1	1
Sewage system in the house	Lined Drain	No lined drain	No response	
	1	0	12	
Soak pit constructed	Yes	No	No response	
	1	4	8	
Open Defecation Free (ODF) Area	ODF	Not ODF	No response	
	1	4	8	
Septic Tank constructed	Yes	No	No response	
	13	0	0	
Opinion received on water usage	Quantitative prospect	Qualitative prospect	No response	
	1	0	12	

END OF REPORT

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Government of India

MINISTRY OF JAL SHAKTI, DEPARTMENT OF WATER RESOURCES, RIVER DEVELOPMENT & GANGA REJUVENATION

REPORT ON MEASURES TO SOLVE WATER SCARCITY PROBLEM IN PORT BLAIR URBAN AREA, SOUTH ANDAMAN DISTRICT, ANDAMAN AND NICOBAR ISLANDS

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EXECUTIVE SUMMARY

A special study was carried by a team of officers from Central Ground Water Board, Eastern Region, Kolkata to assess the water scarcity problem in Port Blair Urban Area, comprising 24 Municipal Wards in Port Blair City, the capital of the Union Territory of Andaman and Nicobar Islands. During the study, detailed ground hydrogeological and geophysical investigation was done coupled with terrain analysis, hydrological study and with inputs from the Port Blair Municipal Council (PBMC). The study was taken up based on a request from the Secretary, Urban Development and Disaster Management, Andaman and Nicobar Island. The so called water scarcity problem in Port Blair Urban Area has manifested from January 2023 to May 2023. Detailed progress of the study was appraised to the Chief Secretary, Andaman and Nicobar administration in June 2023 during field visit to the study area. Relevant inputs on water supply position, water treatment plants, urban water profile and specified locations provided by the Andaman administration were analysed keeping in mind the hydrogeological condition in the environs of Port Blair City. The reported problem on water scarcity in Port Blair City had compelled the PBMC authority to curtail water supply once in a week during the spring-summer season of 2023. Geophysical study (Vertical Electrical Sounding) was completed at 11 locations, combined with ground hydrogeological survey for quantification of water augmentation potential through surface water harvesting and groundwater development through Bore Wells.

Ground hydrogeological survey was completed in 11 sites for assessing feasibility of construction and estimating the water supply potential of open Dug Wells. The survey was followed by further feasibility survey in 12 locations to assess the PBMC proposal for pond construction along with estimating water supply potential of the Ponds. The survey has revealed that Ponds at Dollygunj, Bathu Basti, New Pahargaon and Garacharma have substantial water storage and supply potential, and could be developed as *Amrit Sarovars.* Based on hydrogeological survey and terrain analysis, 4 sites were selected for construction of a series of Check Weirs (two to four Check Weirs) along Hathi Nallah, Pathergudda Nallah and Attam Pahad Nallah. . The present study has revealed that Vegetative Check Weirs are more sustainable bioengineering structures for arresting stream flow and resulting in Managed Aquifer Recharge to the shallow (<20 m) aquifers. The ground hydrogeological and geophysical surveys were supplemented by interpretation of Google Earth Map, Ward Map of the Port Blair City, interpretation of VES survey results and input data provided by the PBMC.

Although the meta-sedimentary rocks of Mithakhari Formation and Andaman Flysch Group are not ideal aquifers, optimum utilization and development of large diameter, open Dug Wells at most favourable locales had the potential to augment the existing water supply up to 253.68 million litre (ML) annually. Cumulative yield potential of seven feasible Bore Wells at Shadipur, Anarkali, Marine Hill, South Point and Haddo has been estimated at 229.95 ML annually. Hydrogeological survey has shown that existing water supply could be augmented by 771.0 ML annually through construction and renovation-restoration of 12 Ponds having water harvesting (supply) potential ranging from 1.1 ML at Brichgunj to 68.0 ML at Dollygunj. Although it is

extremely difficult to quantify the direct benefit of water supply through the series of Check Weirs, realistic estimates on indirect benefit through Managed Aquifer Recharge in the stream catchments shows a cumulative recharge potential of 3431.0 ML annually through 10 Check Weirs at four feasible sites.

Most severe water scarcity in Port Blair City was reported from December 2022 to May 2023, which coincides with the tourist season when the floating population reaches its peak. Based on the latest guidelines of *Jal Jeevan Mission – Har Ghar Jal* of the Department of Drinking Water and Sanitation, Ministry of Jal Shakti and official data on floating (tourist) population by Andaman and Nicobar Tourism for the year 2023, the peak water requirement in Port Blair is estimated at about 9.80 MLD. The present study reveals that cumulative water supply potential from the Bore Wells, Dug Wells, Ponds, and Check Weirs is 12.84 MLD. Even excluding water supply component from the Dhanikhari Dam, there would be a water surplus of 3.04 MLD or 11109.6 ML annually in Port Blair City. This would imply that the so called “water scarcity” in Port Blair could be completely solved, and the city would become "water surplus" provided the scientific management of existing surface water and groundwater resources is implemented by the district administration involving the stakeholders. An integrated water resources management in Port Blair Urban Area necessitates implementing the following recommendations:

- Cumulative water supply potential of the Ponds and Check Weirs is much higher than that of the Bore Wells and Dug Wells. Therefore, construction of water conservation structures would be prioritized as compared to construction of groundwater abstraction structures.
- Commercial establishments like hotels and resorts (1086 as per PBMC estimates) are indiscriminately exploiting the groundwater resources in Port Blair City. Illegal abstraction of groundwater from the fringe areas of Port Blair City needs to be monitored and penalty should be imposed by the district administration on the unregistered bulk water suppliers.
- Climate smart and climate resilient agricultural practices like sprinkler irrigation and drip irrigation needs to be adopted with financial incentive to the farmers. Precision agriculture would be most beneficial to increase the crop productivity and water use efficiency.
- Abandoned and disused Dug Wells should be renovated for utilization as potential point source recharge structures for recharging the shallow aquifers.
- The PBMC, APWD, Agriculture Department and academic and research institutes in Port Blair like Central Island Agriculture Research Institute, Pondicherry University (Port Blair Campus) and Dr. B.R. Ambedkar Institute of Engineering and Technology should focus on pilot studies on water resources conservation and conjunctive water resources management.
- Climate resilient water resources management needs to be developed as a perpetual solution to address issues on future water crisis through action research programmes.

1. INTRODUCTION AND SCOPE OF WORK

The special study on mitigation of reported water scarcity problem in Port Blair urban area germinated in February 2023 at the behest of the Andaman administration. As the Central Ground Water Board (CGWB) is a national apex organization involved in sustainable management of groundwater resources in India, the Chief Secretary, Union Territory of Andaman and Nicobar Islands desired that a feasible solution to the water scarcity problem in Port Blair municipal area needs to be worked out. The first meeting regarding initiation of this study took place in March 2023, when Dr. Anadi Gayen, Regional Director, CGWB, Eastern Region, Kolkata met Sh. A.S.P.S. Ravi Prakash (IAS), Secretary, Urban Development and Disaster Management, Andaman and Nicobar Administration in Port Blair. During the meeting, the issue of water scarcity in Port Blair urban area, falling under the jurisdiction of Port Blair Municipal Council (PBMC) was discussed in detail.

As a follow up of the initial meeting, the second meeting was held in April 2023 by Sh. Debasish Bagchi, Scientist-D (HG) at Port Blair with Sh. A.S.P.S. Ravi Prakash (IAS), Secretary, Urban Development and Disaster Management and also with Sh. Ashish Joon, Joint Secretary, PBMC. During these meetings, details of proposed field visit by the CGWB team and data sharing by the lined departments like PBMC and Andaman Public Works Department (APWD) were discussed. Subsequently, a request letter was sent by the Joint Secretary, PBMC, Port Blair vide F. No. MC/JS/PA/Corrs/22-23/991 dated 12-4-2023 (**Annexure-I**) to the Regional Director, CGWB, ER, Kolkata. The reply was sent by CGWB, ER, Kolkata office (**Annexure-II**) to nominate a Nodal Officer from PBMC for an effective co-ordination with the CGWB during the entire study. In the letter, following officers were nominated from CGWB, ER, Kolkata for the Special Study:

Sh. Debasish Bagchi, Scientist-D (Hydrogeology)
Dr. Kamalesh Chandra Mondal, Scientist-D (Geophysics)
Sh. Sujit Sarkar, Scientist-D (Geophysics)

For an effective co-ordination between CGWB and PBMC, competent authority of PBMC nominated Smt. Asha Sekhar, Executive Engineer In-charge (EE I/C) Water Works (WW) vide F. No. 42-892/GC/Estt/MC/1362 dated 19-5-2023 (**Annexure-III**).The PBMC authority replaced the Nodal Officer and nominated Sh. Jepson Daniel, Assistant Engineer (AE-II), Water Works, PBMC as the Nodal Officer from PBMCvide F. No. 42-892/GC/Estt/MC/1517 dated 7-6-2023 (**Annexure-IV**). The detailed hydrogeological and geophysical study was carried to address the reported water scarcity problem in Port Blair urban area from 23-6-2023 to 4-7-2023.

Port Blair is the capital city of South Andaman district and the largest urban agglomerate in the Union Territory (UT) of Andaman and Nicobar Island. The urban area of Port Blair City is a part of the Survey of India topographic sheet number 87A/10 and 87A/14. The urban area spans for about 41 km^2 and is administratively covered under the Port Blair Municipal Council (PBMC). The PBMC is a civic body, which was constituted on 2nd October 1957 after promulgation of the Andaman and Nicobar Islands (Municipal Boards) Regulation, 1957 by the

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President of India. The PBMC originally consisted of 18 Municipal Wards. Subsequently, after delimitation and expansion of the city limits, the PBMC presently comprises 24 Municipal Wards.

The resident population in the urban area of Port Blair is 108058 (Census 2011). A substantial floating (tourist) population is a feature of the demography, which reaches its peak during the months from December to April (or sometimes till the middle of May). The estimated resident population (year: 2023) in Port Blair municipal area is 148000 (Port Blair Municipal Council City Population Census 2011-2023 | Andaman and Nicobar Islands). As per the information provided in official website of Andaman and Nicobar Tourism (https://www.andamantourism.gov.in/tourist_data.php), the month wise Tourist Population in the year 2023 is as follows:

February, 2023: 29903 (Domestic: 28827, International: 1076)

March, 2023: 29970 (Domestic: 28992, International: 978)

April, 2023: 27228 (Domestic: 26674, International: 554)

May, 2023: 24463 (Domestic: 23601, International: 862)

June, 2023: 19112 (Domestic: 18826, International: 286)

July, 2023: 11071 (Domestic: 10760, International: 311)

August, 2023: 14499 (Domestic: 14069, International: 430)

September, 2023: 22622 (Domestic: 22240, International: 382)

Clearly, the peak floating population was in the month of February, which can be rounded off at 30000 in 2023. The total peak population, including resident and floating (tourist) population will be 178000. Further calculations are based on this peak population.

2. WATER SUPPLY VERSUS REQUIREMENT IN PORT BLAIR CITY

Historical data on surface water supply in Port Blair Urban Area (Economic Survey of Andaman and Nicobar Islands, 2007-08) indicated water resources availability of 17.79 MLD, which was mainly by storage in Dhanikhari Dam, Jawahar Sarovar, Lambaline Diggi, Dilthaman, Nayagaon and Chakkargaon diggi (Srivastava and Ambast, 2009). As on 2020, the shortfall in water supply in urban Port Blair was reported to be 19.67 MLD. For development of water resources in urban and rural Port Blair, raising of Dhanikhari Dam by 5 m, sweet water lake at Sippighat, Rutland water supply project, desalinization plant at Port Blair, Tylerabad Weir, 14 m high earthen dam on Indira *Nallah*, Karupaswamy *Nallah* and procurement of barges in urban area, 14 m high dam on Kamsrat *Nallah,* 13 m high dam on Koila *Nallah,* Mithakhari and reservoir for 100 day storage in rural areas were taken up (Srivastava and Ambast, 2009). As far as groundwater potential is concerned, bore wells are generally not feasible in marine sedimentary formations. However, dug wells of 4-5 m diameter and 6 m depth have yield of at least 4000 to 5000 litre/day (0.004 to 0.005 MLD), and are generally sustainable with average pumping duration of 5 to 6 hours a day. The Late Cretaceous igneous rocks of the "Ophiolite Group" are the potential aquifers in the shallow weathered mantle and the deeper fractured zones. The fracture conduits are observed down to about 45 m depth with discharge varying from 30000 to 45000 litre per day (0.030 to 0.045 MLD). The coralline limestone and especially acidic igneous rocks (rhyolite, dacite) in Ward No. 22 also constitutes potential aquifers at shallow depth (<10 m) and can be developed through large diameter (5-6 m) Dug Wells down to a depth varying from 6 to 10 m and yield varying from 15000 to 90000 LPD (0.015 to 0.09 MLD) as reported during previous study of CGWB (Gayen and Kar, 2013).

Based on the latest available data provided by the Port Blair Municipal Council (PBMC) and considering Dhanikhari Dam as the principal source of water supply to Port Blair Town as reported by the Andaman Public Works Department (APWD), the gap between daily water requirement and water supply would be: 20 – 14 MLD = 6 MLD. This does not include additional source of supply by the PBMC and the APWD through the Water Treatment Plants or consideration of water supply potential through rainwater harvesting in the Port Blair Urban Area. No precise estimate of the water supply though rainwater harvesting is available foe Port Blair City. In the present study, the water supply potential from open dug wells, ponds, bore wells and check weirs has been assessed on the basis of ground geological, hydrogeological and geophysical survey.

As per Census 20211, the resident population in Port Blair city was 108058. Due to absence of reliable figures on population growth rate and non-availability of Census 2021 data, online database is used to estimate 2023 population in Port Blair. The resident population in 2023 is estimated at 148000 (Port Blair Municipal Council City Population Census 2011-2023 | Andaman and Nicobar Islands). As per the latest Guidelines of the Department of Drinking Water and Sanitation (Ministry of Jal Shakti), under the Jal Jeevan Mission – Har Ghar Jal, the water requirement should be 55 litre per capital per day (lpcd) with quality as per the BIS Guidelines on Drinking Water (BIS, IS:10500, 2012). Considering the per capita consumption of 55 lpcd, the calculations are as given below:

Total daily requirement of water in Port Blair city for resident population = 148000 x 55 litre = 8140000 litre = 8.14 million litre per day (MLD)

For an estimated gross population (both resident and tourist population) of 178000 (see Chapter 1), the total daily water requirement in Port Blair urban area would be: 178000 x 55 litre = 9790000 litre = 9.79 MLD or about 9.80 MLD.

As per data provided by the Port Blair Municipal council (PBMC), daily water supply from Dhanikhari Dam, which is the major source of water supply to Port Blair urban area, is 140 lakh litre or 14 MLD. At the time of present survey (June-July 2023), piped water supply is provided once in three days (twice in a week) by the PBMC. This is due to less than normal winter rainfall from December 2022 to May 2023. Available data on bulk water supply by the PBMC indicates that all the 24 Municipal Wards are under the jurisdiction of five Junior Engineers (JE-I to JE-V) of PBMC. The ward wise details of water supply in Port Blair Municipal Area, including the number of commercial establishments (hotel and resorts) and the water supplied through pipe lines are summarized in **Table 2.1.** Ward Map of Port Blair Municipal Area provided by the PBMC authority, Port Blair is shown in **Fig. 1.**

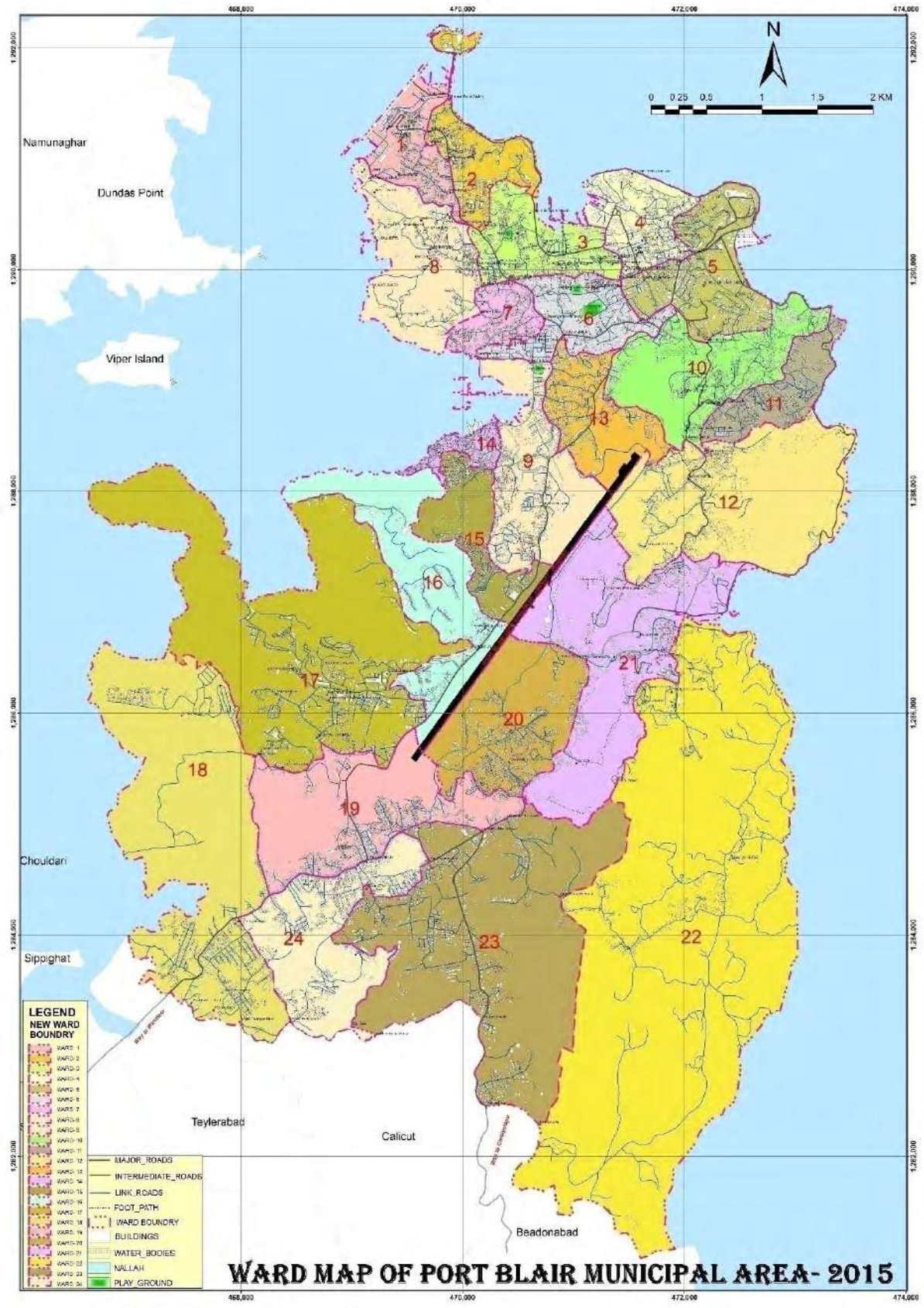


Fig. 1. Ward Map of Port Blair Municipal Area (Source: Port Blair Municipal Council)

Table 2.1 Ward Wise Breakup of Water Supply in Port Blair Municipal Area

Sl. No.	Ward No.	Population (Census 2011)	No. of Commercial Establishments	Water Supply Through Pipeline (kL)
1	1	5890	34	2094
2	2	7329	48	644
3	3	7104	101	882
4	4	7501	111	100
5	5	5352	126	2140
6	6 and 7	9773	269	1947
7	8	5343	9	97
8	9	6274	73	570
9	10	10675	41	889
10	11	5681	24	398
11	12	4424	23	615
12	13	4095	52	645
13	14	3937	15	42
14	15	3910	9	33
15	16	5681	11	46
16	17	9952	125	2120
17	21	425	15	82
Total		**103346**	**1086**	**13344**

(Data Source: Office of the Assistant Engineer-II, Water Works, PBMC)

A perusal of **Table 2.1** shows that the total supply for 1086 commercial establishments in Port Blair during the peak summer season (May 2023) was 13344 kL or 13.34 million litre (ML). Maximum number of commercial establishments (269) is found in Ward No. 6 and 7, which would mean that special emphasis needs to be given for sustainable water resources management in these wards. Ward No. 5 is also crucial as 126 commercial establishments (hotel, resorts) exist in the ward having a relatively less population of 5352, but a very high supply of 2140 kilo litre per day (kLD) by the PBMC. It is evident from the data in **Table 2.1** that the per capita consumption of water is highest in Ward No. 5, 6 and 7. Therefore, these wards need to be the priority areas for optimum utilization, regulation and management of the water resources. In comparison, Ward No. 15 appears to be the safest as far as water demand is concerned, as only 9 commercial establishments exist in this ward, catering to a population of 3910 only and the least piped water supply of 33 kLD by the PBMC. The water supply in 18 wards out of 24 wards is being provided by the PBMC. Water supply in the remaining 6 wards is provided by the Public Health Engineering Division, Andaman Public Works Department (APWD), Prothrapur. The APWD has installed 11 Water Treatment Plants (WTP) within the Port Blair Municipal Area. As on July 2023, the cumulative water treatment capacity from all the WTPs is 55.97 MLD, which appears to be sufficient considering the present water supply versus

demand scenario in Port Blair. The breakup of the Water Treatment Plants along with other relevant details, which was collected from the APWD authority during the present study, is summarized in **Table 2.2.**

Table 2.2 Water Treatment Plants in Port Blair Municipal Area

Sl. No.	Water Treatment Plant (WTP)	Location	Capacity (MLD)	PBMC Ward No.
1	Lambaline WTP-I	Lambaline	6.80	2, 3, 5, 7, 12, 15
2	Lambaline WTP-II	Lambaline	9.50	
3	Lambaline WTP (25 MLD)	Lambaline	25.00	
4	Raj Niwas WTP	Raj Niwas	0.563	5, 10, 11
5	Nayagaon WTP	Nayagaon	1.187	12
6	JawaharSarovar WTP	Dairy Farm	2.57	NA
7	Garacharma WTP	Garacharma	7.40	19
8	Dollygunj WTP	Dollygunj Diggy Site	0.60	17, 18, 19
9	Birdline WTP	Birdline	1.50	20, 22, 24
10	Brichgunj WTP	Brichgunj	0.25	17, 21
11	Corbyns Cove (South) WTP	Corbyns Cove (South)	0.60	NA

(Data Source: Office of the Executive Engineer, APWD)

A list of 36 structures (including Bore Well, Dug Wells, Ponds and Check Weirs) proposed for construction was prepared by the PBMC authority as per the directives of the Secretary, PBMC in June 2023. This list was handed over to the CGWB team by Sh. Jepson Daniel, Nodal Officer of PBMC for assessing the feasibility of construction of the following structures:

Bore Well: 12 nos.
Well (open Dug Well): 7 nos.
Pond: 15 nos.
Check Weir (Check Dam in CGWB parlance): 2 nos.

The details given for 36 sites by the PBMC were modified in the present report based on ground hydrogeological, geomorphological, geological and geophysical survey by CGWB team of officers comprising one Hydrogeologist and two Geophysicists. During the modification, it was observed that few structures proposed for construction by the PBMC were not suitable. For such structures, alternate types of structures were recommended for construction. Accordingly, the original list of 36 structures was modified, which is given in **Annexure-V.**

3. GROUNDWATER EXPLORATION IN PORT BLAIR URBAN AREA

Exploratory drilling was taken up in South Andaman district by Central Ground Water Board, Eastern Region, Kolkata during the Annual Action Plan: 1985-1986. Out of total 18 Bore Wells drilled in South Andaman district, 6 wells were constructed in urban area falling under the jurisdiction of PBMC. All the wells were Exploratory Wells. The drilling was carried out by departmental Rig No. DTH/IR-76/53. Out of the wells drilled in the municipal limits of Port Blair City, none was found suitable for water supply. However, wells at Calicut and Beadonabad, located outside the Port Blair Urban Area, were successful and handed over to Andaman and Nicobar administration for public water supply. The success at Calicut and Beadonabad was attributed to occurrence of volcanic and ultramafic rocks of the Ophiolite Group (Jurassic to Upper Cretaceous age) comprising serpentine peridotite, dunite, basic to intermediate lava, chert and jasper with radiolaria (Chakraborty, 1990). These rocks usually have well developed fracture zones at both shallow depth (<30 m) and intermediate depth (50-60 m). Out of the 6 Exploratory Wells constructed in Port Blair Urban Area (PBUA), the highest discharge of 17 m^3/hr (4.72 LPS) was recorded at Protherpore (Protherapur), near the jail compound, although due to very high salinity in groundwater, the well could not be utilized for public water supply. Apart from Prothrapur, well discharge was found to vary from insignificant (<0.1 LPS) at Project Tartik Office to 1.8 m^3/hr (0.50 LPS) at Brichgunj. At Brichgunj, rocks of Ophiolite Group are exposed where potential fractures are found within 30 m depth. In the northern, western and north-western parts of the PBUA, exploratory drilling was carried out in marine sedimentary rocks comprising black shale, compact and fine-grained sandstone (greywacke) and siltstone having low permeability (Chakraborty, 1990). As the geological formation (Andaman Flysch Group, Mithakhari Formation) has poor groundwater potential, the wells drilled were mostly unproductive from a water supply perspective. Relevant details of the exploratory drilling in the Port Blair Urban Area are summarized in **Table 3.1.**

Table 3.1. Salient Features of Exploratory Drilling by CGWB in Port Blair Urban Area

Location	Type of well	Coordinates	Geology	Depth drilled (m)	Productive fracture zones (m bgl)	SWL (m bgl)	Discharge (lps)	Drawdown, (m)	EC (µS/cm)	Cl (mg/L)
Protherapore-I	EW	11°37´04"N 92°43´42"E	Andaman Flysch (sandstone, siltsone& shale)	56.60	--	--	--	--	--	--
Protherapore-IA	EW	-do-	-do-	37.00	--	--	--	--	--	--
Protherapore-IB	EW	-do-	-do-	60.60	25.0-27.0 30.0-32.0 59.0-60.0	--	4.72	--	5910	1588
Brichganj	EW	11°36´35"N 92°44´10"E	Volcanics and ultramafics (Ophiolite Group)	128.60	Within 30.0	--	0.50 (C)	--	512	14

Dilthaman Tank	EW	11°39´00"N 92°44´00"E	Mithakhari Formation (blackshale & compact, very fine grey sandstone)	121.00	Within 30.0	2.20	--	--	2078	131
Project Tartik Office (Austinabad)	EW	11°38´00"N 92°44´00"E	Mithakhari Formation (black shale)	103.60	--	Negligible (abandoned due to poor discharge)	--	--	--	--

A perusal of **Table 3.1** shows that wells constructed in volcanic rocks and ultramafic rocks belonging to Ophiolite Group are successful whereas those constructed in the marine sedimentary rocks (Andaman Flysch and Mithakhari Formation) are not successful (Chakraborty 1990, Chandra and Das, 1988). Only one Exploratory Well near Prothrapur (Protherapore) Jail junction was successful with a discharge of 4.72 LPS (407.81 m^3/hr), but yielded brackish water with Electrical Conductivity of 5910 µS/cm. However, hydrogeological study has indicated that even in the terrain underlain by sedimentary rocks like shale, sandstone and siltstone, pockets of areas having relatively well-developed valley fill deposits with good porosity and permeability are exposed. Such areas have a substantial base flow throughout the year (Roy, 2014). A detailed groundwater exploration is required to create additional tube wells with relatively high discharge (> 1 LPS) and sustainability (5 to 6 hours in a day), preferably though outsourced and accelerated drilling programme.

4. FEASIBILITY FOR CONSTRUCTION OF PONDS, DUG WELLS, CHECK WEIRS AND BORE WELLS IN PORT BLAIR URBAN AREA

As already mentioned in **Annexure-V,** the feasible structures proposed for construction within the Port Blair Urban Area (PBUA) includes Bore Wells, open Dug Wells, Ponds and Check Weirs (Check Dams in CGWB parlance). For assessing feasibility for construction of the 12 Bore Wells as proposed by the PBMC, Vertical Electrical Sounding (VES) was conducted in June 2023. VES survey was not allowed inside the Police Station, Chatham (Sl. No. 2 in Annexure-I). A total of 22 Vertical Electrical Sounding was completed at 11 locations in the PBUA. This includes one additional survey (not in the original list of the PBMC) in Government Primary School, South Point. A separate description on the feasibility for construction of Bore Wells based on Vertical Electrical Sounding (VES) is given in **Chapter 5**. In the present chapter, results of location specific feasibility survey for construction of open Dug Wells (often large diameter), Ponds and Check Weirs is covered. The feasibility for construction of each of the structures is assessed based on study of site-specific geology, terrain condition, drainage pattern, existing hydrogeological data and visual analysis using Google Earth Pro software. Location details are confirmed using mobile based GPS apps (GPS Map Camera and NoteCam), which were validated using portable, handheld Garmin E Trex30 GPS receiver.

4.1 FEASIBILITY SURVEY FOR CONSTRUCTION OF PONDS

4.1.1 Pond near Dollygunj Segregation Centre (PBMC Ward No. 17)

A feasibility survey for this pond was done on 26-6-2023. During the survey, Sh. Jepson Daniel, Assistant Engineer-II (Water Works), PBMC accompanied the CGWB team. The pond is approachable by a foot track for about 300 m from motorable road and is situated near an old dug well. The area proposed for pond construction is a depressed land having approximately 17000 m^2 area and located near Dollygunj Segregation Centre (**Fig. 4.1**). Hydrogeological survey indicated that the pond is feasible after thorough excavation, preferably using an Excavator machine. The topsoil comprises impermeable clay, which would assist in water storage and conservation. Proper bunding and plantation along the bunds is recommended to enhance structural stability of the proposed pond. The excavated material should be utilized to re-build the foot track leading to the pond. Floating covers need to be added to the pond after it is filled to minimize evaporation loss, which is quite high in this area due to its proximity to the equator. The solid waste (garbage) dumped by the residents of the colony should be cleaned immediately to prevent possible contamination of the proposed pond (**Fig. 4.2**) along with awareness generation among the residents to maintain cleanliness of the area. As per PBMC proposal, the harvested rainwater would be supplied to Dollygunj Water Treatment Plant (WTP) of the Andaman Public Works Department (APWD) through GI pipeline of about 1.5 km length. Considering the recommended depth of pond (5 m), the water resources augmentation

potential of this pond at maximum level (effective depth: 4 m) is estimated at 68 million litre (ML). This would help in alleviating the water shortage experienced from March to May.

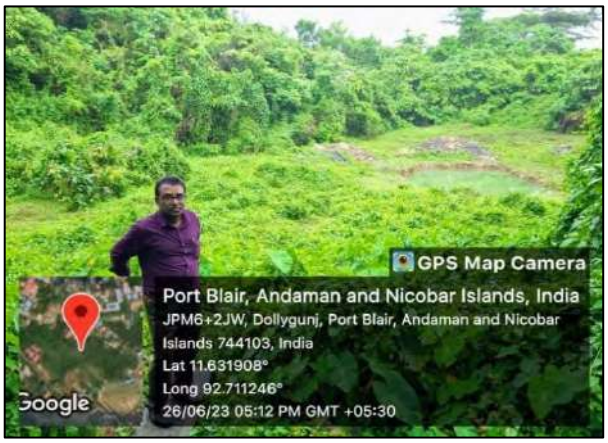


Fig. 4.1 Feasible Pond near Segregation Centre, Dollygunj. Nodal Office, PBMC standing at the site.

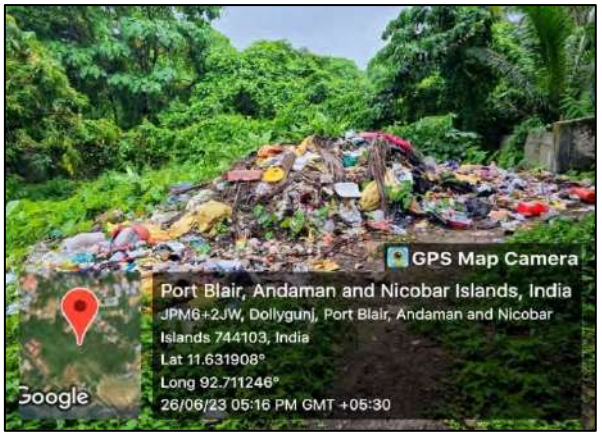


Fig. 4.2 Garbage disposal near the proposed pond adjacent to Dollygunj Segregation Centre, PBMC Ward No. 17.

4.1.2 Pond near Dollygunj Shiv Temple on NH-6 (PBMC Ward No. 17)

This site is located to the west of Great Andaman Trunk Road (National Highway-6) near the tri-junction of road leading to Dollygunj Mini Stadium and Shiv Colony. During a field visit on 26-6-2023 with the Nodal Officer from PBMC, the site was found suitable for construction of a pond having an approximate area of 8000 m^2. However, proper embankment needs to be made around periphery of the pond. Locally available trees that can reduce soil erosion need to be planted along the embankment. Since the entire area of Port Blair is characterized by high evaporation loss, floating covers should be used. The recommended depth of excavation of this pond would be 5 m and the effective depth (at full supply level) would be ~4 m. The estimated water supply potential of the pond is 32 ML at full supply level. The estimated water harvesting potential of this pond as per PBMC is 11 ML, which is under estimation. There is a proposal to connect the harvested water (rainwater) through GI pipeline of about 500 m length to the Dollygunj Water Treatment Plant (WTP), which is a feasible proposition. Accessibility of the proposed pond site is also not a problem due to its proximity to the Great Andaman Trunk Road. Field photograph of the pond site near Dollugunj Shiv temple is shown in **Fig. 4.3.**

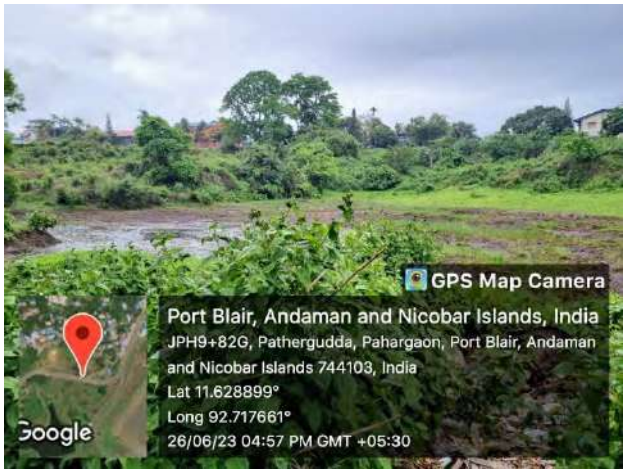


Fig. 4.3 Pond proposed to be developed for water supply, near Dollygunj Shiv Temple

4.1.3 Pond near Pathergudda Colony (PBMC Ward No. 19)

The proposed pond is along a perennial *nallah,* which was encroached downstream by houses of Pahergudda Colony. An open dug well is situated at the fringe area of the *nallah,* which was found to be used for bathing and other domestic use during the field visit. The dug well is located about 90 m east of Chennai Thalappakattu, a popular South Indian eatery. During hydrogeological survey, it is found that the existing *nallah* (Pathergudda Nallah) needs to be rejuvenated by desilting followed by construction of at least two Check Weirs with distance varying from 10 to 15 m. This would increase both surface flow and base flow of Pathergudda Nallah. Due to limited width (about 15 m) and length (about 100 m) of the *nallah* section, pond construction is not feasible as required space for embankment construction, plantation along the embankment and proper development of the pond would not be feasible in this area. Moreover, the proximity of the proposed pond near an unplanned residential colony within the heart of Port Blair City may create further environmental issues. Utmost care, however, needs to be taken to prevent chances of anthropogenic contamination in the catchment area of the *nallah* section. Local people should be made aware of the importance of maintaining sanitation and hygiene in the catchment of Patherguaa Nallah, preferably through a campaign by the PBMC authorities. The matter has been discussed at length during a meeting on 1-7-2023 at the PBMC Headquarters, Port Blair with the Executive Engineer In-charge (Water Works) and the Assistant Engineer and Nodal Officer of PBMC. Field photo of the site is shown in **Fig. 4.4.**



Fig. 4.4 Field photo of proposed pond site near Pathergudda Colony. Section of the Pathergudda Nallah, covered in vegetation is visible to the right.

4.1.4 Pond near Vegetable Market, Bathu Basti (PBMC Ward No. 19)

This pond is located near a small Shiv Temple, which is about 100 m north of the Vegetable Market at Bathu Basti. Using Google Earth Pro software, the area of the pond is estimated at 10000 m^2. Using Garmin E Trex 30 GPS device, elevation of the area is estimated at 19 ± 3 m.

There is good scope to excavate the pond up to a depth of 5 m, which would mean that the storage potential of the pond would be about 40 ML. The proposal to supply water harvested from this pond through Dollygunj Water Treatment Plant appears to be feasible and realistic based on the field survey. Photograph of the proposed pond site near Bathu Basti Vegetable Market is shown in **Fig. 4.5.**



Fig. 4.5 Feasible Pond site near Vegetable Market at Bathu Basti. A small Shiv Temple and a house are visible in the background.

4.1.5 Proposed Pond at Pahargaon (PBMC Ward No. 20)

A field visit to the site was made on 29-6-2023 along with Sh. Chinna Rao from the PBMC. This is a proposed site for pond construction. The site is located about 600 m north-east of Pahargaon Over Head Reservoir (OHR) and about 30 m south of open playground at Old Pahargaon. The site is downstream of a perennial *nallah* (stream) having maximum width of about 20 m in the vicinity of the proposed site. Using Google Earth Pro software, the area of the proposed pond is estimated at about 1700 m^2, which may be used to store the surface flow of the *nallah* along the roadside. Due to proximity of the site to natural drainage and depression, the area may be developed for pond construction (depth: 4 to 5 m) using an Excavator. By harnessing the perennial stream, surface water can be harvested for conservation and augmentation to the existing water supply. The estimated storage potential of the proposed pond is about 8.5 million litre (ML) at full supply level. To reduce evaporation loss, floating covers should be used, and the pond may be developed as a model *Amrit Sarovar.* The area is covered with vegetation, which would act as a buffer to arrest soil erosion, especially during monsoon period when discharge in the *nallah* is increased substantially. However, considering the local field condition, it would be better if the harvested water is utilized for supply through the nearby OHR at Pahargaon (~600 m away), instead of transporting the water through GI pipeline to Birdline WTP, which is about 3 km from the site.

4.1.6 Pond at New Pahargaon, near Shiv Temple (PBMC Ward No. 20)

Field visit to the site was made on 29-6-2023. Ground hydrogeological survey shows that the site is feasible for pond construction. However, due to proximity of the site to Port Blair Airport, excavation should be restricted to not more than 3 m, that too close supervision is required during the excavation. Caution needs to be given during excavation and manual excavation would be preferable instead of using the excavator machine due to proximity of this site to the airport. The site is opposite New Pahargaon Shiv Temple, which is to the south-eastern part of the airport. Google Earth image analysis and ground GPS survey indicates that maximum available surface area is about 4000 m^2, which would be having a storage potential of about 8 ML at full supply level considering an effective depth of 2 m. Embankment of RCC may be constructed here and floating covers need to be used to minimize evaporation loss. The stored water may be supplied through Birdline WTP, as proposed by the PBMC. A field photo of the pond is shown in **Fig. 4.6.**

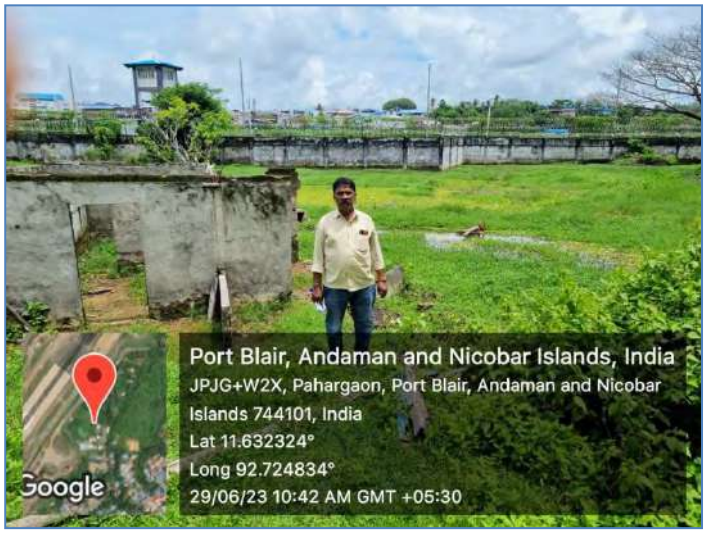


Fig. 4.6 Proposed Pond site at New Pahargaon, opposite to Shiv Temple. Boundary wall of Port Blair Airport is seen in the background.

4.1.7 Pond at New Pahargaon, near Kamaraj School (PBMC Ward No. 20)

The site is about 250 m to the north-east of the first pond at New Pahargaon and located about 50 m to the west of Kamaraj English Medium School. The terrain condition and slope are similar to the previous pond. Limited outcrops of weathered sedimentary rocks of Andaman Flysch Group are exposed in the area, which indicates a low groundwater potential. Rainwater may be stored for supply through the Birdline WTP. Excavated depth should not be more than 3 m and effective depth may be kept at 2 m due to proximity of the site to the east-central part of Veer Savarkar Airport. Using Google Earth Pro software and Garmin handheld GPS, area of the proposed pond was estimated at 1400 m^2, which would mean that water harvesting potential is about 2.8 ML, which is much less than suggested potential of 5 ML by the PBMC as per the detailed list handed over to the CGWB team. Photograph of the proposed pond site near Kamaraj School, New Pahargaon is shown in **Fig. 4.7.**

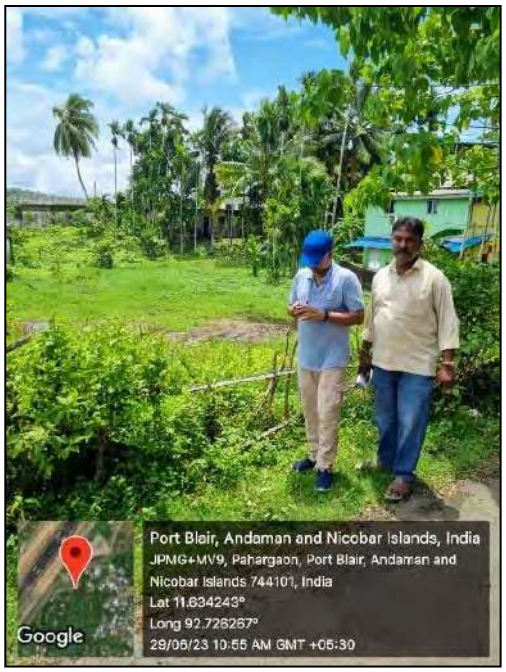


Fig. 4.7 Field visit to proposed pond site near Kamaraj School, New Pahargaon on 29-6-2023.

4.1.8 Pond near PBMC Sewage Treatment Site, Brookshabad (PBMC Ward No. 22)

The proposed site is adjacent to the Solid Waste Treatment site of the PBMC at Brookshabad and about 0.5 km east of Brookshabad playground on Corbyn's Cove Road. During the field visit, the surface area of the proposed pond was estimated at about 150 m^2, which may not be an ideal situation for storage of adequate volume of rainwater for supply through nearby Pumping Station at Brookshabad. Another disadvantage of the proposed pond is the increased chance of contamination due to its proximity to the Solid Waste Management Centre (SWMC). Hydrogeologically, the area has better groundwater potential as compared to other sites within PBMC area, where poor aquifers comprising marine sedimentary rocks occur in abundance. Therefore, instead of Pond, a Dug Well of large diameter (4 to 5 m) should be constructed to tap the freshwater aquifers at shallow depth (<15 m bgl). The Dug Well should be constructed near the tri-junction of the main road and the foot track leading to the disused Brookshabad quarry uphill. The Dug Well should be properly designed for community-based water supply with parapet height of at least 1.0 m. The well should be covered from the top to prevent possibility of contamination. The depth of the Dug Well should not exceed 12 m in order to minimize the possibility of encountering saline aquifer at deeper levels. Shallow aquifers with better groundwater potential (> 1 LPS) occur in the fractured and weathered volcanic rocks, sections of which are exposed in several active and abandoned quarries in and around Brookshabad. The discharge of the Dug Well is expected to range from 85000 to 90000 litre per day (0.085 to 0.090 MLD), which would be able to supply (taking a conservative estimate) about 7.5 to 8.0 million litre (ML) of groundwater during the peak summer season (March to May). Groundwater can be readily supplied in PBMC Ward No. 22 through Brookshabad Pumping Station, located about 0.8 km west of the site. Field photo of the site visit is shown in **Fig. 4.8.**

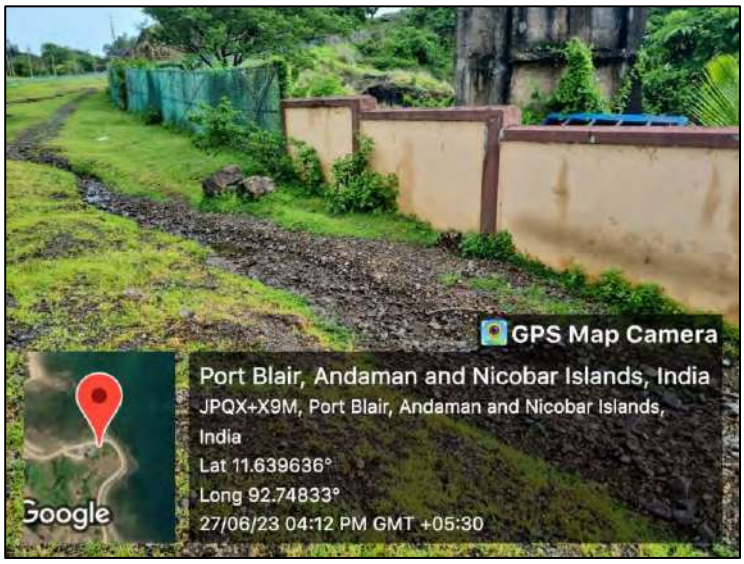


Fig. 4.8 Proposed site for construction of a large dia. Dug Well near Solid Waste Management Site of PBMC, Brookshabad in PBMC Ward No. 22

4.1.9 Pond near Surya Rao Quarry, Brichgunj (PBMC Ward No. 22)

The proposed site for construction of a pond near Surya Rao Quarry at Brichgunj was visited on 29-6-2023 along with Sh. Chinna Rao of PBMC. The site is located near an escarpment of a hill comprising mostly massive (unfractured) basalt with minor ultramafic rocks of the Ophiolite Group. The estimated area of the proposed pond quoted by PBMC is 10000 m^2 with a potential water supply of 50 ML. There is a proposal to connect the harvested pond water with Birdline WTP, located about 1 km from the source. However, the surface geology of the site precludes construction of any water body in the massive, crystalline rocks of the Ophiolite Group. Hence, pond is not feasible in the site. Detailed hydrogeological survey has revealed that a large diameter (4 to 5 m) Dug Well with depth of about 10 m is feasible about 0.5 km east of the proposed pond site. The alternate site for this Dug Well is near a perennial *nallah*, which can be rejuvenated with construction of a series of Check Weirs (at least two with spacing of about 10 m) to arrest the base flow and increase groundwater supply potential of the large diameter Dug Well. The parapet height of the Dug Well should be at least 1 m and it should be covered from the top to prevent surface contamination. Location details of the proposed Dug Well are:

11.61501 N, 92. 73751 E, Altitude: 59 ± 3 m

Historical drilling data of CGWB at Brichgunj Exploratory Well shows a compressor discharge of 0.5 LPS, within a potential aquifer zone (fractured rock aquifer) at 30 m depth (Chakraborty, 1990). Taking a conservative estimate and proximity to the perennial *nallah*, the discharge may be as high as 1.5 to 2.0 LPS using a Submersible Pump of 10 HP capacity. The expected discharge may vary from 0.13 MLD to 0.17 MLD, which would be a useful source to mitigate water scarcity during the summer season. Considering the lower value of expected discharge, the annual water supply potential from the proposed Dug Well would be 47.45 ML. Potable groundwater from the proposed well can be supplied through Birdline Water Treatment Plant. Field photograph of the originally proposed pond site is shown in **Fig. 4.9.**

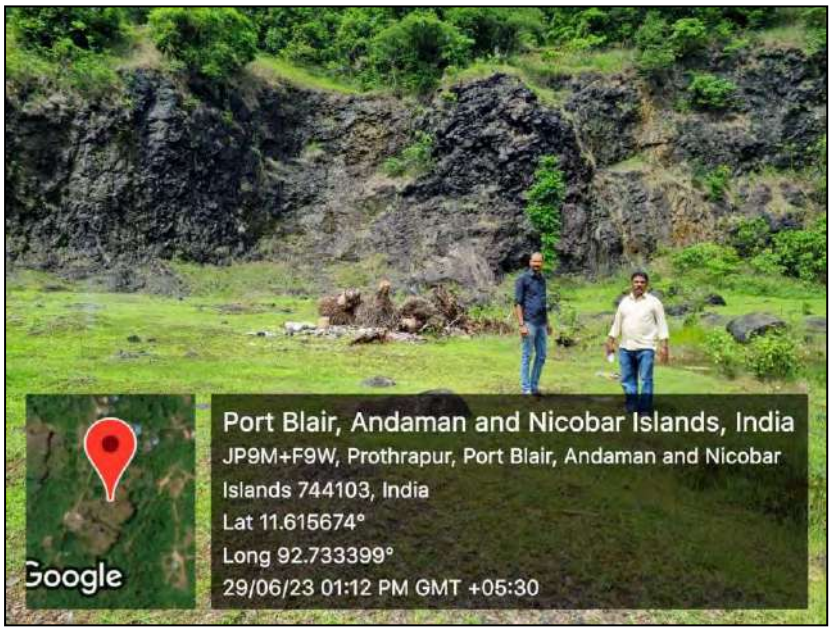


Fig. 4.9. Proposed Pond site near Surya Rao Quarry, Brichgunj. Cliff of volcanic and ultramafic rocks (Ophiolite Group) in the background. The site is not feasible for construction of Pond, but a large diameter Dug Well is feasible downhill of this site.

4.1.10 Pond inside the Police Training School, Brichgunj (PBMC Ward No. 22)

This is an existing pond inside Brichgunj Police Training School, which was surveyed on 27-6-2023 for assessing its feasibility for rejuvenation. The pond was found filled with scattered garbage around its periphery. The pond is fed by a stream (*nallah*) to the eastern side. Although PBMC has estimated the surface area for developing this pond as 2000 m^2, the estimated actual area (using Google Earth Pro software) is about 7200 $m^2$with a periphery of about 350 m. Considering the reported depth as 3 m, there is scope for harnessing about 14.5 ML of surface water through this pond, subject to proper renovation of the structure including construction of embankments and plantation of trees along its bank. Therefore, the quoted storage potential of 0.05 ML by the PBMC is an underestimation. During renovation of this existing pond, de-siltation should be done using excavator and the dredged-out silt may be utilized in farming inside the Police Training School, as sufficient open land is available. The feeder stream to this pond, which is reported to be perennial by the PBMC authority, also should be renovated by re-deepening of the channel and plantation along the course of this stream upstream for about 1 km. There is a proposal to connect the supply water to Birdline Water Treatment Plant, which is about 800 m south-west of the location. Field photo of the existing pond inside the Police Training School, Brichgunj is shown in **Fig. 4.10.**

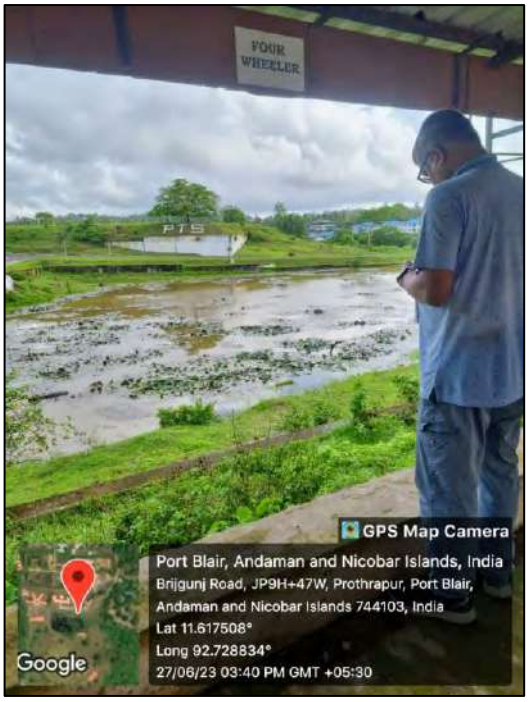


Fig. 4.10 Existing Pond inside Police Training School, Brichgunj: proposal for rejuvenation of the Pond along with feeder stream was found feasible with water harvesting potential of about 14.5 ML for supply through Birdline Water Treatment Plant.

4.1.11 Pond adjacent to Brichgunj Quarry (PBMC Ward No. 22)

This pond, locally known as "Joorah Nallah", is quoted by PBMC having an area of 400 m^2. However, the calculated area using Google Earth Pro and field survey using Garmin GPS shows that the area is about 550 m^2. Estimated depth of the Pond is about 3 m. The area is characterized by an undulating topography with several active and abandoned quarries (stone crushing units) on the outskirts of Brichgunj. The site can be approached by a foot track about 100 m long, upslope of the motorable road. During the field visit, it was found that the Pond is suitable as two perennial streams (*nallahs*) flow into the depression where development of the Pond is proposed. The PBMC authority and local populace both reported that even during peak summer season, the Pond is not fully dried up. Considering an effective depth of about 2 m, the estimated water harvesting potential would be 1.1 ML, which is about 3 times higher than the potential (0.4 ML) quoted by the PBMC. There is a proposal to connect the supply water through Birdline Water Treatment Plant, which is about 5 km south-west of the site. Field photograph of the site is shown in **Fig. 4.11.**



Fig. 4.11 Pond site (Joorah Nallah) located near Brichgunj Quarry, approachable by foot track upslope of main road. PBMC representative is standing near mouth of the perennial Nallah feeding the pond.

4.1.12 Pond near Teachers Training Institute, Garacharma (PBMC Ward No. 18)

A site visit to this proposed Pond was made on 29-6-2023. The site is adjacent to the residential colony of the Teachers Training Institute, Garacharma. Using Google Earth Pro software and Garmin GPS device, the area of the proposed pond was estimated at 350 m^2, which is feasible for construction, especially due to proximity to a perennial *nallah*. The site is about 100 m upslope of the motorable road. Ground survey shows that feasible depth of excavation is about 4 m, whereas the effective supply depth is about 3 m. Thus, the water storage potential of the Pond was estimated at 1.05 ML.

4.1.13 Pond at Hathi Nallah, upslope of Check Weir (PBMC Ward No. 23)

Hathi Nallah is a perennial stream flowing to the south of Birdline area. The proposed site for Pond construction is about 200 m east of the Great Andaman Trunk Road (ATR), on the way from Birdline to Kamaraj Nagar. The elevation of the proposed site, measured using portable handheld GPS, is 34 ± 3 m. Field visit was made on 27-6-2023 after visiting another site for proposed Check Weir construction downstream of the Hathi Nallah, which is about 20 m downhill of this site. The pillow structure in basalts of the Ophiolite Group is exposed on the approach road (foot track) from the main road (ATR). Based on geological and hydrogeological survey, construction of a Pond was not found suitable at this site. Another issue with Pond would be its proximity to the toilet constructed under Swachh Bharat Mission (SBM), which may lead to anthropogenic contamination in the harvested water (rainwater) into the Pond. A sufficient open area for pond construction is also not available at the proposed site. Field photograph of the site is given in **Fig. 4.12.**

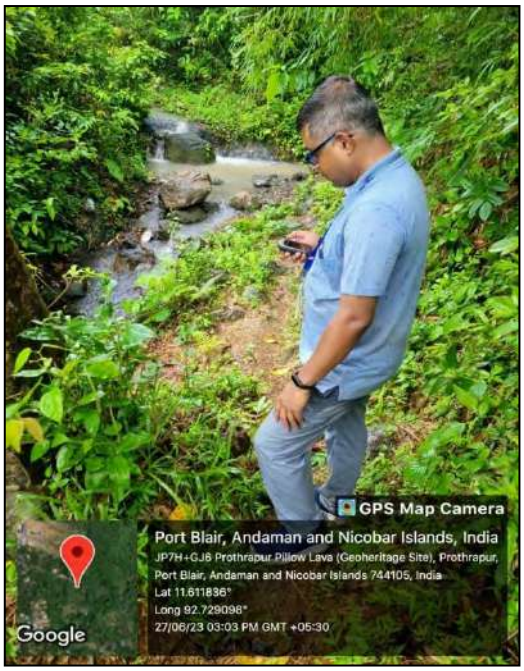


Fig. 4.12. Feasible site for construction of a series of Check Weirs, upstream section of Hathi Nallah in PBMC Ward No. 23. There is ample scope for construction of four Check Weirs in a series along the Nallah section.

Instead of a Pond, the CGWB team recommended constructing a series of Check Weirs (preferably four Check Weirs) along the Hathi Nallah for recharging the shallow, fractured rock aquifers of the Ophiolite Group. The proposed Check Weirs would be beneficial to augment the water supply potential of open Dug Wells that may be constructed down slope along the Andaman Trunk Road. Recommended height of the Check Weirs is 1.5 to 2.0 m and distance between two Check Weirs may be kept at 30 m, keeping in mind the terrain slope and local hydrological regime governed by the Hathi Nallah, which has an average width of ~5 m and a length of ~200 m along the surveyed section of the stream.

4.1.14 Pond near Forest Rangers Office, Garacharma (PBMC Ward No. 24)

The proposed pond site is located about 250 m north-east of the office of the Forest Range Officer, Garacharma. Field visit to this site was made on 29-6-2023. The proposed pond site is to the south of Pathergudda Colony and is approachable by a feeder road diversion from the road leading to Central Island Agricultural Research Institute. The proposed pond is a depression covered with thick vegetation, which must be developed through renovation using a machine operated excavator. Using Google Earth and handheld GPS survey, the area of the pond was estimated at about 4000 m^2, which is about 1000 m^2 higher than the estimate of the PBMC. Using Garmin ETrex 30 GPS, elevation of the pond was estimated as 27 ± 3 m. Based on field survey, depth of excavation of the pond was estimated at about 3 m, which means that storage potential of the pond would be about 12 MLD. The pond needs to be properly developed with embankment and adopting plantation of locally available species along the peripheral area. The pond has ample scope to be developed as an *Amrit Sarovar*, for which necessary procedures needs to be adopted by the district administration involving the lined departments. The water harvested may be supplied after treatment through Birdline WTP, located about 1.5 km south-east of the pond. Field photograph of the site is shown in **Fig. 4.13.**

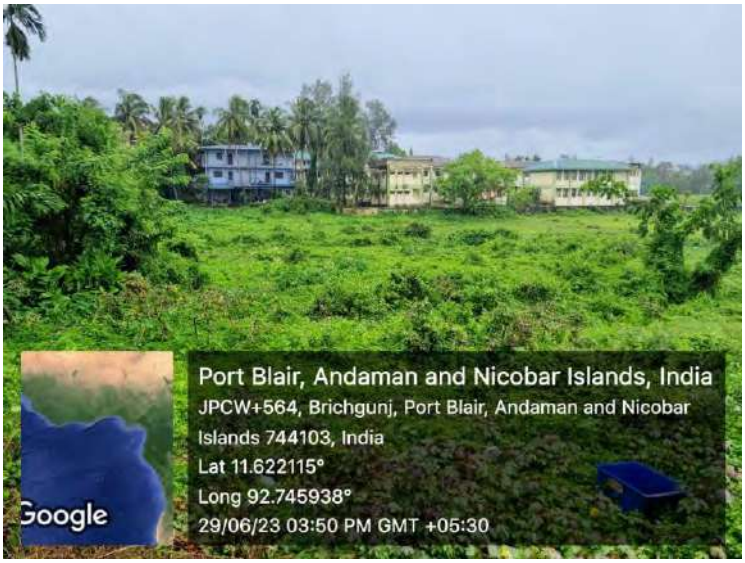


Fig. 4.13. Proposed pond site to the north-east of Forest Range Office, Garacharma. A pond having storage capacity of about 12 ML is feasible for supply through Birdline Water Treatment Plant.

4.1.15 Pond at Rajaji Nagar, Garacharma (PBMC Ward No. 24)

This proposed pond site is approachable by Garacharma – Calicut Road and located about 120 m north-east of Rajaji Nagar water tank. During the site visit on 29-6-2023, the site was found feasible for pond construction. The proposed site is about 50 m downslope of the feeder road and close to Bala Ganesh and Karumari Amman temple, also locally known as Rajaji Nagar Hanuman Mandir. The areal extent of the proposed pond using Google Earth Pro has been estimated at ~900 m^2, which is much less than the quoted area (4000 m^2) by the PBMC. Considering the field condition, the estimated depth of excavation would be ~3 m. Calculated water storage potential of the pond would be about 2.70 ML only, which is about half of the storage potential of 5.0 ML quoted by the PBMC (**Annexure-I**). Structural stability of the pond should be assured by preventing soil erosion at the site through plantation of trees. An embankment of about 0.6 m may be constructed along periphery of this pond to prevent siltation from surface runoff. Field photograph of the proposed pond site is shown in **Fig. 4.14.**



Fig. 4.14. Pond site near Hanuman Mandir, Rajaji Nagar, Garacharma. The depression with pool of water is visible in the background. PBMC representative is standing at the site.

4.2 FEASIBILITY SURVEY FOR CONSTRUCTION OF DUG WELLS

As per the detailed list provided by Joint Secretary, Port Blair Municipal Council (PBMC), total seven sites for Dug Well were surveyed by the CGWB team from 25-6-2023 to 1-7-2023. Ground hydrogeological survey indicated that while Dug Wells are feasible for water supply in majority of the proposed sites and are suitable for renovation and restoration for water supply in the existing locations, there are a few sites where construction of pond would be more beneficial for water supply through one of the designated Water Treatment Plants (WTP) within the municipal limit of Port Blair City.

Few general recommendations for having maximum groundwater supply (optimum discharge) are given below:

- Ideally, a dug well having diameter varying from 2 to 4 m and depth varying from 6 to 8 m would have the best potential to yield freshwater from the phreatic aquifers.
- Based on systematic hydrogeological survey by CGWB in fringe areas of Port Blair City (Banerjee et al. 1988), it is recommended to use perforated RCC casing with wire mesh, instead of impervious concrete casing to allow lateral groundwater flow into the dug well.

- The perforated casings may not be packed tightly and a small gap (1 to 2 cm) should be kept between two casings when placed vertically one above the other.
- The lowermost portion of the casing (2 to 3 m) may be gravel packed by an envelope of well rounded, well sorted, quartzitic gravels (pea gravels) about 20 cm thick. If gravels of suitable size and material are not available, then locally available, rounded to sub-rounded stone chips may be used.

As per ground hydrogeological survey, each of the seven existing and/or proposed Dug Well site was assessed by the CGWB team of officers. A description of the seven dug well sites in the municipal limit of Port Blair City is given below.

4.2.1 Dug Well at Dr. B.G. Lal Road, near Kasim's House (PBMC Ward No. 11)

A hydrogeological survey was done on 26-6-2023 along with Sh. Jepson Daniel, Nodal Officer from PBMC. The proposed site is ~50 m north-west from the junction of Dr. B.G. Lal Road and Corbyn's Cove Road in the eastern part of Port Blair City. The site is to the south of a residential colony. The diameter of the existing dug well is ~1m and depth is ~5 m. The depth may be increased to ~10 m to tap greater thickness of the phreatic aquifer, without causing salinity problem. Well diameter should be increased to 3.0 m to have better yield. The well may be renovated for water supply through Rajniwas WTP, as proposed by the PBMC. The proposed length of the GI pipeline is 2200 m with an estimated cost of Rupees Thirty-Five lakh, as per PBMC estimates. The water supply potential of the dug well is estimated at ~0.1 litre per second (LPS) or ~10000 litre per day (LPD). The supply potential would not be very high as marine sedimentary rocks of Mithakhari Formation (comprising black shale, compact, very fine-grained sandstone and siltstone) do not have appreciable permeability. Groundwater exploration by CGWB near Dilthaman Tank, about 1.5 km west of this site, revealed that salinity problem exists at deeper level (> 30 m) with Electrical Conductivity of 2078 µS/cm. Therefore, utmost care needs to be taken to restrict the well depth to 10 m. The general recommendations for construction of Dug Well should be strictly followed. Field photo of this existing Dug Well is shown in **Fig. 4.15.**

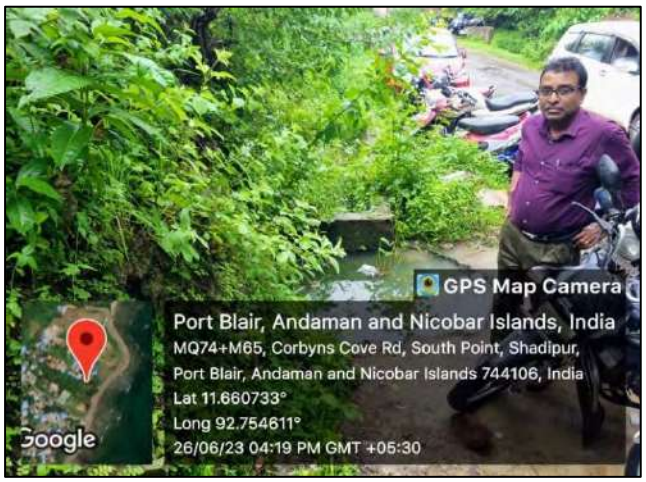


Fig. 4.15 Existing dug well site near Kasim's House in Dr. B.G. Lal Road, about 50 m upslope of the tri-junction of Corbyn's Cove Road. Nodal Officer, PBMC is standing near the dug well.

4.2.2 Dug Well at Andaman Herald Road, behind South Point School (PBMC Ward No. 11)

A hydrogeological survey was done on 26-6-2023. The proposed dug well is about 120 m south-west of Shadipur Health Centre and to the north of APWD Quarters at Shadipur. The well site is covered with thick vegetation and was not accessible. However, ground survey in nearby area has revealed that the site is part of a micro-catchment of a perennial stream (*nallah*), thereby excavation and development in the area may have an adverse effect on the local eco-hydrology. Hence, construction of a large diameter dug well is not feasible. The decision was conveyed to the Nodal Officer, PBMC on 26-6-2023 during the site visit.

4.2.3 Dug Well at Girls School Playground, Aberdeen Bazar (PBMC Ward No. 11)

A site visit was done along with the Nodal Officer, PBMC on 01-7-2023. The proposed site is approachable by Rina Road along the coast and located to the north-east of the Girls Senior Secondary School, Phoenix Bay. A geophysical survey in the site has revealed presence of saline groundwater at shallow level (15 to 20 m) in the unproductive marine sedimentary rocks of Mithakhari Formation (Sarkar 2006). **Hydrogeological survey in and around the area has revealed that instead of Dug Well, a Pond is more feasible inside Radha Gobinda Temple, which is adjacent to RGT Public School.** The site was pin pointed and shown to the Nodal Officer, PBMC on 1-7-2023. This proposed site for pond construction is about 400 m south of the Girls Senior Secondary School, Aberdeen Bazar (Serial No. 10, Annexure-I) and approachable by Rina Road and RGT Road. Using Garmin E Trex 30 Handheld GPS Receiver, the field co-ordinates of the recommended Pond site are:

11.663921°N, 92.748931°E, Altitude: 46 ± 3 m

The pond recommended has a perimeter of ~95 m and a surface area of ~700 m^2. Field survey shows that depth of excavation should be < 3 m, as the site is ~10 m upslope of RGT Road and Macchhi Line Colony. The water storage potential of the pond is estimated at 2.10 ML, which would be about 21 times higher than the Dug Well at Girls Senior Secondary School. The water may be supplied to Raj Niwas WTP located ~0.5 km to the west. The Rajniwas WTP has a supply capacity of 0.563 MLD. Field photo of the recommended pond site inside Radha Gobinda Temple compound is shown in **Fig. 4.16.**



Fig. 4.16 Recommended Pond site inside Radha Gobinda Temple compound on RGT Road. The site is feasible, instead of the proposed dug well inside Girl's Senior Secondary School near Aberdeen Bazar. Nodal Officer, PBMC is standing at the recommended site.

4.2.4 Dug Well at Junglighat (VIP Road), opposite Guru Mandir (PBMC Ward No. 12)

The site visit was made along with Nodal Officer, PBMC on 1-7-2023. The dug well is at Junglighat, which is to the east of VIP Road and near Electricity Department Site Office and Income Tax Office. Co-ordinate of this existing dug well is as follows:

11.655864° N, 92.734928° E, Altitude: 61 ± 3 m

This dug well is ~10 m from VIP Road and located on the back side of a plastic scrap unit. Due to its close proximity to the unit, there is a chance of environmental pollution. Moreover, the area is not hydrogeologically suitable for tapping the shallow aquifers and the expected yield would be meagre (< 0.2 LPS or < 0.02 MLD). Diameter of the dug well is < 2 m and there is space constraint for redevelopment of this well into a large diameter (4 to 6 m) dug well.

As the dug well was not found suitable for large-scale water supply, a hydrogeological traverse was made based on terrain analysis, drainage analysis and limited exposure of outcrops in and around Police Line area. Based on field survey, a suitable site for construction of a large diameter (4 to 6 m) Dug Well was selected ~100 m east of Police Line Main Gate towards Joggers Park. The lies to the south of a micro-catchment crisscrossed by a few perennial and seasonal streams flowing along the hill slope from Dilthaman Tank in the north to Police Line Quarters in the south. The hill slope is covered with thick vegetation with well-developed topsoil, which would act as a potential recharge zone for the shallow aquifers (< 20 m) in Mithakhari Formation. Groundwater exploration by CGWB near Dilthaman Tank revealed discharge of 2.2 LPS using air compressor. Using a submersible pump, the expected discharge (conservative estimate) would be ~3 LPS. Considering peak water scarcity period from March to May (~90 days), the expected water supply through the Dug Well would be ~23.40 ML.

Co-ordinates of the recommended Dug Well are: 11.658290° N, 92.73880° E, Altitude: 85 ± 3 m. Field photo of the proposed Dug Well site is shown in **Fig. 4.17.**

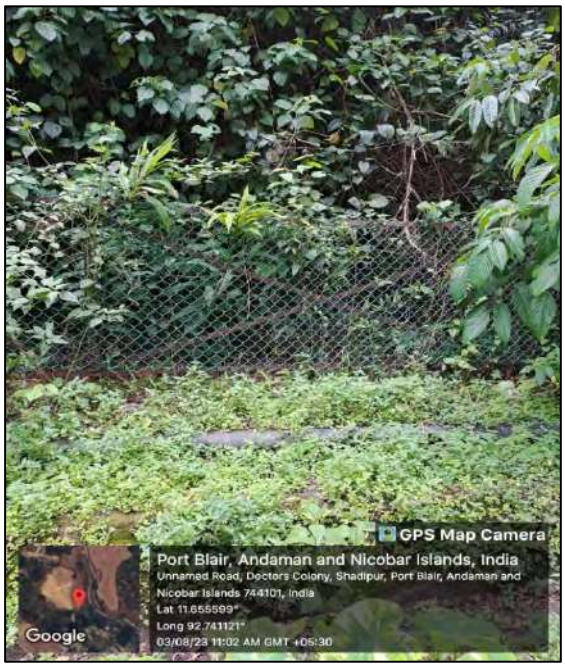


Fig. 4.17 Recommended site for construction of a new, large diameter dug well (instead of redeveloping existing dug well at Junglighat), about 100 m east of Police Line Main Gate. The well vegetated micro-catchment is seen in the background.

4.2.5 Dug Well near Brookshabad Government School (PBMC Ward No. 22)

During the site visit on 27-6-2023, the feasibility of construction of a dug well at this site was assessed. The proposed dug well site is about 100 m south-west of Brookshabad Government School and near the house of Mr. Typhil. The site is located on a hilltop. The local geology comprises volcanic rocks (basalt with pillow structure) of the Ophiolite Group. There is an elevation difference of about 25 m between this site and Corbyn's Cove Road. A dug well having diameter of 3.0 m and depth of 8.0 m is recommended at this site. The weathered and fractured basalt constitutes aquifers with moderate groundwater potential, estimated to be about 1.0 LPS (conservative estimate) based on ground hydrogeological survey and results of exploratory drilling in the fissured formations of Ophiolite Group. The estimated yield potential of this dug well is about 0.085 MLD), which is about 2.8 times higher than that quoted by PBMC (0.03 MLD). It is expected that with a pump unit of suitable capacity, the dug well would mitigate the water scarcity problem in and around Brookshabad area in PBMC Ward No. 22. The general guidelines suggested previously should be strictly followed to have optimum discharge and supply potential. The phreatic aquifer (< 30 m deep) needs to be utilized for community water supply through Brookshabad Pumping Station using GI pipeline of 800 m length, as per PBMC estimates. A photograph of the proposed dug well site is shown in **Fig. 4.18.**



Fig. 4.18 Recommended site for construction of a new dug well, about 25 m upslope of Brookshabad Government School (near Typhil's House) where volcanic rocks of Ophiolite Group constitute the local geology. Estimated yield potential of this dug well is 0.085 million litre.

4.2.6 Dug Well adjacent to Police Training School, Brichgunj (PBMC Ward No. 22)

This large diameter dug well is being used by the PBMC for water supply. However, redevelopment and rejuvenation of this well is required. The well is located about 200 m east of the Police Training School, Brichgunj. The diameter of this dug well is 9.0 m, and there is not

much scope to increase it further. Using portable handheld GPS, elevation of the site was calculated at 69 ± 4 m. The dug well is situated on the southern flank of a hill, in which well jointed outcrops of basalt were identified during ground hydrogeological survey. The dug well may be deepened up to 15 m using available machinery so that greater saturated thickness of the weathered and fractured aquifer may be tapped for increasing the existing water supply potential, which is 0.30 MLD (300000 LPD) as per PBMC estimate. However, groundwater exploration at Brichgunj by CGWB has indicated discharge of 0.50 LPS (using Air Compressor), which is expected to be about 1.0 LPS with submersible pump of suitable capacity. The estimated groundwater potential of phreatic aquifers in this area is about 0.08 MLD, according to a conservative estimate. Thus, the PBMC estimate appears to be an overestimation of the supply potential. Previous studies by CGWB have also indicated that groundwater potential of large diameter dug wells usually vary from ~80000 to ~100000 LPD (0.08 to 0.10 MLD) in the Ophiolite Group of rocks. The dug well needs to be developed scientifically following the recommended general guidelines. Groundwater can be supplied through Birdline WTP, located about 1.0 km south-west of the site. Field photo of this site is shown in **Fig. 4.19.**



Fig. 4.19 Existing large diameter (9.0 m) dug well near Police Training School, Brichgunj. There is ample scope to develop this dug well for increased water supply by the PBMC.

4.2.7 Dug Well inside Police Training School, Brichgunj (PBMC Ward No. 22)

This is also a large diameter existing dug well, which is used for water supply by the Andaman Public Works Department (APWD) through Brichgunj Pumping Station. The dug well is located almost opposite the main building of Police Training School (PTS) and adjacent to the cap parking area. The site can be approached by taking a left turn towards Birdline from the main road. The site is about 500 m south of the main road. The dug well can be deepened up to about 10 m, while the existing diameter (4 m) can be enhanced up to 5 m. The water supply potential is also

expected to be similar, about 1.0 LPS or about 0.08 MLD. However, the general guidelines for well development need to be followed to have the optimum and sustainable discharge from this dug well. These include provision of porous well rings for construction (with weep holes), gravel packing in the bottom part (2 to 3 m) of the dug well and provision of a small gap in between two adjacent well rings (Banerjee et al., 1988).

4.3 FEASIBILITY SURVEY FOR CONSTRUCTION OF CHECK WEIRS

A Check Weir (Check Dam in CGWB parlance) is constructed across small streams having width varying from 5 m to 15 m. Check Weirs are constructed in gently sloping tract and are feasible both in hard rock and alluvial areas. The site for construction of a Check Weir should have sufficient thickness of permeable bed or weathered formation to facilitate recharge of stored water within a short span of time. A Check Weir is generally supposed to induce about 50% rainfall recharge, has a storage capacity of 0.20 million cubic metre (about 20 ham) and an average of two fillings in a calendar year (CGWB 2021). However, the site-specific design of a Check Weir is based on stream width, thickness of porous and permeable formation below the stream bed and order of a stream. To prevent scouring due to excess run off (during monsoon), water cushions need to be provided in the downstream side of the Check Weir. In order to harness the peak run off in the stream, series of Check Weirs can be constructed for regional-scale artificial recharge in the catchment. While designing a Check Weir, caution must be taken to ensure its structural stability during the peak flow in the stream, which may also cause bank erosion. The general site characteristics and design guidelines for construction of a Check Weir are as under (CGWB 2021):

- The catchment area of the stream (or *nallah*) should normally be between 40 and 100 ha, although local hydrogeological condition is the most important guiding factor.
- The width of stream (*nallah*) bed should be at least 5 m, but should not exceed 15 m, whereas the depth of stream bed should not be less than 1 m.
- The area downstream of the Check Weir (CW) should be covered under well irrigation.
- The rock strata exposed in the ponded area (upstream side of the CW) should be permeable so that artificial recharge to the shallow aquifer becomes effective through ponded water.
- The CW should not totally block the stream flow during monsoon rains, which means sufficient carrying capacity of the stream (*nallah*) should be ensured.

Based on the proposal for construction of Check Weirs in the municipal area of PBMC, each site was evaluated by the CGWB team, based on ground geological, geomorphological, topographic and hydrogeological condition. Description of the proposed structures is given below:

4.3.1 Check Weir at Hathi Nallah (PBMC Ward No. 23)

Hathi Nallah is a second order, perennial stream that originates from a group of springs in the forested hills in the south-eastern peripheral part of the PBMC municipal area. The stream flows westward and joins Dhanikhari stream, a third order stream on which the biggest water storage

structure for water supply to Port Blair City (the Dhanikhari Dam) is situated. Ground hydrogeological survey was done on 27-6-2023 for assessing feasibility of construction of two Check Weirs (CW) in the stream channel about 100 m east of Andaman Trunk Road. Average width of stream channel in the area is about 4 m. Ground hydrogeological survey shows that four Check Weirs need to be constructed along the stream bed having a length of about 300 m from the upslope of hill (upper side of Hathi Nallah) to the down slope and adjacent to the motorable Andaman Trunk Road.

Two Check Weirs were already recommended by CGWB team in the upstream section of Hathi Nallah (instead of a pond proposed by PBMC), which would form a series of six Check Weirs to uniformly cover the length of stream channel. It was estimated that from the two CWs in upstream section of Hathi Nallah, the water supply potential would be 1.0 ML, considering a stream section area of ~400 m^2 and an effective depth of ~2.5 m of water column that can be potentially harvested. Distance between two CWs in the upstream section may be kept at ~50 m. Height of each CW should be 2 m and Cut Out Trench (COT) should be constructed at the abutments of each weir to have structural stability, as it is reported that Hathi Nallah has a considerable flow during peak monsoon period resulting in a high bank erosion.

It has been estimated that in the downstream section of Hathi Nallah, the area of stream section is ~1200 m^2. Considering the height of 2 m for each of the CWs, the water harvesting potential would be about 3.0 ML. However, the estimates are based on limited hydrogeological survey in the immediate vicinity of the proposed Check Weirs and do not consider the spatial variability in rock types on a regional scale. It is probable that the actual water harvesting potential through the proposed six Check Weirs (both upstream and downstream sections of the Hathi Nallah) would be many times higher than the estimated combined water harvesting potential of ~4.0 ML. Construction of a series of such Check Weirs from the upper side to the lower side of the *nallah* would facilitate shallow recharge to the fractured rock aquifers (~5 m to ~15 m) in the area. The stream catchment has sufficient vegetation cover to preserve soil moisture and to arrest soil erosion during the monsoon period. Instead of constructing RCC Check Weirs, Vegetative Check Weirs (Vegetative Barriers) are recommended. Locally available boulders may be packed using stainless steel wire and intervening voids should be effectively sealed off with plantation. Pilot studies in Peninsular India has shown that life span of a Vegetative CW is much higher than conventional RCC CW. The cost of construction of a Vegetative CW is also much less than RCC CW. A pilot study on artificial recharge using such low-cost, low-tech bio-engineering structure may be taken up both in the upstream and downstream of Hathi Nallah. Field photo of the site is shown in **Fig. 4.20.** As the Vegetative Barriers (Vegetative check Weirs) are environment friendly, the technique will be a classic example of Managed Aquifer Recharge in the Port Blair Urban Area.



Fig. 4.20 Hydrogeological survey for assessing feasibility of construction of Check Weirs in the downstream side of Hathi Nallah. Instead of 2 Check Weirs proposed by PBMC at this site, a series of four Check Weirs may be constructed.

4.3.2 Check Weir at Attam Pahad Nallah, near Birsa Nagar (PBMC Ward No. 18)

The hydrogeological survey to the site for assessing suitability for constructing two Check Weirs was completed along with Sh. Chinna Rao, representative from the PBMC. The site can be approached from Pahargaon via ICMR Road and then via Birsa Nagar Colony via Children's Park. There is a proposal to construct two Check Weirs along a second order, perennial stream (locally known as Attam Pahad Nallah), for which a geological traverse on foot track passing via APWD Pump House (newly built, not commissioned) for about 300 m was done. Co-ordinate of the proposed site, pinpointed using Garmin E Trex 30 portable, handheld GPS receiver, is as follows:

11.63637 °N, 92.70213 °E, Altitude: 1 ± 3 m

The elevation difference between the *nallah* section and main approach road (motorable) is about 45 m. Length of stream section in the proposed site is about 500 m, along which two Check Weirs, each of 2 m height, may be constructed. Average width of stream channel in the proposed site is ~3 m, which is sufficient for construction of two RCC Check Weirs (or Vegetative Check Weirs) at ~50 m from each other. During field survey, it was not possible to measure the actual length of *nallah* section that would be benefited by artificial recharge due to accessibility problem. Therefore, an estimate of catchment area of the stream (Attam Pahad Nallah) was not attempted. A large diameter (4 m) open Dug Well is situated on the left bank of Attam Pahad Nallah. The Dug Well was constructed by the APWD for water supply through the nearby pump house, which was yet to be commissioned at the time of field visit (July 2023). After construction of the Check Weirs, there is a need to periodically monitor the groundwater level in the Dug Well. The measurement should be at least twice in a year (during pre-monsoon and post-monsoon) to assess the impact of artificial recharge to the shallow, fractured aquifer in the catchment area of Attam Pahad Nallah. Due to the inherently sluggish process of groundwater recharge, the actual impact of recharge would be visible through gradual rise in groundwater level in the nearby monitoring wells. The monitoring of groundwater level should be continuously done for two to three years to assess the groundwater recharge into the

shallow aquifers of the area. Like the CWs at Hathi Nallah, a pilot study on Managed Aquifer Recharge through construction of two Vegetative Check Weirs using stainless steel wire mess, locally available boulders and local plantation is recommended. There is an increasing need for adopting low-cost, low-tech, nature-based solutions for augmentation of groundwater potential through Managed Aquifer Recharge. Field photo of the site is shown in **Fig. 4.21.**



Fig. 4.21 Hydrogeological survey at Attam Pahad Nallah site. The *Nallah* section for proposed Check Weir construction is on the left.

5. GEOPHYSICAL SURVEY FOR ASSESSING FEASIBILITY OF BORE WELLS

During the special study on water scarcity in Port Blair Urban Area, a total of 22 Vertical Electrical Soundings (VES) were completed by a team of Geophysicists at 11 locations. The team comprises Dr. K. C. Mondal, Scientist-D (Geophysics) and Sh. Sujit Sarkar, Scientist-D (Geophysics). The study was conducted during June-July 2023 covering an area of 41 km^2 as specified by the PBMC Authority. The aim of the VES was to determine presence of freshwater bearing zones in the study area. An attempt was made to pinpoint exact locations for further drilling with recommended drilling depth for sustainable water supply. A Google Earth map showing the locations of VES sites in the Port Blair Urban Area is shown in **Fig. 5.1.** The figure reveals that the VES sites are more or less uniformly distributed in the municipal area.

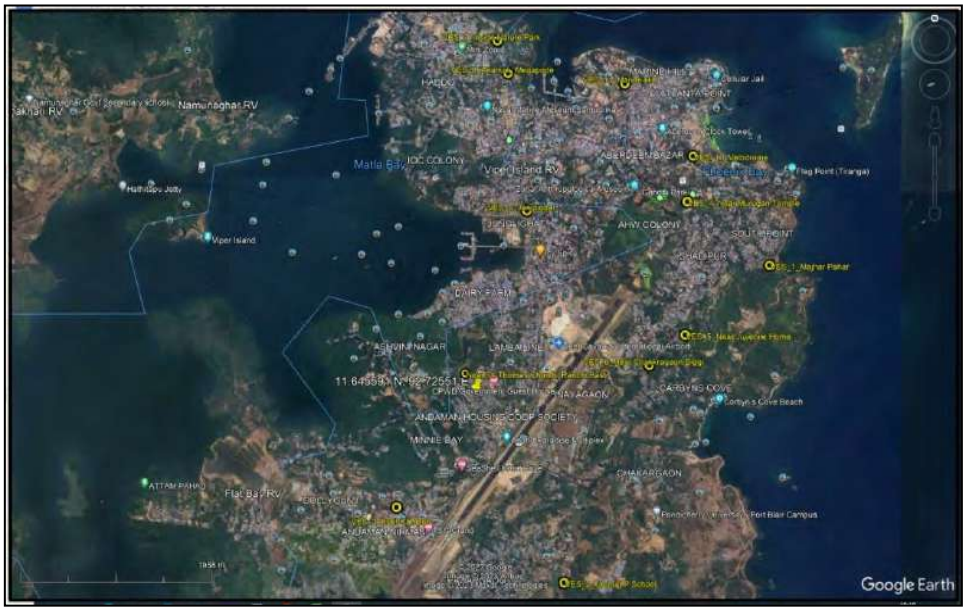


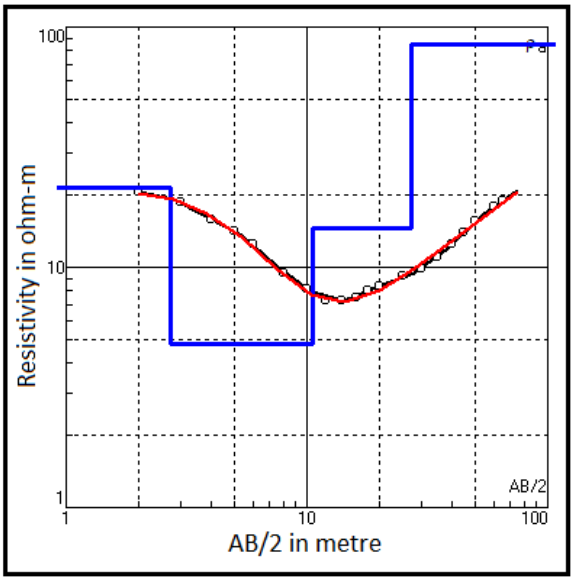
Fig. 5.1 Location of VES Sites for assessing feasibility of Bore Well construction in the Port Blair Urban Area

The geophysical investigations were conducted at all locations with maximum current electrodes spacing (AB) of 200 m deploying resistivity meter CRM-500 (Auto C). The typical resistivity sounding curves in the study area are of 'H' type, 'K' type, 'A' type, 'HA' type, 'KH' type, 'HK' type and 'QH' type. The VES data was interpreted by 1-D inversion technique using software 'IPI2WIN'. Preliminary values of the model parameters are obtained by matching the VES field curves with the theoretical master curves and auxiliary point charts. The refined model parameters are subsequently used as input (starting model) in 'IPI2WIN' for further refinement of results obtained by using the 1-D inversion algorithm. Resistivity of different layers and corresponding thicknesses are reproduced by several iterations until the model parameters of all VES curves are totally resolved with minimum RMS error. The results of VES are interpreted in terms of subsurface geology and aquifer characteristics under prevailing hydrodynamic conditions.

After interpretation of VES data, it is found that resistivity of the first geo-electric layer (topsoil) was varying from 1.2 to 51.0 ohm-m, whereas the layer thickness was varying from 1.20 to 4.30 m. Resistivity of the second geo-electric layer was ranging from 1.10 to 34.50 ohm-m indicating occurrence of saturated brackish water zones along with freshwater zones. The layer thickness was varying from 2.40 to 15.50 m. Resistivity of the third geo-electric layer was varying from 0.65 to 85.0 ohm-m, indicating both saline and fresh saturated formations. Thickness of the third geo-electric layer was ranging from 7.50 to 33.0 m. Resistivity of the fourth (bottom most) layer was varying from 2.60 to 125.00 ohm-m, which indicates brackish saturated formations (Mithakhari Formation) and fresh saturated formation in the fractured volcanic rocks of the Ophiolite Group. The VES interpreted results are summarised under **Table 5.1** to **Table 5.12,** whereas the VES curves are shown under **Fig. 5.2** to **Fig. 5.13.**

Table 5.1. Layer resistivity and interpreted lithology at Government Primary School, South Point (VES 1 and 2), PBMC Ward No. 11, Port Blair

Layer No.	Resistivity (ohm-m)	Thickness (m)	Depth (m)	Lithology
I.	21.40	2.70	2.70	Topsoil
II.	4.80	7.90	10.60	Weathered Formation
III.	14.50	16.60	27.20	Fractured Formation
IV.	85.0	---	---	Semi-consolidated Volcanics



Fracture Zones identified: i) 14 m bgl – 25 m bgl, ii) 60 m bgl – 65 m bgl

Fig. 5.2 Interpreted VES Curve at Government Primary School, South Point (near Mazar)

Table 5.2 Layer resistivity and interpreted lithology inside Ummat Public School (VES 3 and 4), PBMC Ward No. 21, Port Blair

Layer No.	Resistivity (ohm-m)	Thickness (m)	Depth (m)	Lithology
I.	12.70	1.40	1.40	Topsoil
II.	9.10	3.20	4.60	Weathered Formation
III.	13.50	33.00	37.60	Highly Fractured Formation (Volcanics)
IV.	24.0	---	---	Fractured Formation (Volcanics)

Fracture Zones identified: i) 20 m bgl – 25 m bgl, ii) 50 m bgl – 70 m bgl

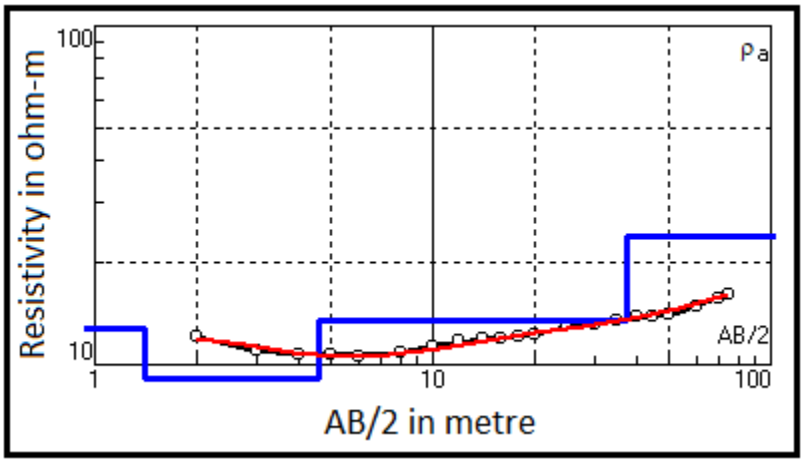


Fig. 5.3 Interpreted VES Curve at Ummat Public School, Port Blair

Table 5.3 Layer resistivity and interpreted lithology at Pahargaon, near BRAIT Second Gate (VES 5 and 6), PBMC Ward No. 17, Port Blair

Layer No.	Resistivity (ohm-m)	Thickness (m)	Depth (m)	Lithology
I.	14.0	1.90	1.90	Topsoil
II.	1.40	15.50	17.40	Weathered Formation saturated with brackish water
III.	4.0	----	----	Fractured Formation saturated with brackish water

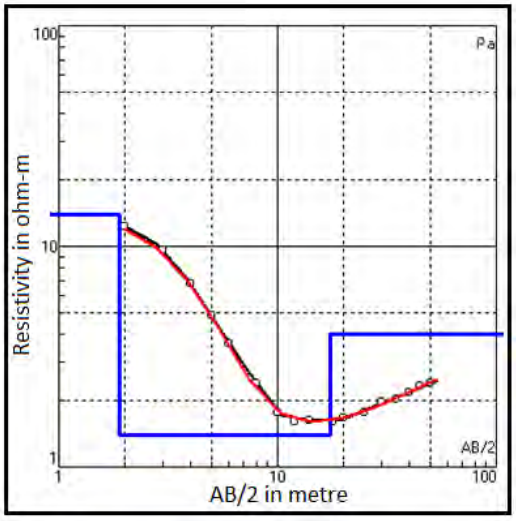


Fig. 5.4 Interpreted VES Curve at Pahargaon, near BRAIT Second Gate, Port Blair

Table 5.4 Layer resistivity and interpreted lithology at Murugan Temple Compound, Shadipur (VES 7 and 8), PBMC Ward No. 10, Port Blair

Layer No.	Resistivity (ohm-m)	Thickness (m)	Depth (m)	Lithology
I.	42.50	3.80	3.80	Topsoil
II.	8.0	3.60	7.40	Weathered formation (clayey)
III.	48.00	12.80	20.20	Fractured formation saturated with fresh water
IV.	3.0	---	---	Fractured formation (Mithakhari Formation) saturated with brackish water

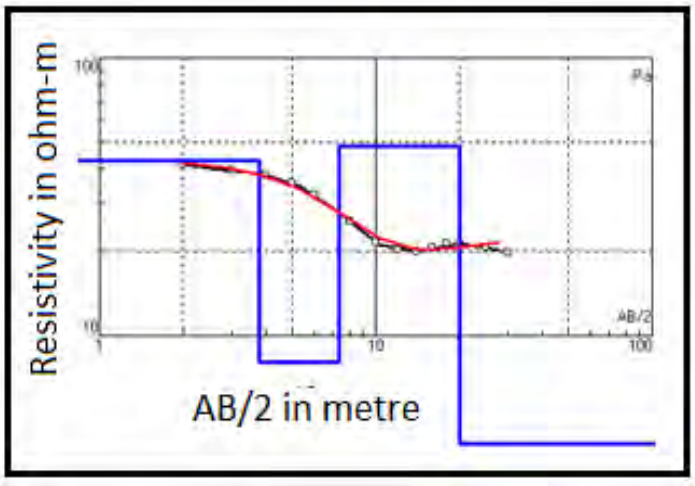


Fig. 5.5 Interpreted VES Curve at Murugan Temple Compound, Shadipur, Port Blair

Table 5.5 Layer resistivity and interpreted lithology in the back side of Children's Jail, Nayagaon (VES 9 and 10), PBMC Ward No. 12, Port Blair

Layer No.	Resistivity (ohm-m)	Thickness (m)	Depth (m)	Lithology
I.	7.50	1.20	1.20	Topsoil
II.	2.50	3.10	4.30	Weathered formation
III.	14.00	8.50	12.80	Semi-consolidated formation
IV.	7.50	---	---	Fractured formation (Mithakhari Formation) saturated with brackish water

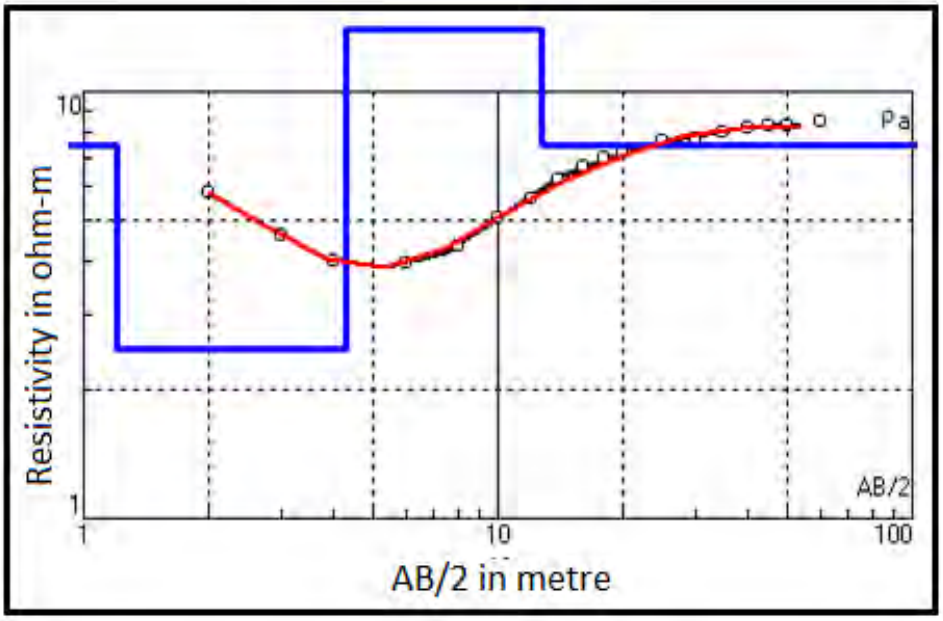


Fig. 5.6 Interpreted VES Curve near Children's Jail, Nayagaon, Port Blair

Table 5.6 Layer resistivity and interpreted lithology at the location opposite to Forest Nursery, Nayagaon (VES 11 and 12), PBMC Ward No. 12, Port Blair

Layer No.	Resistivity (ohm-m)	Thickness (m)	Depth (m)	Lithology
I.	2.40	4.20	4.20	Topsoil
II.	12.30	6.80	11.00	Weathered formation
III.	2.60	---	---	Fractured formation (Mithakhari Formation) saturated with brackish water

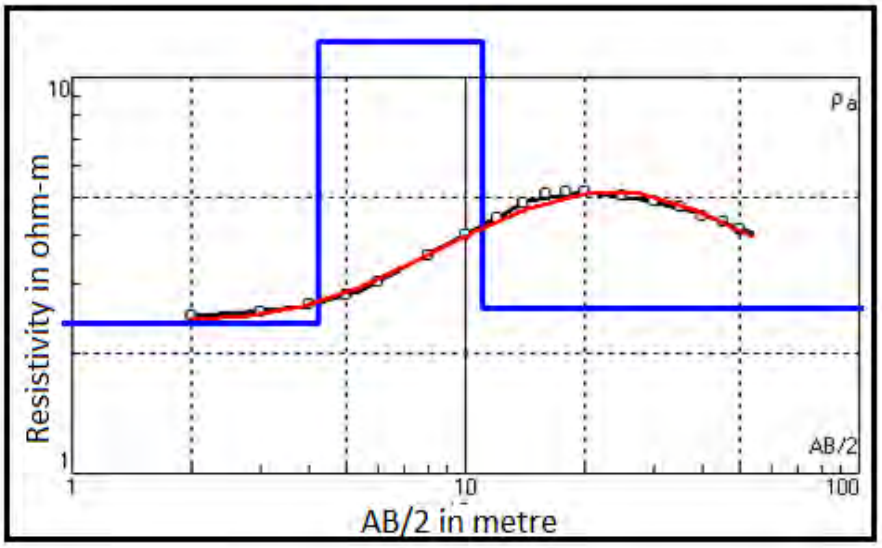


Fig. 5.7 Interpreted VES Curve, opposite to Nayagaon Forest Nursery, Port Blair

Table 5.7 Layer resistivity and interpreted lithology at Anarkali, adjacent to Megapode Road (VES 13 and 14), PBMC Ward No. 3, Port Blair

Layer No.	Resistivity (ohm-m)	Thickness (m)	Depth (m)	Lithology
I.	15.20	1.20	1.20	Topsoil
II.	23.0	4.0	5.20	Weathered formation
III.	8.20	20.50	25.70	Semi-consolidated formation (clayey)
IV.	33.20	---	---	Fractured formation, saturated with fresh water

Fracture Zone identified: i) 35 m bgl – 45 m bgl

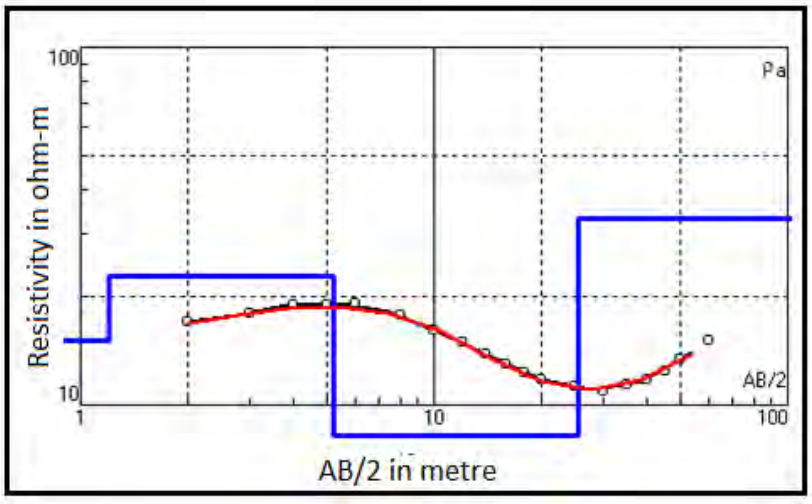


Fig. 5.8 Interpreted VES Curve at Anarkali (adjacent to Megapode Road), Port Blair

Table 5.8 Layer resistivity and interpreted lithology inside Nature Park, Haddo (VES 15 and 16), PBMC Ward No. 2, Port Blair

Layer No.	Resistivity (ohm-m)	Thickness (m)	Depth (m)	Lithology
I.	26.00	1.70	1.70	Topsoil
II.	34.50	6.50	8.20	Semi-weathered formation
III.	9.0	14.20	22.40	Highly weathered formation
IV.	42.00	---	---	Fractured formation saturated with freshwater

Fracture Zones identified: i) 30 m bgl – 35 m bgl, ii) 50 m bgl – 60 m bgl

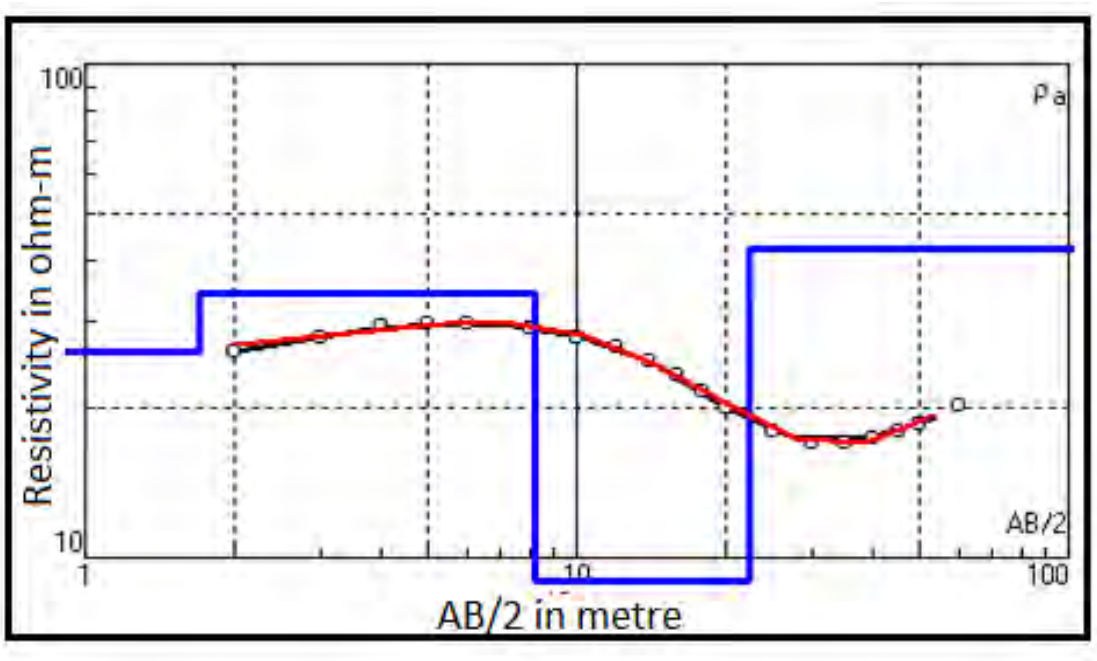


Fig. 5.9 Interpreted VES Curve inside Nature Park, Haddo, Port Blair

Table 5.9 Layer resistivity and interpreted lithology at APWD land, behind Kalyana Mandapam (VES 17 and 18), PBMC Ward No. 7, Port Blair

Layer No.	Resistivity (ohm-m)	Thickness (m)	Depth (m)	Lithology
I.	5.80	1.40	1.40	Topsoil
II.	1.20	4.10	5.50	Weathered Formation
III.	0.65	10.20	15.70	Highly fractured formation (Mithakhari Formation), saturated with saline water
IV.	5.80	---	---	Highly fractured formation (Mithakhari Formation), saturated with brackish water

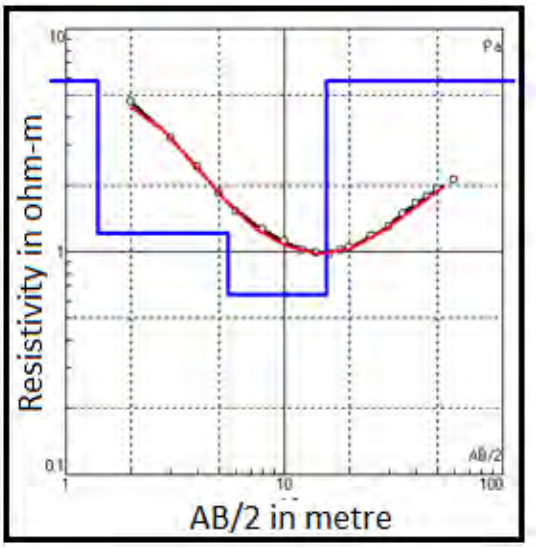


Fig. 5.10 Interpreted VES Curve near Kalyana Mandapam, PBMC Ward No. 7, Port Blair

Table 5.10. Layer resistivity and interpreted lithology near Velodrome, Aberdeen Bazar (VES 19 and 20), PBMC Ward No. 5, Port Blair

Layers	Resistivity (ohm-m)	Thickness (m)	Depth (m)	Lithology
I.	3.20	1.70	1.70	Topsoil
II.	1.10	2.40	4.10	Weathered formation
III.	4.80	7.50	11.60	Fractured formation (Mithakhari Formation) saturated with brackish water
IV.	7.50	---	---	Fractured formation (Mithakhari Formation) saturated with brackish water

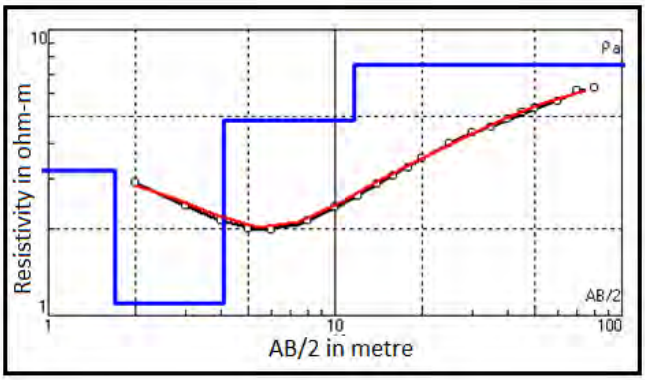
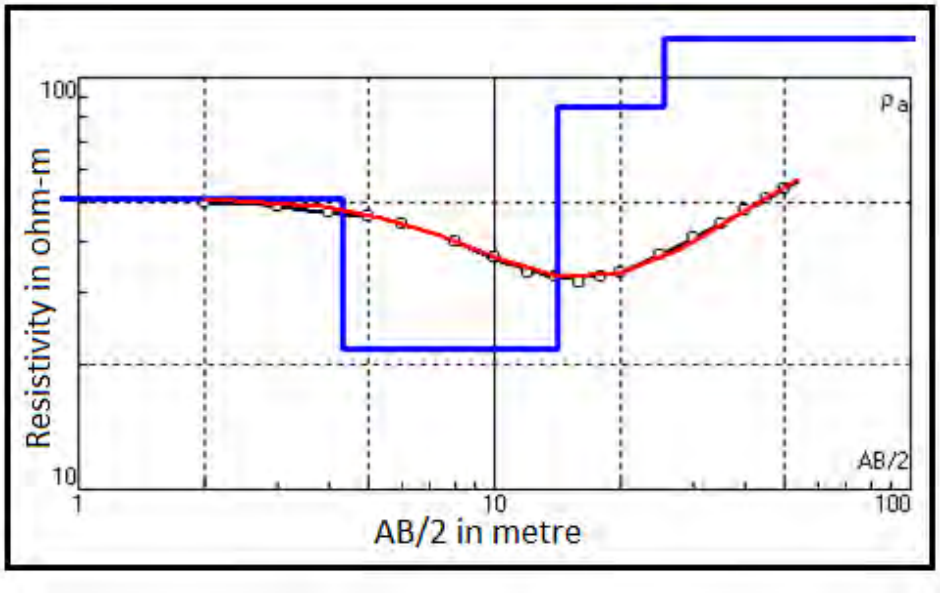


Fig. 5.11 Interpreted VES Curve near Velodrome, Aberdeen Bazar, Port Blair

Table 5.11. Layer resistivity and interpreted lithology near Old APWD Quarters, Marine Hill (VES 21 and 22), PBMC Ward No. 5, Port Blair

Layers	Resistivity (ohm-m)	Thickness (m)	Depth (m)	Lithology
I.	51.00	4.30	4.30	Topsoil
II.	22.00	9.90	14.20	Weathered formation
III.	85.0	11.50	25.70	Fractured formation saturated with freshwater
IV.	125.00	--	--	Semi-consolidated formation saturated with freshwater



Fracture Zones identified: i) 30 m bgl – 40 m bgl ii) 45 m bgl – 50 m bgl

Fig. 5.12 Interpreted VES Curve near Old APWD Quarters, Marine Hill, Port Blair

True resistivity contour maps were prepared for three geoelectric layers, based on analysis of interpretation of Vertical Electrical Sounding (VES) in the PBMC area, Port Blair. The VES surveys involve injecting electric current into the ground and measuring the resulting voltage to determine resistivity of the subsurface formations. The data collected from VES surveys are then processed and interpolated to create the contour map. A true resistivity contour map displays contours representing the distribution of true resistivity values within a specific subsurface region. True resistivity is a measure of a material's inherent resistance to electric current flow. It is an important parameter in geophysics, particularly in applications like electrical resistivity sounding, which is used to study the subsurface properties of the Earth, including identifying geologic layers, detecting groundwater, and locating buried objects. The true resistivity contour maps for the second layer (**Fig. 5.13**), for the third layer (**Fig. 5.14**) and for the fourth (bottom most) layer (**Fig. 5.15**) were prepared using Surfer software.

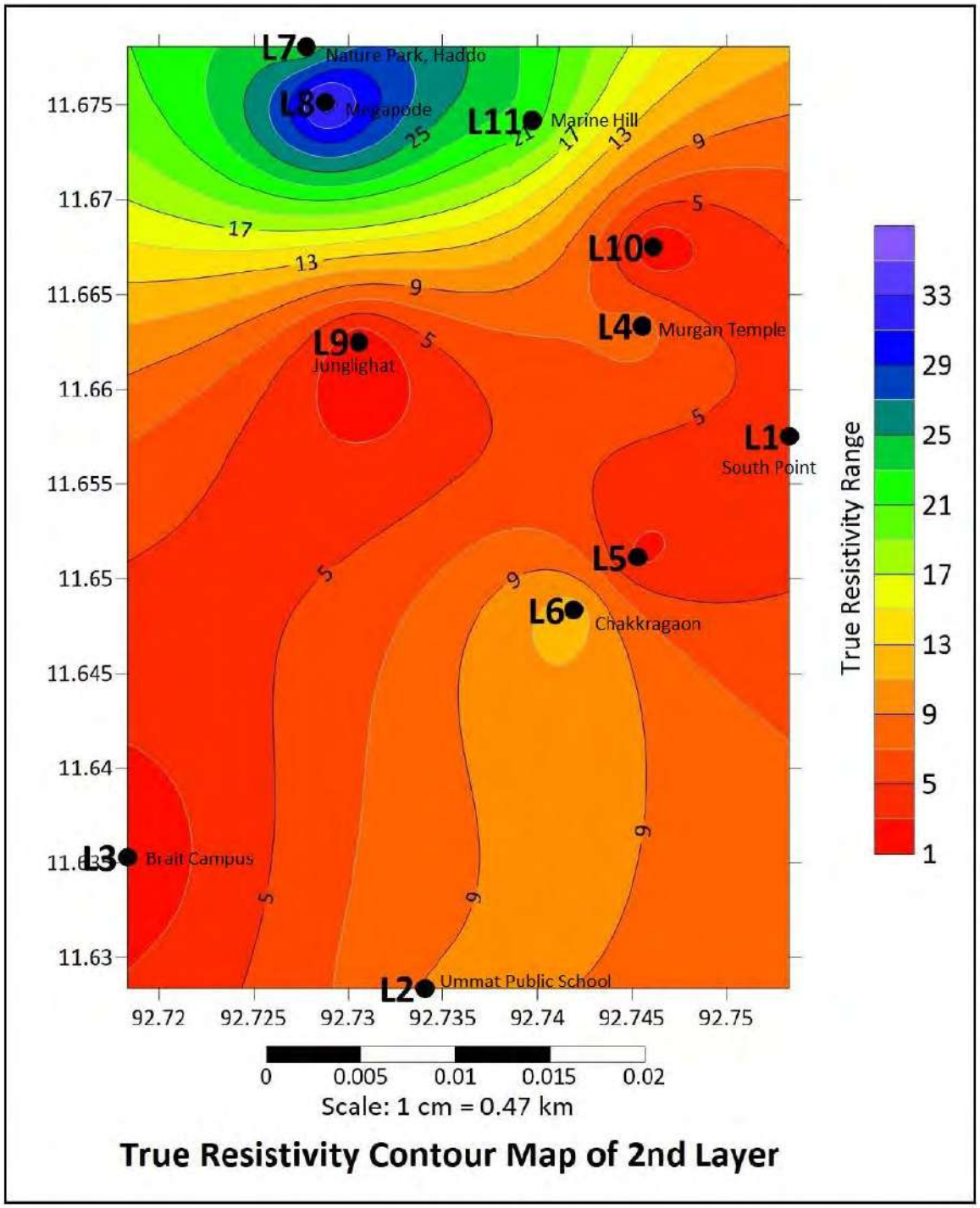


Fig. 5.13 True Resistivity Contour Map of Second Layer, PBMC area

From the true resistivity contour map of the second layer (weathered formation) shown in **Fig. 5.13**, it is envisaged that weathered formation is mainly sandy nature at north-western part and some locales in the southern part of the study area with the resistivity ranges from 15 ohm-m to 45 ohm-m. indicated by cooler colour. Rest of the study area is representing

clayey nature of the weathered formation with a resistivity vaue below 15 ohm-m indicated by warmer colour.

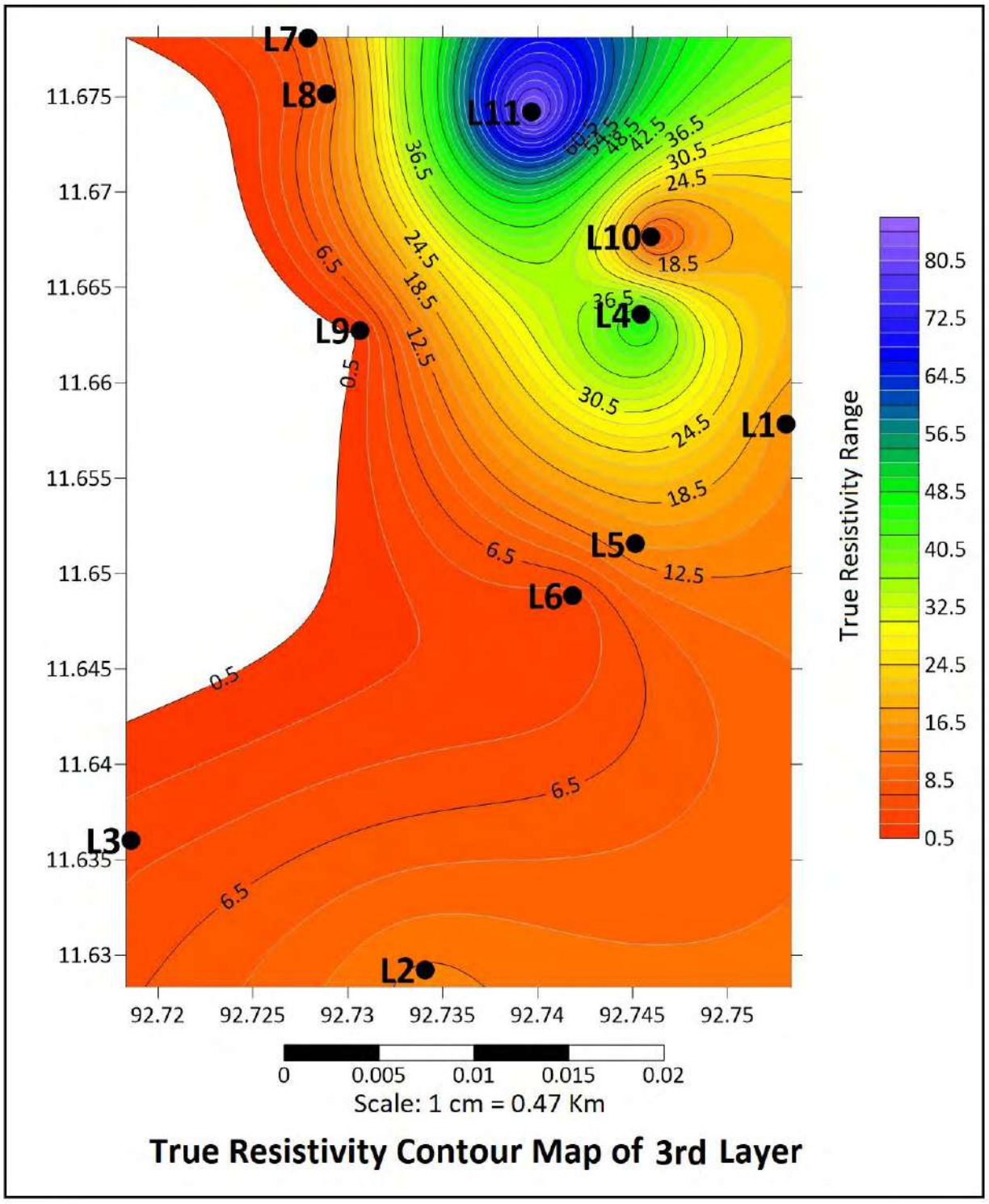


Fig. 5.14 True Resistivity Contour Map of Third Layer, PBMC area

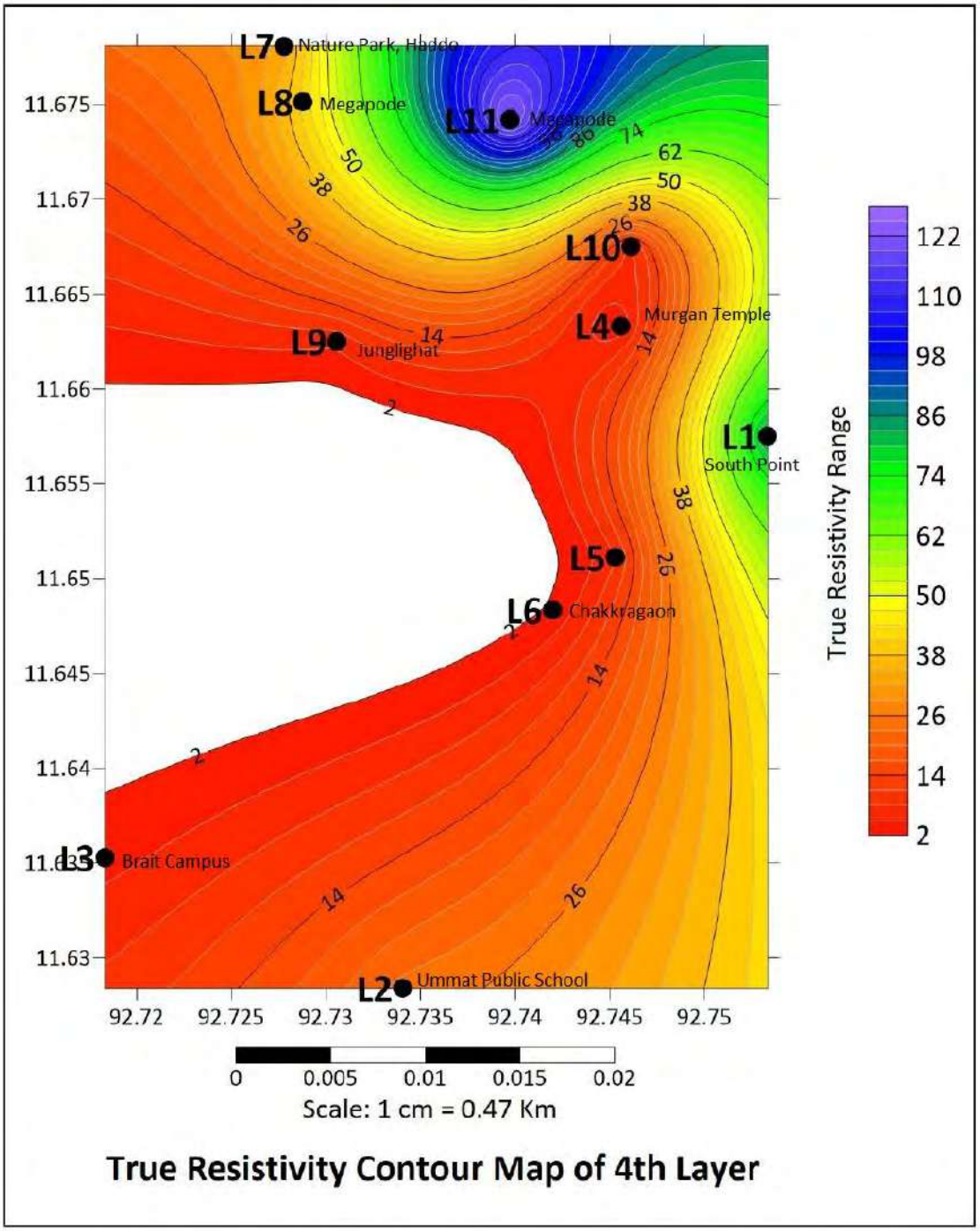


Fig. 5.15 True Resistivity Contour Map of Fourth (Bottom Most) Layer, PBMC area

From the true resistivity contour map of the fourth layer (compact formation) shown in **Fig. 5.15**, it is envisaged that poential fresh groundwater exists in the fractured formation in the north-easten, eastern and south-eastern parts of the study area, where the resistivity ranges from 30 ohm-m to 130 ohm-m. The zones are indicated by cooler colour. Rest of the study area is representing brackish to saline water formation with a resistivity vaue below 15 ohm-m indicated by warmer colour.

From the interpreted results of **Table 5.1** to **Table 5.11,** geo-electric sections and layer-wise True Resistivity Contour Maps, it is concluded that potential fresh ground water bearing zones have been identified at deeper level down to the depth ranges from 55.0 m to 75.0 m at five locations within the study area.The locations are:

Location 1: Inside Government Primary School, South Point (near Mazar)
Location 2: In Ummat Public School
Location 3: Adjacent to Megapode Road, Anarkali
Location 4: Inside Nature Park, Haddo
Location 5: Near Old APWD Quarters, Marine Hill.

Besides these locations, two locations have been identified based on interpreted VES result, for construction of shallow bore wells (depth < 30 m) for tapping the potable freshwater aquifer within the weathered zone. The locations are:

Location 6: Near Murugan Temple Compound, Shadipur
Location 7: Near Saint Thomas Church, Ranchi Basti

A summary of the recommendations based on interpreted result of Vertical Electric Sounding (VES) in Port Blair Urban Area is given in **Table 5. 12.**

Table 5.12. Summary of Recommendations of the VES Study, Port Blair Urban Area

Sl. No.	Type of source	Location	PBMC Ward No.	Latitude	Longitude	Recommendations
1	Bore Well	Inside Govt. Primary School, South Point (Near Mazar)	11	11.657500	92.753333	Recommended for drilling down to a depth of 70.0 m
2	Bore Well	In Ummat Public School	21	11.628350	92.734050	Recommended for drilling down to a depth of 75.0 m
3	Bore Well	Pahargaon, near Second Gate of Dr. Bhimrao Ambedkar Institute of Technology (DBRAIT)	15	11.635278	92.718333	No drilling is recommended in this location
4	Bore Well	Murgan Temple Compound, near Vanvasi Kalyan Ashram, Shadipur	10	11.663333	92.745556	Recommended for drilling down to a depth of 20.0 m. Perforated casing assembly should be used.
5	Bore Well	Back side of Children's Jail, Nayagaon	12	11.651111	92.745278	No drilling is recommended in this location
6	Bore Well	Nayagaon, opposite Forest Nursery and near Pillu House	13	11.648333	92.741944	No drilling is recommended in this location
7	Bore Well	Adjacent to Megapode Road, Anarkali	3	11.6781	92.7278	Recommended for drilling down to a depth of 60.0 m

8	Bore Well	Inside Nature Park, Haddo	2	11.678056	92.727778	Recommended for drilling down to the depth of 65.0 m
9	Bore Well	APWD land, behind Kalyana Mandapam	7	11.662500	92.730556	No drilling is recommended in this location
10	Bore Well	Velodrome, Aberdeen Bazar	5	11.667500	92.746111	No drilling is recommended in this location
11	Bore Well	Near Shakti Amman Temple, Old APWD Quarters, Marine Hill	5	11.674167	92.739722	Recommended for drilling down to a depth of 55.0 m
12	Bore Well	Near roadside of Saint Thomas Catholic Church at Ranchi Basti	15	11.647573	92.724761	VES was not possible due to space constraint. However, 30.0 m drilling is recommended based on field study. Perforated casing pipe should be used.
13	Bore Well	Near Police Station, Chatham	2	NA	NA	Permission not given for VES at Chatham Jetty area by the Port Trust Authority.

6. DISCUSSIONS

Considering the latest population estimates and recommended guidelines on *Jal Jeevan Mission – Har Ghar Jal* of the Ministry of Jal Shakti, the daily peak water requirement in Port Blair Urban Area (Year: 2023) was estimated at 9.80 million litre per day (MLD). The requirement was estimated based on peak population of 178000, which includes resident population of 148000 and peak floating (tourist) population of 30000 (see Chapter 1). Out of twelve locations proposed by the Port Blair Municipal Council (PBMC), seven locations were found feasible for construction of shallow (<30 m) and deep (>50 m) Bore Wells. The locations include an additional feasible site for Bore Well inside the Government Primary School, South Point located in PBMC Ward No. 11. Based on the yield (in MLD) of the feasible Bore Wells and considering that all of them are suitable for supply round the year, the annual yield potential of the feasible Bore Wells was estimated.

It has been reported by the Andaman administration that both the magnitude and duration of winter rainfall in the area in and around Port Blair City has decreased substantially over the last decade. However, quantitative estimates of the long-term rainfall variability are not readily available. Detailed climatological modeling is required to establish the actual pattern of long-term rainfall variation in the Port Blair Urban Area. Based on the survey by the CGWB team, the raw database given by the PBMC was modified, which is summarized in **Annexure-V.** For judicious water resources management, a comprehensive water policy for the island needs to be developed (Srivastava and Ambast, 2009).

A comprehensive analysis of the VES survey, ground hydrogeological, geological and topographic survey, combined with interpretation of Google Earth maps and analysis of available exploratory drilling data of CGWB has revealed that Bore Well construction is feasible at seven sites in PBMC Ward No. 2, 3, 5, 10, 11, 14 and 21. Construction of open Dug Wells is feasible at seven locations in PBMC Ward No. 11, 12 and 22. Construction of Ponds for rainwater storage and subsequent water supply is feasible in twelve locations falling in PBMC Ward No. 11, 17, 18, 19, 20, 22 and 24. Four locations were found feasible for construction of total 10 Check Weirs, out of which two sites are located along stream section of the perennial Hathi Nallah (one upstream and the other downstream) falling in PBMC Ward No. 23. The remaining two sites for Check Weir construction were selected along stream sections of Pathergudda Nallah and Attam Pahad Nallah. In each of these streams, two Check Weirs are feasible.

The raw data furnished by PBMC reveals that yield (in MLD) is widely variable across the municipal area, ranging from 0.03 MLD at Marine Hill to 0.20 MLD at Shadipur. The basis for such widely variable discharge in the Bore Wells was not found to be scientifically justified from geological, hydrogeological, geomorphic, hydrological and geophysical perspective. This necessitated re-calculation of the discharge based on available hydrogeological information generated during exploratory drilling in the Port Blair Urban Area (PBUA) by the CGWB. However, it is emphasized that actual yield (discharge) after construction of each of the Bore Wells and the Dug Wells may be similar or may differ from the estimated discharge potential. The authors have considered a conservative estimate of 1 litre per second (LPS) or about 0.09

MLD as the standard, uniform discharge of the Bore Wells. The justification for 1 LPS as standard discharge (yield) is the occurrence of less potential sedimentary rocks like greywacke, black shale and siltstone of the Mithakhari Formation and Andaman Flysch Group in PBUA. The permeability of the rocks is low due to high clay content in rock matrix, and as such, they are not the potential aquifers (Gayen 2015). Exploratory drilling by CGWB within PBUA has shown compressor discharge varying from 0.50 LPS at Brichgunj to a maximum of 4.72 LPS at Protherapore (near Jail Junction). However, on an average, the most probable and sustainable discharge would be about 1.0 LPS or 0.09 MLD.

Apart from the Bore Wells, the water supply potential of the open Dug Wells, Ponds and the Check Weirs (Check Dam in CGWB parlance) was analyzed in detail. For the Dug Wells, available data in CGWB technical reports and data of Andaman Public Works Department (APWD) were used to estimate the discharge potential in million litre per day (MLD). Based on local hydrogeological condition, depth of weathered zone and proximity to natural drainage channels, the expected discharge of Dug Wells was found to vary from 0.01 LPS to 0.09 LPS. The data on expected daily discharge of Dug Wells and expected annual discharge are clubbed with similar data for the Bore Wells. The combined estimates of water supply potential from the Bore Wells and the open, large diameter Dug Wells are summarized in **Table 6.1.** The table shows that seven Bore Wells and seven open Dug Wells are feasible in the municipal area of Port Blair City. The actual discharge of the Bore Wells and the Dug Wells may vary from the expected discharge; although variation in discharge after field testing is expected to be within ±10% of the estimated discharge given in **Table 6.1.**

Table 6.1 Water Supply Potential of Bore Wells and Dug Wells, Port Blair Urban Area

Sl. No.	Location	PBMC Ward No.	Yield Potential (MLD)	Annual Yield Potential (ML)	Remarks
For Bore Wells					
1.	Inside Ummat Public School	21	0.09	32.85	Bore Well feasibility confirmed from geophysical survey
2.	Murugan Temple Compound, near Vanvasi Kalyana Ashram, Shadipur	10	0.09	32.85	
3.	Adjacent to Megapode Road, Anarkali	3	0.09	32.85	
4.	Inside Nature Park, Haddo	2	0.09	32.85	
5.	Near Shakti Amman Temple, Old APWD Quarters, Marine Hill	5	0.09	32.85	
6.	Near road side of St. Thomas Church, Ranchi Basti	15	0.09	32.85	
7.	Additional Site: Inside Government School, South Point (near Mazar)	11	0.09	32.85	

Cumulative Yield Potential of Bore Wells			**0.63**	**229.95**	**Actual yield may vary after construction of the Bore Wells**
For Open Dug Wells					
8.	On Dr. B.G. Lal Road, near Kasim's House	11	0.01	3.65	Feasibility confirmed from hydrogeological survey
9.	About 100 m east of Police Line Main Gate, approach towards Joggers Park	12	0.26	94.90	Dug Well recommended instead of Junglighat, VIP Road
10.	Near Brookshabad Government School and adjacent to Typhil's house	22	0.085	31.03	Potential is ~2.5 times than that quoted by PBMC
11.	Adjacent to Police Training School, Brichgunj	22	0.08	29.20	Existing Dug Well of PBMC
12.	Inside the Police Training School, Brichgunj	22	0.08	29.20	Existing Dug Well of APWD
13.	Besides Sewage Treatment Site of PBMC, Brookshabad	22	0.09	32.85	Dug Well feasible instead of Pond
14.	Near Surya Rao Quarry, opposite to M/s Maruti Borewells	22	0.09	32.85	Dug Well with stream rejuvenation is more feasible than Pond
Cumulative Yield Potential of Dug Wells			**0.695**	**253.68**	**Actual yield may vary after construction and field testing**
Cumulative Yield Potential of Bore Wells and Open Dug Wells				**483.63 ML**	

Using the database given in the above table, the estimated annual water supply potential from the Bore Wells and the open Dug Wells would be:

Water supply potential from the Bore Wells (7 nos.): 229.95 ML, Rounded Off to 230 ML

Water supply potential from the Dug Wells (7 nos.): 253.68 ML, Rounded Off to 254 ML

Total estimated annual water supply potential from the Bore Wells and Dug Wells: 484 ML

Daily estimated water supply from the Bore Wells and Dug Wells: 1.33 MLD

The water supply potential from the Ponds and the Check Weirs (in million litre, ML) has been estimated on the basis of ground hydrogeological survey with input data provided by the PBMC. The survey has revealed the feasibility for construction of 12 Ponds and a series of Check Weirs (ranging from 2 to 4 Check Weirs) at four locations within the Municipal Wards of Port Blair. While considering water harvesting potential in the Ponds, the average number of filling has been taken as four as Port Blair City is benefited by rainfall both during the monsoon

period (south-west monsoon) and during the winter months (north-east monsoon). There is also ample scope of developing many of the existing and proposed Ponds as "*Amrit Sarovars"* following the recommended guidelines of the National Water Mission, Ministry of Jal Shakti. The actual storage (water harvesting) potential) of the Ponds and estimated water conservation potential of the proposed Check Weirs at four locations are summarized in **Table 6.2.** It is pertinent to mention that each Check Weir would contribute to shallow recharge to the weathered and fractured aquifers in the catchments of perennial streams or *nallahs.* Managed Aquifer Recharge through the proposed Check Weirs is inherently an extremely slow physical process. It was neither possible to estimate base flow in the perennial streams nor to quantify the volume of water recharged into the aquifers through vertical and lateral flow.

Table 6.2 Water Supply Potential of Ponds and Check Weirs, Port Blair Urban Area

Sl. No.	Location	PBMC Ward No.	Water Harvesting (Supply) Potential (ML)	Annual Water Supply Potential (ML)	Remarks
For Ponds					
1.	Inside Radha Gobinda Temple, adjacent to RGT Public School	11	2.10	8.40	Pond finalized instead of proposed Dug Well at Govt. Girl's Senior Secondary School, near Aberdeen Bazar
2.	Dollygunj, near Segregation Centre	17	68.0	272.0	Storage potential of Ponds assessed during hydrogeological survey
3.	Near Shiv Mandir, Dollygunj on National Highway 6	17	32.0	128.0	
4.	Behind Vegetable Market, Bathu Basti	19	40.0	160.0	
5.	Pahargaon, opposite to playground	20	8.5	34.0	
6.	Near Shiv Temple, New Pahargaon	20	8.0	32.0	
7.	Near Kamaraj School, New Pahargaon	20	2.8	11.2	
8.	Inside Police Training School, Brichgunj	22	14.5	58.0	
9.	Adjacent to Brichgunj Quarry	22	1.1	4.4	
10.	Near Teachers Training Institute Colony, Garacharma	18	1.05	4.2	
11.	Near Forest Ranger's Office, Garacharma	24	12.0	48.0	
12.	Rajaji Nagar, Garacharma	24	2.7	10.8	

Cumulative Water Supply Potential from Ponds				**771.0 ML**	**Actual water supply potential may vary after construction of the Ponds.**
For Check Weirs					
13.	About 100 m east of Chennai Thalapakattu (Restaurant), near Pathergudda Colony	19	5.0	1825.0	Water harvesting/supply potential assessed based on ground hydrogeological survey. Impact of indirect benefit through artificial recharge of groundwater in the weathered/fractured aquifers could not be quantified.
14.	Upstream section of Hathi Nallah	23	1.0	365.0	
15.	Downstream section of Hathi Nallah	23	3.0	1095.0	
16.	Attam Pahad (Near Birsa Nagar Colony)	24	0.4	146.0	
Cumulative Water Supply Potential from the Check Weirs				**3431.0 ML**	**Mostly beneficial for artificial recharge (indirect/intangible benefit)**
Cumulative Estimated Water Supply Potential from the Ponds and Check Weirs				**4202.0 ML**	

Using the database given in **Table 6.2,** the estimated water supply potential of the Ponds and the Check Weirs are estimated, which is given below:

Water supply potential of the Ponds (12 nos.): 771 ML

Water supply potential of the Check Weirs at 4 locations (in addition to increased water availability through artificial recharge): 3431 ML

Total estimated freshwater supply from the Ponds and the Check Weirs: 4202 ML

Daily estimated water supply from the Ponds and the Check Weirs: 11.51 MLD

A comparison of cumulative water supply potential given in **Table 6.1** and **Table 6.2** indicates that water supply potential of the Ponds and the Check Weirs is about 8.7 times higher than the combined water supply potential from the Bore Wells and the open Dug Wells. Thus, it can be concluded that construction of water conservation structures would be more beneficial than construction of groundwater abstraction structures in Port Blair City.

Considering all the proposed (and existing) structures, the gross water supply potential through 7 Bore Wells, 7 open Dug Wells, 12 Ponds and 10 Check Weirs at 4 sites, the estimated total water supply potential in the Port Blair Urban area would be 4686 million litre (ML). Therefore, the potential for water supply through all these structures would be about 12.84 MLD, considering that the structures (Bore Wells, Dug Wells, Ponds and Check Weirs) are operational round the year. A summary of the water supply versus demand relationship of Port Blair City is given below:

1. Daily estimated water supply potential of the Bore Wells and Dug Wells: 1.33 MLD

2. Daily estimated water supply potential of the Ponds and Check Weirs: 11.51 MLD

3. Total estimated water supply potential through all type of structures (Bore Wells, Dug Wells, Ponds and Check Weirs): 12.84 MLD

Without considering 14 MLD supply from Dhanikhari Dam, the cumulative water supply potential is much higher than the peak water demand of 9.80 MLD in Port Blair Urban Area.

4. Peak water demand during the summer season (demand by both resident and floating population): 9.80 MLD (discussed in Chapter 1 and Chapter 2)

7. WATER SURPLUS: WATER SUPPLY POTENTIAL – PEAK WATER DEMAND

= 12.84 MLD - 9.80 MLD

= 3.04 MLD

Thus, there is a scope of having excess water supply of 3.04 MLD, which indicates a feasible water surplus condition in Port Blair City. This would mean that Port Blair City would be a “Water Surplus” city instead of “Water Scarce”, if scientific management and planned development of existing surface water and groundwater resources are adopted.

7. CONCLUSION AND RECOMMENDATIONS

Based on a request from the Secretary, Urban Development and Disaster Management, Andaman and Nicobar Island and subsequent follow up from the Joint Secretary, Port Blair Municipal Council (PBMC), a team of three officers from Central Ground Water Board, Eastern Region, Kolkata carried out ground hydrogeological and geophysical investigation in Port Blair Urban Area. The main objective of this special and integrated study was to assess the reported problem on water scarcity in Port Blair City, which has manifested in greatly reduced frequency of water supply of only once in a week by the PBMC in the Port Blair Urban Area from February 2023 till June 2023.

The special study was done using the available database provided by the PBMC and additional database provided by the Andaman Public Works Department (APWD). A total of 22 Vertical Electrical Sounding (VES) in 11 locations, combined with ground hydrogeological survey was completed to assess the reported water scarcity problem in Port Blair City. It was observed that present water scarcity is an aftermath of less than normal winter rainfall received in the area from December 2022 to the end of April 2023. This has resulted in reduced natural recharge to the shallow aquifers in weathered zone and the deeper aquifers in the fractured zone of the ultramafic rocks of the Ophiolite Group. Due to occurrence of sedimentary rocks of Mithakhari Formation in Port Blair City area, the inherent groundwater potential is low, as the rocks do not have good porosity and permeability. Many instances of failure of Bore Wells have been reported by the APWD, who is entrusted with rural water supply in South Andaman District.

Detailed ground hydrogeological survey was completed in eight locations for assessing the feasibility of construction and estimating the water supply potential of open Dug Wells. The survey was followed up at twelve locations for assessing feasibility of construction of Ponds and water supply potential of the Ponds. It was found that some of the Ponds could be developed as *Amrit Sarovars,* like the pond proposed at Dollygunj and at New Pahargaon. Based on the hydrogeological survey, 4 sites were selected for construction of a series of Check Weirs (ranging from 2 to 4 Check Weirs along stream section) along few perennial streams like the Hathi Nallah, Pathergudda Nallah and Attam Pahad Nallah. The ground hydrogeological and geophysical surveys were supplemented by interpretation of Google Earth Maps of Port Blair City, Ward Map of PBMC, interpretation of VES survey results and analysis and interpretation of data provided by the PBMC and APWD.

The water supply versus demand estimate for Port Blair City has been estimated based on authentic data of Andaman and Nicobar Tourism Department, PBMC and APWD. During assessing the water supply versus demand position, assured supply of 14 MLD from the Dhanikhari Dam has been excluded. The inter-island transfer of freshwater from springs in Rutland Island to the rural areas surrounding Port Blair City was not considered, as quantitative estimates of spring-based inter-island transfer of water supply was not readily available. Most severe water scarcity in Port Blair City is usually observed for a period of about four months (December to March), when the population reaches its peak due to large influx of tourist in the City, with peak tourist population reaching about 20.30% of the resident population.

The estimated water supply potential from all the feasible structures (7 Bore Wells, 7 open Dug Wells, 12 Ponds and 10 Check Weirs in four locations) is 4686 million litre (ML). Considering the structures are operational throughout the year, the daily supply potential would be 12.84 million litre per day (MLD). As the peak water requirement is about 9.80 MLD, there is ample scope of water surplus condition in Port Blair City, where the surplus water supply could be 3.04 MLD. This indicates that reported water scarcity could be solved fully if all the proposed structures are constructed scientifically using standard engineering designs and recommended guidelines.

Nevertheless, it is reiterated that due to inherent geological and hydrogeological complexity of the hard rocks in the environs of Port Blair City, the estimated cumulative water supply potential of 4686 ML is only indicative and may or may not differ from the actual yield (discharge) potential. The present estimates on water supply are based on hydrogeological and geophysical field survey, data analysis and interpretation by CGWB, Eastern Region, Kolkata. Although conservative estimates are taken for assessing water supply potential of each of the structures, care should be exercised while designing the Check Weirs, excavating new Ponds (or renovating existing Ponds) and designing the assembly of the Bore Wells and Dug Wells. Regular and long-term monitoring of depth to water levels in open Dug Wells located near each of the proposed and existing water conservation (water harvesting) structures would be essential to see the temporal variation in groundwater levels across different wards of the city.

For integrated water resources management in the Port Blair Urban Area and its surrounding rural areas, the following recommendations are suggested:

- Numerous hotels and resorts are indiscriminately exploiting the groundwater resources in Port Blair City. The illegal abstraction needs to be monitored, controlled and penal provision to be enacted by the local administration.
- Water audits should be practiced in all the commercial establishments (hotels and resorts) within the municipal limits of Port Blair City.
- Abandoned and disused Dug Wells need to be renovated to utilize them as potential point source recharge structures to the shallow, fractured aquifers. Such Dug Wells could be brought under the popular “Blue Pipe Project” of the PBMC for creating additional water conservation and shallow recharge to the phreatic aquifers.
- Existing lined departments like PBMC, APWD, Irrigation Department and Agriculture Department should be sensitized for taking effective and implementable policies on water resources conservation, sustainable management including the source sustainability of freshwater resources.
- A water policy needs to be framed for efficient and sustainable management of both surface water and groundwater resources of Port Blair Urban Area and its fringe areas.
- Climate smart and climate resilient agricultural practices like sprinkler irrigation and drip irrigation need to be adopted with financial incentive to the farmers (Singh et al. 2021). Precision agriculture like drip and sprinkler irrigation would be most beneficial to increase crop productivity and water use efficiency.

- Location specific water conservation and recharge structures should be constructed to augment water resources availability. Micro irrigation practices, fresh water based Integrated Farming System (IFS) and Broad Bed and Furrow System (BBF) need to be developed as water conservation technologies (Subramani et al. 2012).
- Climate resilient water resources management needs to be developed as a prerequisite for formulation of an integrated water resources management programme.
- Participatory water resources management involving the local community needs to be developed as a full proof system of developing and managing the water resources. Capacity building of the stakeholders should be effective, and time bound for optimum utilization and efficient demand side water resources management of the precious freshwater resources.

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Annexure-I: Letter from PBMC to the Regional Director, CGWB, ER (12-4-2023)

नगरपालिका परिषद् कार्यालय

OFFICE OF THE MUNICIPAL COUNCIL

पोर्ट ब्लेयर

PORT BLAIR

****

F.No. MC/JS/PA/Corrs/22-23/991 Port Blair, dated the 12th April, 2023

To,

Sh. Anadhi Gayen,
Regional Director
Central Ground Water Board (CGWB)
Bhujalika, C P Block-6 Sector-V
Bidhan nagar Kolkata
700 091 (West Bengal)
Contact No.+91-33-23673081, Fax No. +91-33-23673080
Email ID:- rder-cgwb@nic.in

Sub: Central Ground Water Board (CGWB) to assess water scarcity situation faced by the Port Blair city and suggest corrective measures:- Reg.

It is to submit that a meeting was scheduled in the chamber of Secretary UD, A&N Administration in the month of March, 2023 with the officials of RD, PBMC and Central Ground Water Board (CGWB).

In this regard, as directed by Secretary (UD), A&N Administration Central Ground Water Board is hereby requested to suggest measures for sustainable water management by assessment of ground water situation, exploration, and other technological measures.

12/4/23
Joint Secretary, PBMC

Copy to:-

1. The PA to Secretary, PBMC for kind information of Secretary, PBMC.
2. The PA to Secretary (UD), A&N Administration for kind information of Secretary(UD), A&N Administration.
3. The PA to Secretary (RD), A&N Administration for kind information of Secretary(RD), A&N Administration.

Joint Secretary, PBMC

Top priority
T/S pl for n-a.
17/04/2023
17/4/2023.

1st week of June 2023.
D. Bagchi, Sc-D.
S. Sardar & Dr. K. C. Mandal, Sc-B.
Sandip Bhowal, ATFO.
Tapelli, AEN.

Annexure-II: Letter from Regional Director to Joint Secretary, PBMC (10-5-2023)

Govt. of India
Ministry of Jal Shakti
Department of Water Resources, River Development & Ganga Rejuvenation

Azadi Ka Amrit Mahotsav

CENTRAL GROUND WATER BOARD
Eastern Region, 'BHUJALIKA'
Sector-V, CP-6 Block
Salt Lake City
Kolkata - 700 091
Fax No.: 033-23673080
Email : rder-cgwb@nic.in

No.2/ER/A&N-Port Blair/WSI/2023-112
Dated: 10.05.2023

To,
The Joint Secretary
PBMC
Port Blair

Subject: Central Ground Water Board (CGWB) to assess water scarcity situation faced by the Port Blair City and suggest corrective measures: Reg.

Reference: Letter No. MC/JS/PA/Corrs/22-23/991 dated 12.04.2023

Sir,

This has reference to the above cited letter, vide which Central Ground Water Board (CGWB), Eastern Region, Kolkata, has been requested to suggest measures for sustainable water management to address the water scarcity issue faced by Port Blair City.

In this regard, CGWB is proposed to take up field investigations tentatively in the first week of June 2023.

It is therefore, requested to kindly nominate a Nodal Officer from Andaman Administration, with whom our team of officers will correspond prior to and during the course of field investigations. The name, contact number and email of the nominated officer may please be intimated.

Regards,

(Dr. Anadi Gayen)
Regional Director

Copy to:

1. The PA to Secretary, PBMC for kind information of Secretary, PBMC.
2. The PA to Secretary (UD), A&N Administration for kind information of Secretary (UD), A&N Administration.
3. The PA to Secretary (RD), A&N Administration for kind information of Secretary (RD), A&N Administration.

10/05/2023
(Dr. Anadi Gayen)
Regional Director

Always : *Wear Mask; Maintain Social Distance; Wash / Sanitize Hands Frequently*

Annexure-III: Follow up letter from PBMC to the Regional Director, CGWB, ER (19-5-2023)

F.No. 42-892/GC/Estt/MC/ 1362

नगरपालिका परिषद् कार्यालय

OFFICE OF THE MUNICIPAL COUNCIL

पोर्ट ब्लेयर

PORT BLAIR

****

पोर्ट ब्लेयर दिनांक 19.5.2023

To

The Regional Director,
Central Ground Water Board,
Eastern Region, 'BHUJALIKA'
Sector-V, CP-6 Block,
Salt Lake City
Kolkata-700 091.

Fax No. 033-23673080
E-mail :rder-cgwb@nic.in

कार्यालय क्षेत्रीय निदेशक Office of the Regional Director
प्राप्ती संख्या / Dy. No. 279
दिनांक / Date 30-05-23
(पूर्वी क्षेत्र) कोलकाता (ER) Kolkata
केन्द्रीय भूमि जल बोर्ड Central Ground Water Board

Sub:- Central Ground Water Board (CGWB) to assess water scarcity situation faced by the Port Blair City and suggest corrective measures, reg:-

Sir,

I am directed to refer your letter No. 2/ER/A&N-Port Blair/WSI/2023-112 dt. 10.05.2023 and to inform that, PBMC is nominating Smti. Asha Shekhar, AE i/c EE(WW) as Nodal officer to coordinate with your team during the course of field investigations. The requisite details is given below:-

Name - Smti Asha Shekhar, AE i/c EE (WW)
Mobile No - 9434282823
Mail id - eewwpbmc@gmail.com

Yours Faithfully

Administrative Officer
Municipal Council

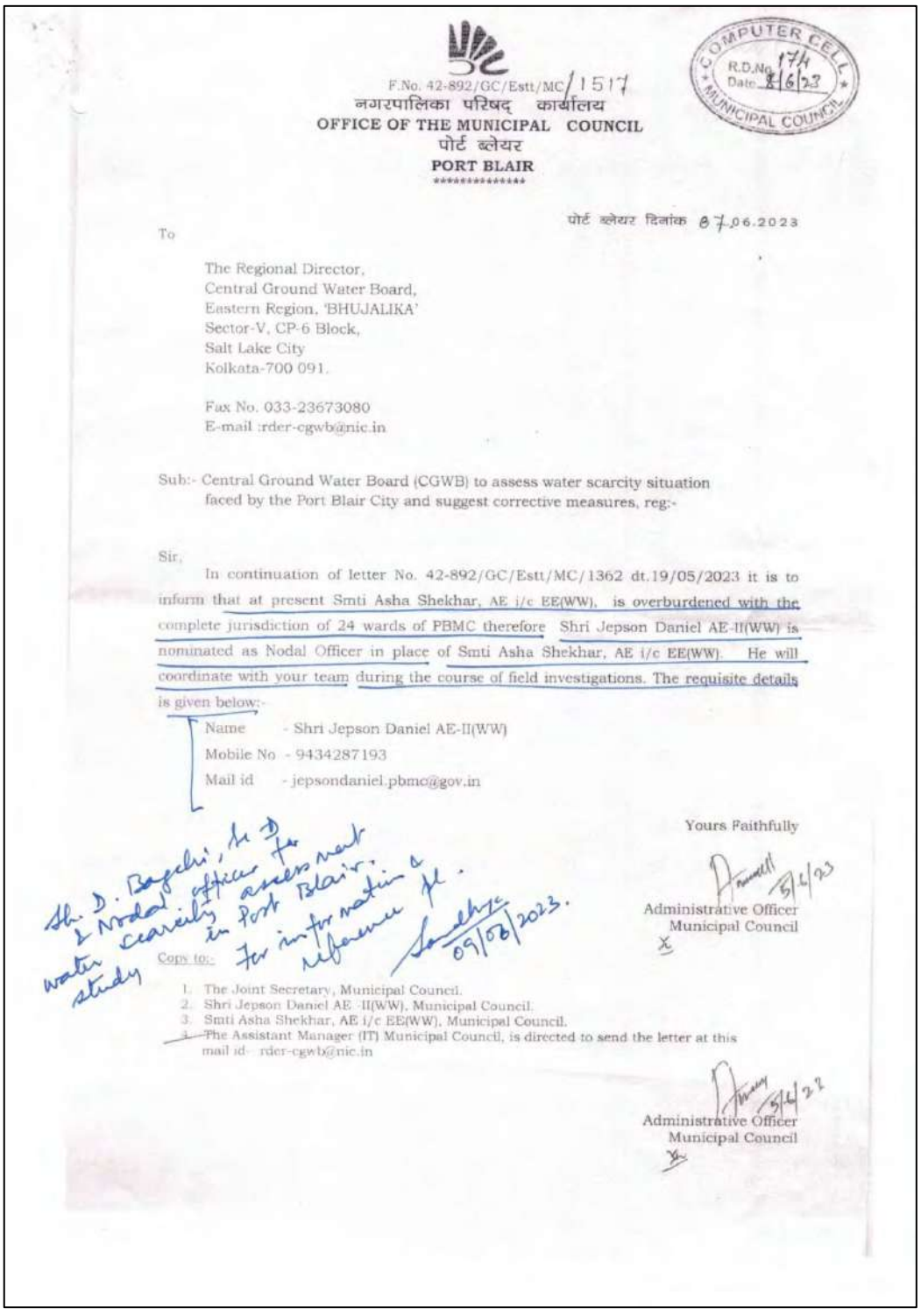
Copy to:-

1. The Joint Secretary, Municipal Council.
2. Smti Asha Shekhar, AE i/c EE(WW), Municipal Council.
3. The Assistant Manager(IT) Municipal Council, is directed to send the letter at this mail id- rder-cgwb@nic.in

Administrative Officer

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Annexure-IV: Follow up letter from PBMC to the Regional Director, CGWB, ER (7-6-2023)



F.No. 42-892/GC/Estt/MC/1517

नगरपालिका परिषद कार्यालय
OFFICE OF THE MUNICIPAL COUNCIL
पोर्ट ब्लेयर
PORT BLAIR

COMPUTER CELL R.D.No. 174 Date 8/6/23 MUNICIPAL COUNCIL

पोर्ट ब्लेयर दिनांक 07.06.2023

To

The Regional Director,
Central Ground Water Board,
Eastern Region, 'BHUJALIKA'
Sector-V, CP-6 Block,
Salt Lake City
Kolkata-700 091.

Fax No. 033-23673080
E-mail :rder-cgwb@nic.in

Sub:- Central Ground Water Board (CGWB) to assess water scarcity situation faced by the Port Blair City and suggest corrective measures, reg:-

Sir,

In continuation of letter No. 42-892/GC/Estt/MC/1362 dt.19/05/2023 it is to inform that at present Smti Asha Shekhar, AE i/c EE(WW), is overburdened with the complete jurisdiction of 24 wards of PBMC therefore Shri Jepson Daniel AE-II(WW) is nominated as Nodal Officer in place of Smti Asha Shekhar, AE i/c EE(WW). He will coordinate with your team during the course of field investigations. The requisite details is given below:-

Name - Shri Jepson Daniel AE-II(WW)
Mobile No - 9434287193
Mail id - jepsondaniel.pbmc@gov.in

Yours Faithfully

Administrative Officer
Municipal Council

Sh. D. Bagchi, Ld. D
& Nodal officer for
water scarcity assessment
in Port Blair.
For information &
reference pl.
09/06/2023.

Copy to:-

1. The Joint Secretary, Municipal Council.
2. Shri Jepson Daniel AE -II(WW), Municipal Council.
3. Smti Asha Shekhar, AE i/c EE(WW), Municipal Council.
4. The Assistant Manager (IT) Municipal Council, is directed to send the letter at this mail id- rder-cgwb@nic.in

Administrative Officer
Municipal Council

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ANNEXURE-V

Annexure-V: List of Bore Wells, Dug Wells, Ponds and Check Weirs As per Feasibility Survey Carried by CGWB, ER, Kolkata in Port Blair Urban Area (With Inputs by PBMC)

Sl. No	Type of Source	Location	PBMC Ward No.	Latitude	Longitude	Approximate area (m^2)	Approximate Yield (MLD)/ Storage Potential (ML)	Type of Land	Remarks	Tentative cost (Lakh Rupees) as per PBMC Estimate	Timeline as per PBMC Estimate
1	Bore Well	Inside Nature Park, Haddo	2	11.678056	92.727778	NA	0.09 MLD	Revenue Land	Recommnded for drilling up to 65.0 m depth, water to be collected and transported to Lambaline Treatment Plant (TP).	NA	3 months
2	Bore Well	Adjacent to Megapode Road, Anarkali	3	11.678100	92.727800	NA	0.09 MLD	Revenue Land	Recommnded for drilling up to 60.0 m depth, water to be collected and transported to Raj Niwas Treatment Plant; length of Pipeline: 3000 m	54	3 months
3	Bore Well	Near Ummat Public School	21	11.628350	92.734050	NA	0.09 MLD	Revenue Land	Recommnded for drilling up to 75.0 m depth, proposed to be linked with Brookshabad Pumping Station, pipeline length: 3000 m	54	2 Months
4	Bore Well	Near Shakti Amman Temple, Old APWD Quarters, Marine Hill	5	11.674167	92.739722	NA	0.09 MLD	Revenue Land	Recommnded for drilling up to 55.0 m depth, water to be collected and transported to Raj Niwas Plant; length of the Pipeline: 2000 m	36	3 months
5	Bore Well	Near road side of St. Thomas Catholic Church at Ranchi Basthi	15	11.646573	92.724761	NA	0.09 MLD	Revenue Land	VES could not be done to space constraint, drilling is recommended up to 30.0 m depth (using perforated casing) based on hydrogeological study, proposed to be linked to Lambaline WTP by PBMC through GI pipe line for a length of approx. 1.5 km	41	3 months
6	**Bore Well**	**ADDITIONAL BORE WELL NOT IN PBMC LIST Inside Government Primary School, South Point (near Mazar)**	**11**	**11.657500**	**92.753333**	**NA**	0.09 MLD	**Revenue Land**	**Recommended for drilling down to a depth of 70.0 m; potential fracture zones expected: i) From 14 to 25 m, ii) From 60 to 65 m based on geophysical survey (VES)**	**NA**	**NA**
7	Bore Well	Near Police Station, Chatham	2	NA	NA	NA	Geophysical survey was not possible due to denial of entry by the Port Trust Authority	Revenue Land	PBMC proposed 3 Bore Wells, water proposed to be collected and trasnported to Lambaline Treatment Plant using water tankers.	NA	NA
8	Bore Well	Velodrome, near Aberdeen Bazar	5	11.667500	92.746111	NA	Not suitable for drilling as per Geophysical Survey (VES)	Revenue Land	Not suitable for construction of Bore Well at Velodrome, near Aberdeen Bazar	NA	NA
9	Bore Well	In APWD land, behind Kalyana Mandapam	7	11.662500	92.730556	NA	Not suitable for drilling as per Geophysical Survey (VES)	Revenue Land	Not suitable for construction of Bore Well in APWD land, near Kalyana Mandapam	NA	NA
10	Bore Well	Murgan Temple Compound, near Vanvasi Kalyan Ashram, Shadipur	10	11.663333	92.745556	NA	Not suitable for drilling as per Geophysical Survey (VES)	Revenue Land	Not suitable for construction of Bore Well at Murugan Temple Compound, near Vanvasi Kalyan Ashram, Shadipur	NA	NA
11	Bore Well	Back side of Nayagaon Children's Jail, near Kalimuthu House	12	11.651111	92.745278	NA	Not suitable for drilling as per Geophysical Survey (VES)	Revenue Land	Not suitable for construction of Bore Well in the back side of Childrens Jail, Nayagaon	NA	NA
12	Bore Well	Nayagaon, opposite to Forest Nursery and near Pillu House	13	11.648333	92.741944	NA	Not suitable for drilling as per Geophysical Survey (VES)	Revenue Land	Not suitable for construction of Bore Well at Nayagaon, opposite to Forest Nursery and near Pillu House	NA	NA
13	Bore Well	Pahargaon, near Bhim Rao Ambedkar Institute of Technology (second gate)	17	11.634821	92.718363	NA	Not suitable for drilling as per Geophysical Survey (VES)	Revenue Land	Not suitable for construction of Bore Well at Pahargaon, near Dr. Bhim Rao Ambedkar Institute of Technology (second gate)	NA	NA
14	Dug Well	Dr. B.G. Lal Road, near Kasim's House	11	11.660755	92.754632	7.07 (D = 3.0 m)	0.01 MLD	Revenue Land	Through pumping line to Rajniwas TP, Length: about 2200 m through GI pipeline	35	2 Months
15	**Dug Well**	**About 100 m east of Police Line Main Gate, approach from VIP Road towards Joggers Park**	**12**	**11.658290**	**92.738800**	12.56 (D = 4 m) to 28.26 (D = 6 m)	0.26 MLD	Revenue Land	Instead of the existing Dug Well at Junglighat VIP Road, a new Dug Well near the Police Line Main Gate is more feasible and should be constructed, site selection done on 1-7-2023.	3	2 Months
16	Dug Well	Near Brookshabad Government School and adjacent to Typhil House	22	11.638811	92.741618	7.07 (D = 3.0 m)	0.085 MLD	Revenue Land	Estimated supply potential is about 2.5 times higher than quoted potential of PBMC (0.03 MLD), can be linked with Brookshabad Pumping station, length of the Pipeline: 800 m	30	2 Months
17	Dug Well (PBMC)	Adjacent to the Police Training School, Brichgunj (existing well)	22	11.617115	92.730833	63.59 (D = 9.0 m)	0.08 MLD	Revenue Land used by Police Training School	Instead of quoted supply potential by PBMC (0.3 MLD), estimated gsupply potential (expected discharge of aquifer) is about 0.08 MLD. Water supply proposed by PBMC through Birdline WTP, length of Pipeline: 1000 m	25	2 Months
18	Dug Well (APWD)	Inside the Police Training School, Brichgunj (existing well)	22	11.617581	92.728934	19.63 (D = 5.0 m)	0.08 MLD	Revenue Land	Instead of quoted supply potential by PBMC (0.03 MLD), estimated supply potential is 0.08 MLD, which is about 2.5 times higher than quoted potential. Water supply proposed by PBMC through Brichgunj Pumping Station.	NA	NA
19	Dug Well	Besides PBMC Sewage Treatment Site, Brookshabad	22	11.639700	92.748300	150	0.09 MLD (Dug Well is feasible)	Revenue Land	CGWB survey shows that a large diameter Dug Well (with perforated casing) is more suitable instead of a Pond proposed by PBMC at this site.	30	2 Months
20	Dug Well	Quarry opposite to M/s Maruti Borewell (Surya Rao Quarry)	22	11.616020	92.732820	10000	0.09 MLD (Dug Well with stream rejuvenation feasible)	Revenue Land	CGWB survey shows that a large diameter Dug Well (with perforated casing) is more suitable instead of a Pond proposed by PBMC at this site, water supply may be through Birdline WTP (proposed by PBMC), length of Pipeline: ~1000 m	50	4 Months

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21	Dug Well	On Andaman Herald Road, behind South Point School	11	11.658357	92.747426	NA	Dug Well is not suitble considering the local hydrogeological, topographic and geomorphological condition	Revenue Land	As per hydrogeological survey, constrcution of Dug Well is not feasible on Andaman Herald Road, behind South Point School	NA	NA
22	Pond	Inside Radha Gobinda Temple compound, adjacent to RGT Public School, on RGT Road	11	11.663921	92.748931	700	2.10 ML	Revenue Land	Instead of the proposed Dug Well at Girls Sr. Secondary School near Aberdeen Bazar, a Pond would be feasible inside the Radha Gobinda Temple compound on RGT Road.	35	2 Months
23	Pond	At Dollygunj, near Segregation Centre	17	11.631876	92.711172	17000	68 ML	Revenue Land	Proposed to be linked with Dollygunj WTP by PBMC, length of pipeline: 1500 m	50	5 Months
24	Pond	At Dollygunj, near Shiv Temple on National Highway 6	17	11.628877	92.717679	8000	32 ML	Revenue Land	Proposed to be connected with Dollygunj WTP by PBMC, length of pipeline: 500 m	40	3 Months
25	Pond	Behind Vegetable Market, Bathu Basti	19	11.623289	92.713185	10000	40 ML	Revenue Land	Proposed to be connected with Dollygunj WTP by PBMC, which is about 1500 m from the source	30	4 months
26	Pond	Pahargaon, opposite to playground	20	11.634168	92.728993	1700	8.5 ML	Revenue Land	Proposed to be linked with Birdline WTP by PBMC, which is about 3000 m from the source	50	2 Months
27	Pond	At New Pahargaon, near Shiv temple	20	11.632366	92.725012	4000	8 ML	Revenue Land	Proposed to be linked with Birdline WTP by PBMC, which is about 3000 m from the source	50	1 Months
28	Pond	At New Pahargaon, near Kamaraj School	20	11.634236	92.726237	1400	2.8 ML	Revenue Land	Proposed to be linked with Birdline WTP by PBMC, which is about 3000 m from the source	50	1 Month
29	Pond	Inside the Police Training School, Brichgunj (existing pond of APWD)	22	11.617581	92.728934	7200	14.5 ML	Revenue Land	Proposed to be linked with Birdline WTP by PBMC, which is about 800 m from the source	NA	NA
30	Pond	Adjacent to Brichgunj Quarry	22	11.624153	92.749586	550	1.1 ML	Revenue Land	Proposed to be linked with Birdline WTP by PBMC, which is about 5000 m from the source	60	To be finalised
31	Pond	Near Teachers Training Institute (TTI) Colony, Garacharma	18	11.610520	92.707590	350	1.05 ML	Revenue Land	Proposed to be connected with Garacharma Pumping Station by PBMC, which is about 1000 m from the source	35	1 Month
32	Pond	Near Forest Rangers Office, Garacharma	24	11.619922	92.718118	4000	12.0 ML	Revenue Land	Proposed to be linked with Birdline WTP by PBMC, which is about 1500 m from the source	40	2 months
33	Pond	At Rajaji Nagar (Garacharma)	24	11.609230	92.711670	900	2.70 ML	Revenue Land	Proposed to be linked with Garacharma Pumping Station by PBMC, which is approx 700 m from the proposed source	40	3 Months
34	Check Weir (2 nos.)	Back side of Chennai Thalappakattu (South Indian Eatery), near Pathergudda Colony	19	11.624049	92.716386	2000 (estimated during CGWB survey)	5.0 ML	Revenue Land	Hydrogeological survey shows that Pond construction is not feasible at the site; instead stream (nallah) rejuvenation may be done through construction of Check Weirs (minimum 2), the site is ~100 m east of Chennai Thalpakattu, near Pathergudda Colony	20	1 Months
35	Check Weir (4 nos.)	Hathi Nallah (downstream section)	23	11.612538	92.727794	1200 (estimated during CGWB survey)	3.0 ML	Revenue Land	CGWB survey shows that 4 Check Weirs can be constructed (instead of 2 proposed by PBMC); proposed to be linked with Birdline Pumping Station for a length of about 500 m	50	6 Months
36	Check Weir (2 nos.)	Hathi Nallah (upstream section)	23	11.611800	92.729100	400 (estimated during CGWB survey)	1.0 ML	Revenue Land	CGWB survey shows that a series of Check Weirs (2 Nos) is more feasible instead of the proposed pond at this site.	40	1 Month
37	Check Weir (2 nos.)	Attam Pahad (near Birsa Nagar Colony)	18	11.636370	92.70213	NA	0.4 MLD	Revenue Land	Dollygunj pipeline, length 3000 m	68	6 months

ANNEXURE-VIII-2

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HYDROCHEMISTRY
GROUNDWATER QUALITY SCENARIO IN ANDAMAN & NICOBAR ISLANDS
AAP: 2023-24

Introduction

Groundwater is the primary source of drinking water for both the urban and rural population in India, and its importance extends to irrigation and industrial uses as well. The growing demand for groundwater, fuelled by advancements in pumping technologies, has increased the dependence of communities on this resource. However, the suitability of groundwater for various uses depends largely on its quality, which is influenced by natural processes and human activities. As groundwater moves through pore spaces and weathered formations, it is subject to various hydrochemical changes that can affect its composition. To maintain the sustainability of ecosystems, it is essential to assess the physico-chemical parameters of groundwater, understand their origin and manage the hydrogeochemical processes that influence them. Degradation of groundwater quality has become a major environmental concern, particularly because of its impact on public health. Therefore, systematic monitoring is crucial to ensure the safety of this vital resource for the population.

To implement preventive measures to provide safe drinking water and to investigate the geochemical characteristics and potability of groundwater, 113 representative samples were collected from various locations across the Andaman and Nicobar Islands during the pre-monsoon season of 2023-24. The analytical results of the chemical analyses were critically reviewed and the findings interpreted accordingly.

Basic Groundwater Chemistry

Hydrogen Ion Concentration (pH)

the pH value is a measure of the balance between the concentration of hydrogen ions and hydroxyl ions in water. The pH of water provides important information for many types of geochemical equilibrium or solubility calculations. The groundwater pH of the samples collected during AAP 2023–24 from the Andaman and Nicobar Islands were found neutral to slightly alkaline in nature with pH ranging from 7.63 (Bharatpur, South Andaman) to 8.30 (Manjeri, South Andaman) and an average value of 8.11 ± 0.13. No sample was found with pH values beyond the permissible limit of 6.5 - 8.5 as per BIS: 2012.

Total Dissolved Solids (TDS)

According to the BIS:2012 specifications, the recommended TDS (Total Dissolved Solids) value for drinking water is 500 mg/L, while the maximum permissible limit is set at 2,000 mg/L. In the studied area, TDS values ranged from a minimum of 41 mg/L (Kishorinagar, North and Middle Andaman) to a maximum of 1584 mg/L (Ograbraj, South Andaman) indicating that all groundwater samples fall within the permissible limit. Only 8% of the samples analysed had TDS values above the acceptable limit of 500 mg/L, and none of the samples had TDS values higher than the permissible limit of 2000 mg/L for drinking water purposes. It is noteworthy that 80% samples with TDS values exceeding the acceptable limit were from the South Andaman District and rest 20% from North and Middle Andaman district.

Table 1: Chemical qualities of groundwater samples of Andaman & Nicobar Islands (2023-24) showing the maximum and minimum values vis-à-vis drinking water standards (IS 10500:2012)

Constituents		A&N Islands		IS 10500:2012	
		Range	Average	Acceptable Limit	Permissible Limit
pH		7.63 - 8.30	8.11 ± 0.13	6.5-8.5	6.5-8.5
EC (µs/cm) 25ºC		72 - 2532	499 ± 335	-	-
TDS	mg/L (ppm)	41 - 1584	290 ± 203	500	2000
Carbonate alkalinity as $CaCO_3$		Nil	Nil	-	-
Bicarbonate alkalinity as $CaCO_3$		18 - 695	186 ± 106	-	-
Total alkalinity as $CaCO_3$		15 - 570	152 ± 87	200	600
Chloride		7 - 606	52 ± 68	250	1000
Sulphate		Traces - 242	26 ± 38	200	400
Nitrate		Traces - 42	5 ± 7	45	45
Fluoride		Traces - 0.69	0.14 ± 0.16	1	1.5
Calcium (as Ca)		4 - 76	24 ± 11	75	200
Magnesium (as Mg)		1 - 69	25 ± 16	30	100
Total Hardness (as $CaCO_3$)		15 - 460	164 ± 76	200	600
Sodium		3 - 394	41 ± 52	-	-
Potassium		0.16 - 36.23	3.59 ± 4.88	-	-
Iron		Traces - 8.55	0.59 ± 1.37	1.0	NR
Uranium		Traces - 0.01	0.00 ± 0.00	0.03	NR

Electrical Conductivity (EC)

Electrical conductivity (EC) is often used as an indicator for estimating water salinity, with higher EC values generally reflecting higher salinity, making it an important parameter in assessing water quality. EC also provides an approximate measure of total dissolved solids in water, which is influenced by factors such as temperature, ion concentration and the type of ions present (Hem, 1985). In the groundwater of the Andaman & Nicobar Islands, EC and TDS (Total Dissolved Solids) values vary widely, indicating significant differences in dissolved constituents. EC values in the region range from 72 µS/cm (Kishorinagar, North and Middle Andaman Islands) to 2532 µS/cm (Ograbraj, South Andaman Islands), with an average value of 499 ± 335 µS/cm and a median of 416 µS/cm. Fig. 01 represent the contour mapping of Electrical Conductivity values across the entire island.

For EC in drinking water the World Health Organisation (WHO) recommends a desirable limit value of 750 µS/cm, water with an EC value higher than this may require monitoring for potential salinity-related issues, though it's not necessarily harmful unless it exceeds the type II or III thresholds. Based on this

guideline, EC values can be categorised as follows: Type I (low salt enrichment) for EC < 1,500 µS/cm, Type II (medium salt enrichment) for EC between 1,500 and 3,000 µS/cm, and Type III (high salt enrichment) for EC > 3,000 µS/cm. According to this classification, more than 97% of the groundwater samples fall under type I, which indicates low salt enrichment, and only three samples were found as Type II category, which indicates moderate levels of dissolved salts. It may still be usable for drinking, but the taste may be affected, and it may require treatment for sensitive uses like irrigation. No source has been found with elevated EC values suggesting potential contamination from human activities such as industrial or agricultural practises that may contribute salts or other dissolved substances to groundwater. As most EC values are within acceptable limits, there is currently no evidence of saline water intrusion into the fresh aquifer at present.

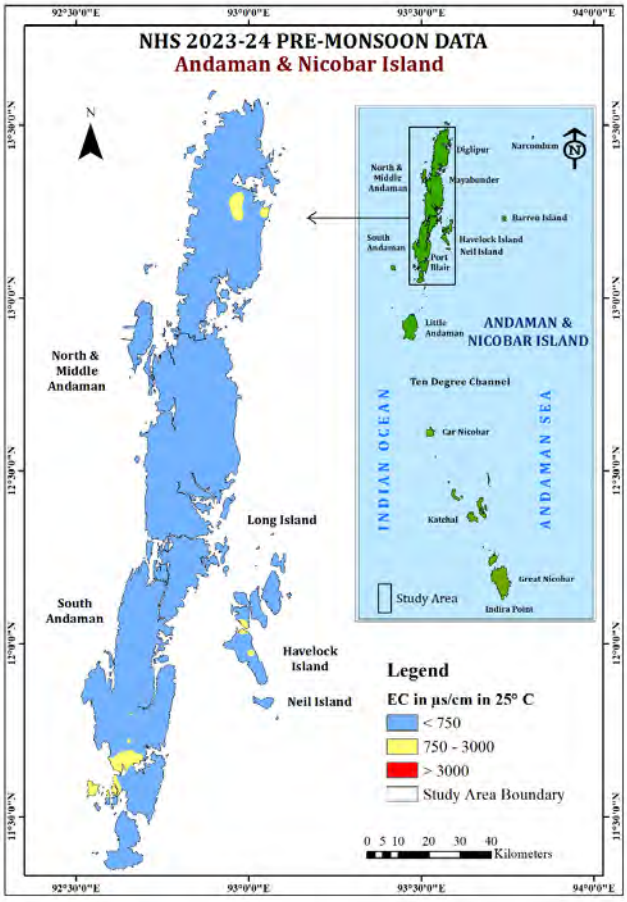


Figure 1: Contour mapping based on Electrical Conductivity

Major Cations

Total hardness (TH)

The total hardness as CaCO3 in the groundwater of the A&N Islands ranges from 15 to 460 mg/L (Ograbraj, South Andaman district). The groundwater of the entire study area is within the maximum permissible limit prescribed by BIS: 2012. The quality of groundwater in terms of Total Hardness as CaCO3 has been found as moderately hard (29% of the total samples analysed) to hard (63% of the total samples analysed) (Table: 02). The hardness of the water is due to the presence of carbonate and bicarbonate salts of alkaline earths such as calcium and magnesium. The detailed distribution is shown in Fig:02.

Table 02: Hardness Classification of groundwater of A&N Islands (2023-24)

Water Class	TH as CaCO3 in mg/L	No. of Samples	% of Samples
Soft	<75	14	12
Moderately Hard	75–150	29	26
Hard	150–300	63	56
Very Hard	>300	7	6

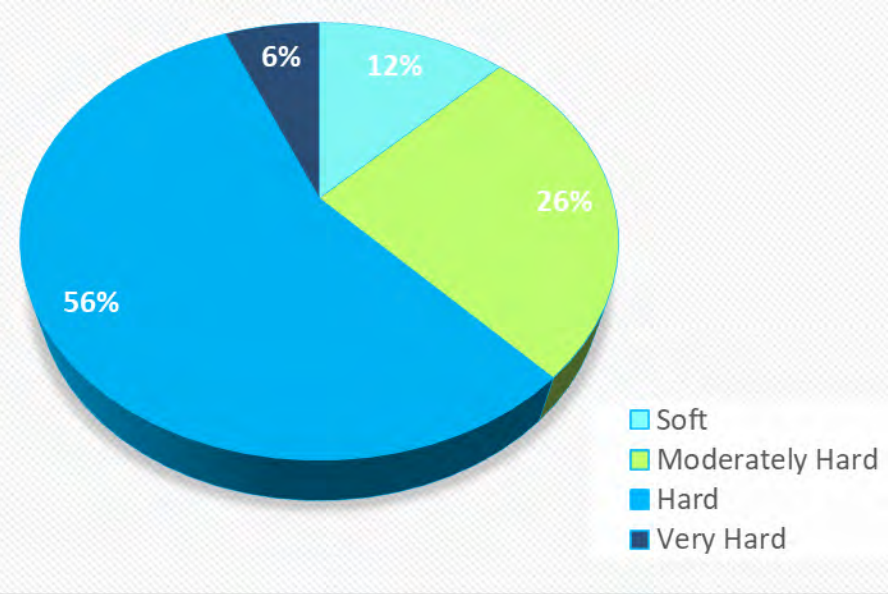


Figure 2: Distribution of groundwater based on Total Hardness classes

Calcium and Magnesium (Ca and Mg)

Calcium and magnesium are the predominant elements in natural surface and groundwater, occurring mainly as bicarbonates and to a lesser extent as sulphates and chlorides. A higher Ca^{2+} content in water is considered undesirable for domestic purposes as it leads to scaling and limescale deposits. Therefore, it is crucial to monitor and control the calcium content in drinking water to ensure that it is suitable for human consumption and to avoid potential problems associated with excessive calcium levels.

The Ca^{2+} concentration in the study area varies between 04 and 76 mg/L. The only sample having Ca^{2+} concentration above the Acceptable Limit of 75 mg/L observed in Ograbraj, South Andaman District. As per the specified limits by BIS 2012 for calcium concentration in drinking water, it was observed that none of the groundwater samples from the study area exceeded maximum permissible limit of 200 mg/L for calcium.

The magnesium content varies between 1 and 69 mg/L (Long Island Forest area, North & Middle Andaman District). 36% of analysed samples were found with Mg concentration higher than the acceptable limit of 30 mg/L but no sample was found having Mg concentration above the maximum permissible limit of100 mg/L as prescribed by BIS 2012.

Sodium and potassium (Na and K)

Sodium, the sixth most abundant element, is frequently found in natural waters. In fresh water, however, it is usually present in low concentrations. The observed concentration of Na+ in the groundwater of the study area varies between 3 and 394 mg/L (Ograbraj, South Andaman). Consumption of high sodium concentrations can lead to health problems such as increased blood pressure, arteriosclerosis, oedema and hyperosmolarity. Moreover, groundwater with high sodium content is not suitable for agricultural use as it can degrade the soil.

On the other hand, potassium is a naturally occurring element, but its concentration in groundwater is relatively low compared to calcium, magnesium and sodium. This is because potassium feldspars, which contain potassium, are very resistant to chemical weathering in the environment. The K^+ concentration in groundwater is between trace and 36 mg/L (Webi Debipur, South Andaman).

Major Anions

Chloride:

The presence of chloride in groundwater can originate from a variety of sources, including weathering, leaching of sedimentary rocks and soils, saltwater intrusion, wind-borne salt in precipitation carried by wind, discharge of domestic and industrial wastes, and municipal sewage. In the A&N Islands, the chloride concentration in groundwater ranges from 07 to 606 mg/L (Ograbraj of South Andaman district). Except for one groundwater sample, all other chloride levels are within the acceptable limit for drinking water (250 mg/L, according to BIS: 2012). In natural water bodies, chloride concentration is closely related to sodium content and specific conductivity. Groundwater with low chloride and sodium levels indicates its fresh nature, which in turn indicates that it is directly replenished by rainfall every year.

Carbonate & Bi carbonate:

Carbonate has not been detected in the groundwater of the A&N islands and the bicarbonate concentration ranged between 18 and 695 mg/L. The highest concentration of HCO_3^- was found at Wandur, South Andaman district. 20% of the samples analysed had a total alkalinity value above the acceptable limit of 200 mg/L and no sample had a value above the permissible limit of 600 mg/L for drinking water purposes (BIS: 2012). In most cases, bicarbonate is the dominant ion, except in groundwater occurring near the coast. The higher concentration of HCO_3^- in the water indicates the dissolution of carbon dioxide (CO_2) in the water, which occurs during the weathering of rocks, the dissolution of minerals or through the decomposition of organic matter.

Nitrate, Fluoride & Sulphate:

Nitrate concentration of the analysed samples ranged from traces to 42 mg/L (Subhashgram, North and Middle Andaman). No sample showed NO_3 concentration higher than the permissible limit of 45 mg/L (BIS: 2012). Spatial distribution of groundwater Nitrate has been shown in fig. 03.

Fluoride ion concentration varied from Traces to 0.69 mg/L, detected from Laxmipur of North & Middle Andaman district with a mean of 0.14 ± 0.16 mg/L. None of the analysed sample showed higher Fluoride concentration than the permissible limit of 1.5 mg/L (BIS: 2012). Spatial distribution of groundwater Fluoride has been shown in fig. 04.

Sulphate is one of the most important anions found in natural waters. The concentration of sulphate ions ranged from trace to 242 mg/L in Havelock Island Jetty, South Andaman district. Only from two analysed samples sulphate concentrations were found higher than the Acceptable limit of 200 mg/L (BIS: 2012). Evaporite deposits form when shallow water bodies evaporate and leave behind concentrated solutions of dissolved salts. In such environments, sulphate ions can combine with calcium (Ca^{2+}) and water (H_2O) to form gypsum, a hydrated calcium sulphate mineral. Anhydrite can also form when conditions are drier and water loss is greater, leading to dehydration of the gypsum. The formation of gypsum or anhydrite is a natural process and can occur over long geological timescales. When these minerals form, they may remove sulphate from the water, contributing to lower levels in groundwater.

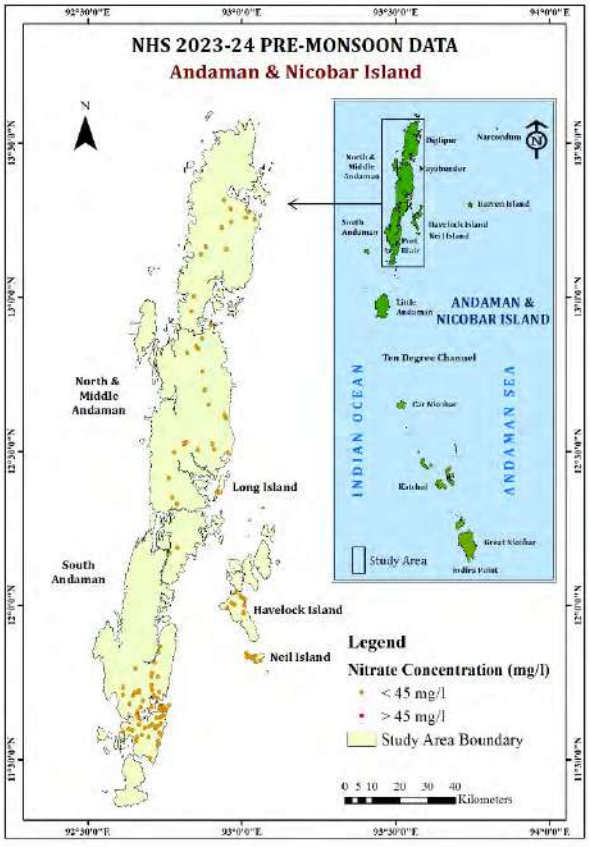


Figure 3: Spatial distribution of groundwater Nitrate

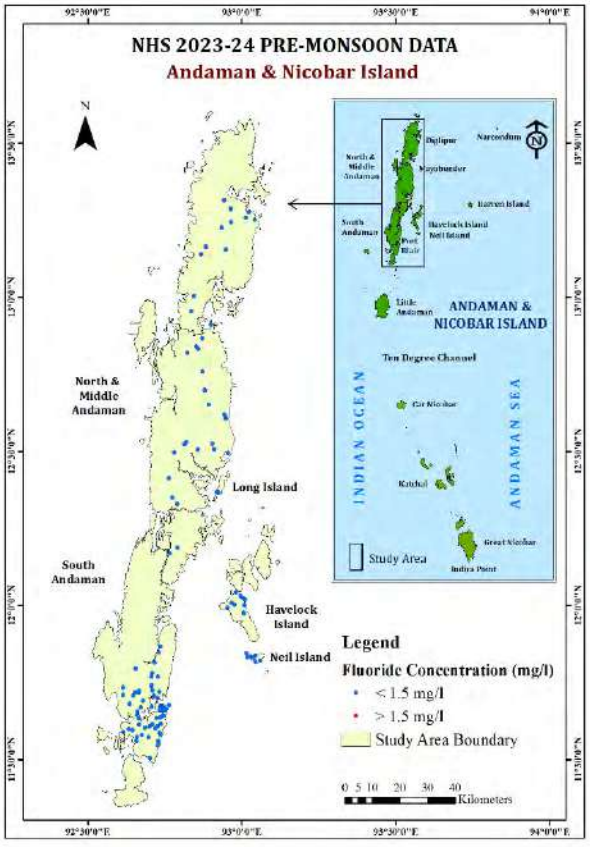


Figure 4: Spatial distribution of groundwater Fluoride

Heavy Metal

Iron

The presence of high concentrations of iron in groundwater is a common water quality problem. Apart from anthropogenic factors it can be attributed to several natural phenomenon like –

1. Geological Sources: The geological composition of the aquifer plays an important role in determining the iron content in groundwater. Iron occurs naturally in various rock formations and minerals. When water encounters iron-rich rock and has a longer residence time, more iron can dissolve and enter into the groundwater.
2. Redox Reactions: Iron exists in various forms, including ferrous iron (Fe^{2+}) and ferric iron (Fe^{3+}). The solubility of iron in water is influenced by the redox conditions. In anaerobic (low-oxygen) environments, such as confined aquifers or waterlogged soils, iron can be reduced from its oxidized form (Fe^{3+}) to its more soluble form (Fe^{2+}). This soluble ferrous iron is more likely to be present in high concentrations in groundwater.

In A&N Islands, groundwater Iron content ranged between Traces to 8.55 mg/L detected from 8 no. Shol Bay, South Andaman District. Only 15% of analyzed samples were found to have Fe concentration more than permissible limit of 1.0 mg/L as per BIS (2012). Spatial distribution of groundwater Nitrate has been shown in fig. 05.

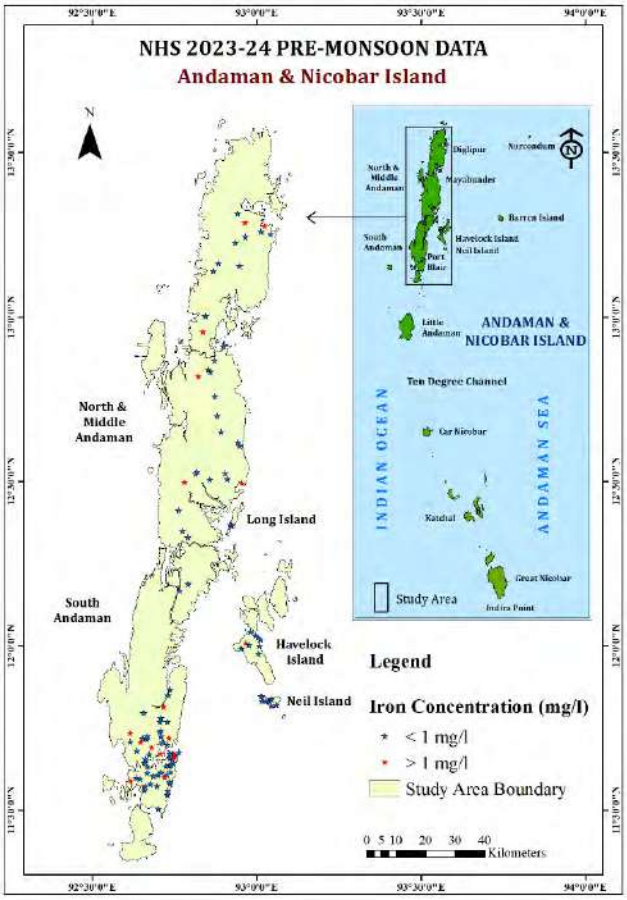


Figure 5: Spatial distribution of groundwater Iron

Uranium

Uranium, a naturally occurring radioactive element, is found in low concentrations in various natural sources like soils, rocks, particularly granites and metasedimentary rocks, and younger sedimentary deposits. The presence of Uranium in water can occur through leaching from soil and rocks or as a result of releases from processing plants. In the A&N Islands, the groundwater's Uranium content ranges from traces to 0.012 mg/L, with the highest concentration detected in Mangluton of the South Andaman district, averaging 0.002 ± 0.003 mg/L. Fortunately, none of the analyzed samples exceeded the permissible limit of 0.03 mg/L as set by the Bureau of Indian Standards (BIS: 2012).

Assessment of Groundwater Suitability for Drinking Purposes

Table 3: Drinking Water Suitability as per the Physicochemical Constituents of Andaman & Nicobar Islands (2023-24, Total number of samples Analysed - 113)

Constituents		Acceptable Limit	Permissible Limit	No of Samples beyond Acceptable Limit	Percent of Samples beyond Acceptable Limit (%)	No of Samples beyond Permissible Limit	Percent of Samples beyond Permissible Limit (%)
pH	mg/L (ppm)	6.5-8.5	No Relaxation	0	-	0	-
TDS		500	2000	9	8	0	-
Total alkalinity as $CaCO_3$		200	600	23	20	0	-
Chloride		250	1000	1	1	0	-
Sulphate		200	400	2	2	0	-
Nitrate		45	No Relaxation	0	-	0	-
Fluoride		1	1.5	0	-	0	-
Total Hardness (as $CaCO_3$)		200	600	29	26	0	-
Calcium (as Ca)		75	200	1	1	0	-
Magnesium (as Mg)		30	100	41	36	0	-
Iron		1	No Relaxation	17	15	17	15
Uranium		0.03	No Relaxation	0	-	0	-

Assessment of Groundwater Suitability for Irrigation Purposes

Understanding the salinity hazards of groundwater samples is critical to making informed decisions regarding irrigation practices. Careful consideration of salinity classes allows for effective management of water resources and appropriate crop selection to ensure sustainable agricultural practices and maintain soil health in the study area.

High sodium content in water samples can have a detrimental effect on soil permeability, leading to a reduction in water available to plants. The presence of excessive sodium in water can lead to the displacement of adsorbed calcium and magnesium in the soil, which poses a risk as it causes structural

damage and compaction resulting in impermeable soil. This impaired soil structure can have a negative impact on plant growth and agricultural productivity. For the purposes of this report, the suitability of groundwater for irrigation is assessed using irrigation indices, specifically USSL salinity and Wilcox diagrams. These tools are typically used in agricultural and environmental studies to assess the potential impact of water quality on soil and plant health. The USSL salinity diagram helps to understand the salinity risks posed by groundwater. High salinity and elevated SAR levels in water can lead to soil degradation and reduced crop yields if not properly managed. The Wilcox diagram, on the other hand, assesses the potential risk of sodium-induced soil degradation caused by irrigation water.

Sodium adsorption ratio (SAR) and USSL diagram

US salinity hazards (USSL 1954) diagram (Fig: 6A) reveal that for most groundwater samples fall under C1–S1 (low-salinity hazard and low-sodium hazard) to C3–S1 (high-salinity hazard and low-sodium hazard) class. Only one sample falls in each of the C3-S2 (high-salinity hazard and medium-sodium hazard) and C4-S3 (Very high-salinity hazard and high-sodium hazard) class.

Groundwater falling into the low to medium salinity hazard classes (C1 – C2) can generally be used for irrigation without the need for special practices to control salinity. These water sources are suitable for most crops and agricultural activities. However, groundwater falling under the C3–S2 category requires more careful management practices if used for irrigation. It is considered of moderate quality and can be used to irrigate semi-tolerant crops. Water samples falling in the high-salinity areas (C4) are not suitable for irrigation under ordinary conditions, as they can cause significant damage to soil structure and negatively affect plant growth. However, in certain cases, this very high-salinity water (C4) may be utilized for irrigation of salt-tolerant plants on permeable soils, provided that special management practices are implemented.

Percent sodium (% Na) and Wilcox diagram

The sodium content is important for irrigation, as sodium reacts with the soil and reduces permeability. In the study area, the percentage of soluble sodium percentage or sodium content, expressed as percentage of sodium (% Na), ranges from 6 to 72 %. The diagram by Wilcox (1948) (Fig. 6B) shows that 95% of the samples fall into the "excellent to good" and "good to-permissible" category. The absence of excess sodium means that most samples are suitable for irrigation and do not impede air and water circulation, infiltration and drainage in the soil during wet conditions in the study area. This condition is beneficial for plant growth and agricultural productivity as it allows the roots to access the necessary nutrients and moisture while preventing soil compaction and waterlogging.

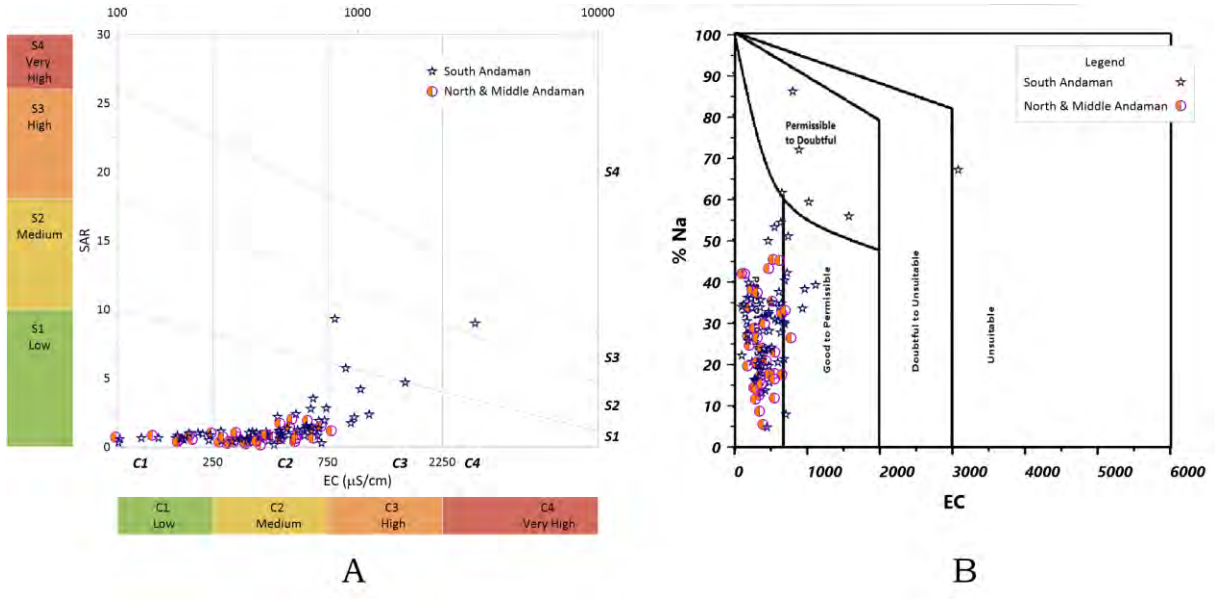


Figure 6: Samples of the Study Area of Andaman and Nicobar Islands plotted in US Salinity Diagram (A) and Wilcox Diagram (B) for Irrigation Suitability

Hydro-geochemical Facies

The representation of groundwater composition is best suited for linear plots. A widely used and modified trilinear diagram, introduced by Piper in 1944, is used to analyse the hydrochemical system of the study area. By plotting the analytical values of the groundwater samples on Piper's trilinear diagram, we gain valuable insight into the variations of cation and anion concentrations in the study area. The diagram shown in Fig. 07A provides a clear visualisation of the chemical properties of the groundwater and facilitates the identification of the prevailing hydrochemical trends. By analysing the trilinear diagram, it becomes possible to identify patterns and relationships between different ions, which can be crucial for the management of water resources and for making informed decisions regarding sustainable water use and environmental protection.

The analysed groundwater samples from the study area show a relatively uniform main ion composition. In majority of the samples about 95% of the samples, magnesium (Mg^{2+}) and/or calcium (Ca^{2+}) ions dominate, while the primary anion, which was detected in about 96% of the samples, is bicarbonate (HCO_3^-). According to the Piper trilinear diagram, the cationic concentration in the groundwater chemistry in the Andaman and Nicobar Islands does not show a dominant type. However, as far as the anionic concentration is concerned, the samples are characterised by the HCO_3^- type.

According to the Chadhas Diagram (Fig. 07B), more than 90% of the groundwater samples have been categorized as either Ca^{2+}-Mg^{2+}-HCO_3^- or Ca^{2+}-Mg^{2+}-Cl^-, indicating a prevalence of similar ion compositions in the region. This observation points to a significant water-rock exchange process and a modern recharge mechanism in the area, suggesting active interactions between the groundwater and surrounding geological formations. It is worth noting that all the analyzed samples originate from shallow groundwater aquifers, which are characterized by being recharged with fresh water. The dominant hydrochemical process influencing the water is weathering-solubilization, wherein minerals in the aquifer bedrock dissolve, leading to the observed cation and anion compositions in the groundwater.

The study area is abundant in fresh groundwater characterized by the Ca-HCO_3 or Mg-HCO_3 type, indicating the presence of relatively pure and uncontaminated water sources. Additionally, the low levels of sodium and chloride content in the groundwater signify the absence of any significant salinity hazards throughout the study area at the present time. This valuable information aids in making informed decisions to protect the groundwater from potential contamination and to ensure its optimal utilization for various purposes, including drinking water supply and agricultural needs. Continual monitoring and further research will be essential to track any changes in groundwater quality and to maintain the region's water resources in a healthy state for future generations.

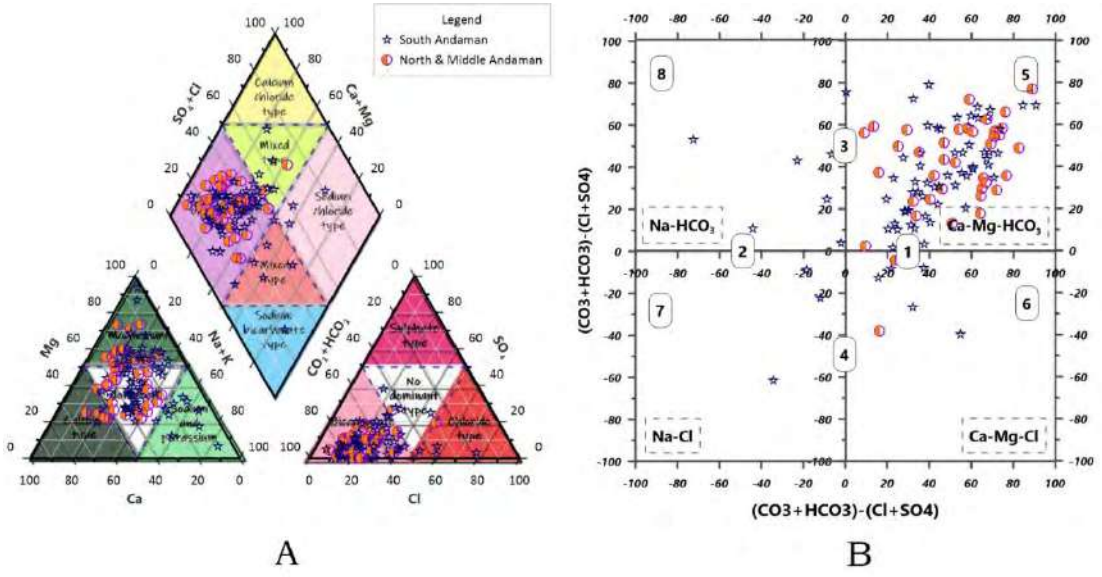


Figure 7: Samples of the Study Area of Andaman and Nicobar Islands plotted in Piper trilinear diagram (A) and modified Piper diagram (Chadha, 1999) (B) for hydrogeochemical facies

Conclusion

The shallow aquifer quality of the Andaman & Nicobar Islands was assessed with regard to major cations, anions, trace metals and radioactive uranium. The hydrogeochemical processes that control the composition of the groundwater and its suitability for drinking, domestic and irrigation purposes were evaluated. The basic parameters analysed in the shallow aquifers of the entire A&N Islands do not, by and large, indicate any major risk from drinking water perspective (Drinking Water Specification: BIS, 2012). Water quality is of concern, particularly regarding the high iron concentration in some places throughout the islands. Overall, the predominant groundwater type in the area suggests that water-rock interactions, weathering, the dissolution of carbonate minerals and modern recharge are the key hydrochemical processes at play. Groundwater in major part of the A&N Islands is also suitable for irrigation, industry and allied purposes as the analysed data ensures adequate sodium and calcium balance. The groundwater contributes to sustainable agricultural practises and the maintenance of soil health in the region. The study will help in making informed decisions on irrigation practices and water resource management across the Andaman and Nicobar Islands.

~~~~~~ End ~~~~~~
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- Inspection has been conducted for 103 Units and EC notices have been issued to defaulting units to levy Environment Compensation on case-to-case basis.

Summary of 103 Units	Total
Hotels(South Andaman	59
Hotels: (Swaraj Dweep	17
Automobile Service centres(ASC)	20
Hotels: (Shaheed Dweep)	7
	103

List of 103 units :

Present Status of Hotels/ASC

S.No	Name of the hotel	Hotel/ Automobile Service Center
HOTELS(SOUTH ANDAMAN)		
1.	M/s Hotel Blue Mmarlin, Polytechnic Road, Dollygunj, Port Blair. Ph-03192-250201. Email-hotelbluemmarlin@gmail.com PIN: 744103	Hotel
2.	M/s Sinclairs Bayview, South Point, Port Blair. Ph-03192-227824. Email-portblair@sinclairshotels.com PIN: 744106	Hotel
3.	M/s TSG Emerald View, No.25 maulana Azad Road, Phoenix Bay. Port Blair-744102. Ph-246488/246499 Email-tsg-hotel@rediffmail.com. PIN: 744102	Hotel
4.	M/s Hotel Shreesh, Link Road, Goalghar, Port Blair-744103. Ph-03192-242115. Email-hotelshreeshportblair@gmail.com. PIN: 744103	Hotel
5.	M/s Hotel Aparupa, Link Road, Goalghar, Port Blair, PIN: 744103	Hotel
6.	M/s Hotel Abhishekh, Link Road, Goalghar, Port Blair-744103. Email-hotelabhishekh@yahoo.com PIN: 744103	Hotel
7.	M/s Hotel Shompen,	Hotel

	Middle Point, Port Blair. **2598** Ph-03192 244644. Email-feedback@singhotel.in	
8.	M/s J Hotel, Abeerdeen, Bazaar, Port Blair	Hotel
9.	M/s Hotel Sahara, Govt. Polytechnic, Dollygunj, Port Blair	Hotel
10.	Hotel Sunrise, CARI Road, Bathubasti, Port Blair South Andaman	Hotel
11.	M/s Hotel Magpie, Near Dollygunj Junction, Port Blair, South Andaman	Hotel
12.	M/s Hotel Anbu International, Dollygunj, Port Blair South Andaman	Hotel
13.	M/s Hotel Mainak, Shadipur, Port Blair South Andman	Hotel
14.	M/s Ripple Resorts, Carbyn Cove, Port Blair South Andaman	Hotel
15.	M/s Hotel AT Villa, Sita Nagar, AttamPahar, Port Blair South Andaman	Hotel
16.	M/s Driftwood Hotel & Resort, JN Road, Haddo, Port Blair South Andaman	Hotel
17.	M/s Diviyum Manor, Opp Veer Savarkar Airport, Lamba Line, Port Blair South Andaman	Hotel
18.	M/s Da Bay Inn, Sea Shore Road, Port Blair South Andaman Email-dabayinnandaman@rediffmail.com.	Hotel
19.	M/s Palika Palace, Anarkali, Delanipur Port Blair South Andaman	Hotel
20.	M/s Hotel Port Sheraton, 21/18 RP Road, Dignabad,	Hotel

	Port Blair, South Andaman 2599	
21.	M/s Sea Shell Hotels & Resorts, Marine Hill, Port Blair, South Andaman, PIN: 744101. Ph-03192 242773. Email-info@seashellhotels.net	Hotel
22.	Coral Cove,Minni Bay Port Blair	Hotel
23.	M/s Hotel SL International, Protherapur, Port Blair South Andaman	Hotel
24.	M/s Blue Sea Hotel Pvt. Ltd, M.G Road, Middle Point, Port Blair, South Andaman PIN-744101. Email-hotelbluesea@gmail.com	Hotel
25.	M/s Sun Sea Resort Pvt Ltd. , MG Road, Middle Point, Port Blair. South Andaman, Ph-03192 244442. Email-info@sunsearesort.net	Hotel
26.	M/s S.R. Castle, Opp. Govt. Polytechnic, Dollygunj, Port Blair-744103. South Andaman Email- infosrcastle@gmail.com	Hotel
27.	M/s Hotel Rishab, Marine Hill, Port Blair South Andaman, 744101. Email-hotelrhishabh@gmail.com. Ph-03192-238223	Hotel
28.	M/s Megapode Resort, Haddo, Port Blair South Andaman	Hotel
29.	M/s Hotel Port Mariden, Delanipur, Port Blair South Andaman	Hotel
30.	M/s Dev Haweli, Delanipur, Port Blair South Andaman	Hotel
31.	M/s Dev Mahal, PremNagar, Port Blair South Andaman	Hotel
32.	M/s Hotel Sentinel, Phoenix Bay, Port Blair. South Andaman Ph-03192 244914/9932089996. Email-hotelsentinel@hotmail.com	Hotel
33.	M/s Hotel NK International, Sea Shore Road, Anarkali, Port Blair, South Andaman	Hotel

	Ph-233066. **2600** Email-hotelnkinternational@gmail.com	
34.	M/s Hotel Dhanalaxmi Pvt. Ltd., Aberdeen Bazaar, Port Blair South Andaman	Hotel
35.	M/s Hotel ACC, Mohanpura, Port Blair South Andaman	Hotel
36.	M/s Hotel Shan N Shah, Mohanpura, Port Blair South Andaman	Hotel
37.	M/s Hotel Dream Palace, Haddo, Port Blair South Andaman	Hotel
38.	M/s Hotel Kings Tower, Haddo main Road, Opp Van Sadan, Port Blair South Andaman	Hotel
39.	M/s Hotel Island Pride, Dollygunj, Port Blair South Andaman	Hotel
40.	M/s Hotel Evergreen Residency, Dollygunj, Port Blair South Andaman	Hotel
41.	M/s Sea Princes Beach Resort, New Wandoor Beach, Port Blair South Andaman	Hotel
42.	M/s Hotel Hill View, Air Road, Delanipur Port Blair, South Andaman	Hotel
43.	M/s GB Oceania, Bathubasti Junction, Garacharma, Port Blair, South Andaman	Hotel
44.	M/s Palm Grove Eco Resort, Protherapur, Port Blair South Andaman	Hotel
45.	M/s The White Coral, Sippighat, Port Blair South Andaman	Hotel
46.	M/s Hotel SRM, Babuline, Aberdeen Bazaar Port Blair, South Andaman	Hotel
47.	M/s Maya Hotel, JN Road, Haddo Port Blair, South Andaman	Hotel
48.	M/s Hotel Ram Niwas, Babuline, Aberdeen Bazaar Port Blair	Hotel

49.	M/s The North Reef, Dollygunj, Port Blair South Andaman Email-hotelthenorthreef@gmail.com	Hotel
50.	M/s Islander Inn, Phoenix Bay, Pongi Chong, Port Blair, South Andaman Email-vmrottals@gmail.com. Ph-03192-234234.	Hotel
51.	M/s A.G. Residency, Garacharma, Port Blair South Andaman	Hotel
52.	M/s Hotel Vivek, Garacharma, Port Blair South Andaman	Hotel
53.	M/s Hotel Port Residency, CARI Road, Bathubasti, Port Blair, South Andaman	Hotel
54.	M/s Sun City, Beadanabad, Near Chidyatapu, Port Blair, South Andaman	Hotel
55.	M/s Lalbagh Eco Friendly Resort, Pathergudda Junction, Port Blair	Hotel
56.	Western Park, Near New india Insurance office, Babuline, Aberdeen Bazaar Port Blair	Hotel
57.	Hotel Blair, HSKP Gurudwara Lane, Port Blair	Hotel
58.	Jaimathi In Balir, Sasthiri Road, Aberdeen, Port Blair	Hotel
59.	Hotel Shalini, VIP Road Junction, Junglighat, Port Blair	Hotel
AUTOMOBILE SERVICE CENTRES(ASC)		
60.	M/s Prince Store trading (Prince Honda), Garacharama, Ph-9564783666/8348303666	Automobile Service Center
61.	M/s PreetaCars(India) Pvt Ltd., Opp working Womens Hostel, Dollygunj, Port Blair	Automobile Service Center
62.	M/s AKT Automobiles, VIP Road, Port Blair Ph:9434288772	Automobile Service Center
63.	M/s Ahaan Automobile Andaman Pvt Ltd(Nissan), New Pahargoan, Port Blair	Automobile Service Center
64.	M/s Prince Bajaj(Prince Hardware), Middle Point, Ph-9932082135	Automobile Service Center
65.	M/s Gennext Motors Andaman Pvt Ltd (Tata Cars)	Automobile Service Center
66.	M/s Jadwet Trading Co. Pvt Ltd.(Mahindra & Mahindra) Garacharama, Port Blair South Andaman	Automobile Service Center

	Ph-9932089864 **2602**	
67.	M/s Agency House, Dudhline, Nayagoan, Port Blair, South Andaman Ph-9434282419	Automobile Service Center
68.	M/s Agency House, Garacharma, Port Blair, South Andaman Ph-9434282419	Automobile Service Center
69.	M/s Mohan Automotives Pvt Ltd, Garacharma, Port Blair, South Andaman Ph-8001230400	Automobile Service Center
70.	M/s LMS Honda, Junglighat, Port Blair South Andaman	Automobile Service Center
71.	M/s Jadwet Trading Co. Pvt Ltd.(Mahindra& Mahindra) Aberdeen Bazaar, Port Blair, South Andaman Ph-9932089864	Automobile Service Center
72.	M/s LMS Hyundai, School Line, Port Blair South Andaman Ph-9679550616	Automobile Service Center
73.	M/s Andaman Motors Pvt Ltd, Seashore Road, Haddo, Port Blair, South Andaman Ph: 9932087117	Automobile Service Center
74.	M/s Andaman Automobile Agency (Ashok Leyland), Garacharama, Port Blair South Andaman Ph-8001230400	Automobile Service Center
75.	M/s N K Automotives, Pathargudda, Port Blair, South Andaman Ph: 9933241004.	Automobile Service Center
76.	M/s Sai Leela Automobile, ATR Main Road, Bathubasti, Garacharma, Port Blair.	Automobile Service Center
77.	M/s Agency House, Rangat, North & Middle Andaman, Ph-9434282419	Automobile Service Center
78.	M/s Agency House, Diglipur, North & Middle Andaman, Ph-9434282419	Automobile Service Center
HOTELS: (SWARAJ DWEEP)		
79.	M/s Symphony Palms, No.3, Govind Nagar,	Hotel

	Swaraj Dweep, South Andaman PIN: 744211	
80.	M/s Havelock Island Beach Resort Pvt.Ltd, Govind Nagar, Swaraj Dweep South Andaman PIN: 744211	Hotel
81.	M/s Coral Reef Resort Pvt. Ltd., No. 5 Vijay Nagar beach, Swaraj Dweep South Andaman PIN: 744211	Hotel
82.	M/s Sun Rise Tourist Complex/ M/s Sun Rise Beach Resort(Old name), Vijay Nagar Beach, Swaraj Dweep South Andaman PIN: 744211	Hotel
83.	M/s Shangri Las Beach Resort, No. 5 Vijay Nagar beach, Swaraj Dweep South Andaman PIN: 744211	Hotel
84.	M/s El dorado Beach Resort, No. 5 Vijay Nagar beach, Swaraj Dweep South Andaman PIN: 744211	Hotel
85.	M/s Arpita Pent House, Govind Nagar, Swaraj Dweep South Andaman PIN: 744211	Hotel
86.	M/s Radhakrishna Eco Friendly Resort, Govind Nagar, Beach No.2, Swaraj Dweep. South Andaman PIN: 744211	Hotel
87.	M/s The Kingdom, Radha Nagar, No.3, Swaraj Dweep South Andaman PIN: 744211	Hotel
88.	M/s Silver Sand, No. 5 Vijay Nagar beach, Swaraj Dweep South Andaman PIN: 744211	Hotel
89.	M/s Orient Legend Resort, No. 5 Vijay Nagar beach, Swaraj Dweep South Andaman PIN: 744211	Hotel

90.	M/s Aquays Hotels and Resorts/ **2604** M/s Holiday Inn (Old name), Govind Nagar, Beach No.5, Swaraj Dweep South Andaman PIN: 744211	Hotel
91.	M/s Barefoot Resorts, Beach No. 7, Radha Nagar, Swaraj Dweep South Andaman PIN: 744211	Hotel
92.	M/s Coconut Grove Beach Resort, No. 5 Vijay Nagar beach, Swaraj Dweep South Andaman PIN: 744211	Hotel
93.	Havelock Holiday Beach Resort, No.2, Govind Nagar, Havelock	Hotel
94.	Munjoh, beach-5, Havelock	Hotel
95.	Gold India Beach Resort, No. 5 Vijay Nagar beach, Havelock	Hotel
96.	Gold Star Beach Resort, Govind Nagar, Havelock	Hotel
	Hotels: (Shaheed Dweep)	
97.	M/s Tango Beach Resort, Beach No.1, Lakshamanpur, Shaheed Dweep, South Andaman PIN: 744104	Hotel
98.	M/s Summer Sands Beach Resort, Ram Nagar, Beach No. 5, Shaheed Dweep South Andaman PIN: 744104	Hotel
99.	M/s Hotel Amullya, Neil Kendra, Shaheed Dweep South Andaman PIN: 744104	Hotel
100.	M/s Silver Sand Beach Resort, Lakshmanpur, Shaheed Dweep South Andaman PIN: 744104	Hotel
101.	M/s Aquays Hotels and Resorts/ M/s Holiday Inn Beach Resort Pvt. Ltd (Old name), Beach No.3, Ram Nagar, Shaheed Dweep South Andaman PIN: 744104	Hotel
102.	Coco-N-Huts Beach Resort , Shaheed Dweep	Hotel
103.	Kalapani Beach Resort, Beach No. 3, Shaheed Dweep	Hotel

2605

- Further, Inspection roster has been prepared for the inspection of the remaining Hotels (excluding the hotels listed in 103 units) from **01/11/2024- 31/11/2024** at all the locations simultaneously by the ANPCC officials to assess the compliance status of Waste management and Sewage Treatment Plant for compliance of the Water (Prevention and Control of Pollution) Act, 1974, Air (Prevention and Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986 and various court orders.

Summary of Hotels to be Inspected		
Locations	**No. of Units**	**Estimated Time frame for Inspection**
Port Blair	207	01/11/2024- 31/11/2024
Ferrargunj	9	
Mayabunder	8	
Diglipur	18	
Rangat	19	
Shaheed Dweep	55	
Swaraj Dweep	81	
Total	**397**	

List of hotels to be inspected are as below:**2607**

Sr No	Name of the Unit	Category	District	Area
1.	M/s Hotel Saddle peak , Arial bay, pin-744202 ph-9474276434,	Green	Diglipur	Arial Bay, Diglipur
2.	M/s Karthika Inn, Subasgram, Diglipur	Green	Diglipur	Diglipur
3.	M/s Pristine Beach Resort, Kalipur Beach, diglipur, North Andaman ph-272352, 271793 9474286787	Green	Diglipur	Kalipur, Diglipur
4.	Saddle peak view Resort, kalipur, Diglipur, North Andaman, ph-272789	Green	Diglipur	Kalipur, Diglipur
5.	Turtle Nest Resort (Turtle Resort by IP&T), Kalipur, Diglipur, North Andaman, ph-03192-271818	Green	Diglipur	Kalipur, Diglipur
6.	M/s Mv Lodge, Diglipur Bazaar-9434297998,9679587160	Green	Diglipur	Subhasgram, Diglipur
7.	M/s Hotel Adhi, Subhasgram, Diglipur	Green	Diglipur	Subhasgram, Diglipur
8.	D. W. Guest House, Subhashgram, Diglipur	Green	Diglipur	Subhasgram, Diglipur
9.	Hotel Disney World, Subhashgram, Diglipur	Green	Diglipur	Subhasgram, Diglipur
10.	J. N. Bepari Lodge, Subhashgram, Diglipur	Green	Diglipur	Subhasgram, Diglipur
11.	Hotel Land Fall, Ariel Bay, Diglipur	Green	Diglipur	Subhasgram, Diglipur
12.	Tamizar Sangam, Subhashgram, Diglipur	Green	Diglipur	Subhasgram, Diglipur
13.	Laxmi Lodge, Subhashgram, Diglipur	Green	Diglipur	Subhasgram, Diglipur
14.	M/s Titli Guest House, Subhashgram, Diglipur, North Andaman-744202	Green	Diglipur	Subhashgram, Diglipur
15.	M/s Maa Yasodha lodge, , Subhashgram, Diglipur ph-9933255086	Green	Diglipur	Subhashgram, Diglipur
16.	M/s JN Bepari Lodge, Subhashgram, Diglipur	Green	Diglipur	Subhashgram, Diglipur
17.	M/s Drua Lodge, Subhashgram, Diglipur	Green	Diglipur	Subhashgram, Diglipur
18.	M/s Hotel BD, Subhashgram, ATR Road,Diglipur-744202, ph-272420 E-mail-b.d.lodge_d.p@gmail.com	Green	Diglipur	Subhashgram, Diglipur

19.	Genex resort PVt. Ltd., Jodakalan 2608 Netaji Nagar, Telerabad, Port Blair, South Andaman Andaman Islands .	Green	Ferrargunj	Jodakalan
20.	Sudharsan Eco Friendly resort, Ferrargunj	Green	Ferrargunj	Manjery
21.	Habdipur Hotel, Habdipur, Ferrarigunj, Port Blair, South Andaman	Green	Ferrargunj	Ograbraj
22.	Munjoh Island House Private Limited, Sippighat, 9474296333	Orange	Ferrargunj	Sippighat
23.	HOTEL KANGAROO, Shippighat, Port Blair, South Andaman.	Green	Ferrargunj	Sippighat
24.	M/s Anugama Resort, Wandoor Vilage, South Andaman, 744103 www.anugamaresort.com email-info@anugamaresort.com Ph.- 6591540452 / 6598509052 / 03192 280068	Green	Ferrargunj	Wandoor
25.	M/s Lush Green, 15/12, S.N. Road Gol Ghar, (Wandoor) Port Blair, 744102 Ph.- 9932082489/ 03192 231762 Fax- 03192 232484 email- md@lushgreenresorts.com	Green	Ferrargunj	Wandoor
26.	M/s Mangrove bay resort, Wandoor, Port Blair	Green	Ferrargunj	Wandoor
27.	M/s Sanctuary Guest House, Wandoor, 9531843113	Green	Ferrargunj	Wandoor
28.	M/s Hotel Ashna, Seaport Bar & Restaurant Near Rampur Beach, Danapur Junction, North & Middle Andaman - 744204, Ph: 9434287028, 9679527028,9434287027,9474226200	Green	Mayabunder	Danapur, Mayabunder
29.	Hotel carlo,Dobi Dera, Mayabunder, ph-9476013540	Green	Mayabunder	Dobi Dera, Mayabunder
30.	M/s Anmol Guest House, MKS complex, Mayabunder, North & Middle Andaman-744204, ph-03192-262695,9474540064,9434276092	Green	Mayabunder	Mayabunder
31.	M/s S.T.B Lodge, bar & restaurant, Near Helipad Ground, Mayabunder, North & Middle Andaman-744204, ph-	Green	Mayabunder	Mayabunder

	03192-273249, 9474266727 **2609**			
32.	Blue Bird Hotel, Mayabunder	Green	Mayabunder	Mayabunder
33.	Megeshwari Lodge, Mayabunder	Green	Mayabunder	Mayabunder
34.	M/s Green Valley Resorts, NH-4, Panighat road, Mayabunder, North & Middle Andaman-744204 ph-07838382914, 9933221164	Green	Mayabunder	Panighat, mayabunder
35.	M/s Sea n Sand , pokhadera, Mayabunder, North & Middle Andaman-744204 ph-9434287028, 9679527028, 9434287027, 9474226200	Green	Mayabunder	Pokhadera, Mayabunder
36.	Azad Lodge, Aberdeen Bazar, Port Blair	Orange	Port Blair	Aberdeen Bazaar
37.	KALKI, Gurudwara Lane, Port Blair.	Orange	Port Blair	Aberdeen Bazaar
38.	Amina Lodge, Aberdeen Bazaar	Green	Port Blair	Aberdeen Bazaar
39.	Ateeq Lodge, Aberdeen Bazaar, Port Blair	Green	Port Blair	Aberdeen Bazaar
40.	Hotel City Heart, Aberdeen Bazaar, Port Blair	Green	Port Blair	Aberdeen Bazaar
41.	Hotel LandMark Aberdeen Bazar, Port Blair 9434282412 landmarkandaman@gmail.com	Green	Port Blair	Aberdeen Bazaar
42.	Hotel Light House Residency MG Road, A/Bazar, Port Blair 9933200733 lighthouseresidency2017@gmail.com	Green	Port Blair	Aberdeen Bazaar
43.	Hotel Meshack,Meshack Complex, Aberdeen Bazaar, Port Blair 744101, Ph: 9434281791/03192 235060/260917hoteldayasagar@yahoo.co.in	Green	Port Blair	Aberdeen Bazaar
44.	Hotel Milan Manor, Aberdeen Bazaar, Port Blair 744101 Ph.03192 240006/ 8900914006 hotelmilanmanorpb@gmail.com	Green	Port Blair	Aberdeen Bazaar
45.	Hotel Sabra, Aberdeen Bazaar, Port Blair	Green	Port Blair	Aberdeen Bazaar
46.	Sampat Lodge, Near Clock Tower, Aberdeen bazar 9434280611	Green	Port Blair	Aberdeen Bazaar

47.	Swagat Lodge, Opp. Tiranga Park, Aberdeen Bazaar, Port Blair 744101 Ph.9531850465	Green	Port Blair	Aberdeen Bazaar
48.	M/s HOTEL BELL ELITE, Biggie Line, Port Blair, South Andaman.	Green	Port Blair	Aberdeen Bazaar
49.	ASHIRWAD- LODGE, Opp. CARA BANK, Near Clock Tower, Aberdeen Bazar, Port Blair, Andaman and Nicobar Islands 744101	Green	Port Blair	Aberdeen Bazaar
50.	HOTEL-N H REGENCY, Dr Rajendra Prasad Rd, Aberdeen Bazar, Mohanpura, Port Blair, Andaman and Nicobar Islands 744101	Green	Port Blair	Aberdeen Bazaar
51.	M/s Hotel Saddle peak , Arial bay, pin-744202 ph-9474276434,	Green	Port Blair	Arial Bay, Diglipur
52.	Amit Lodge, Atlanta Point, Port Blair 9679530518 ali9434@gmail.com	Green	Port Blair	Atlanta Point
53.	Atlanta Cottage, Atlanta Point, Port Blair 9933278423	Green	Port Blair	Atlanta Point
54.	De Marina Hotels & Resorts, Atlanta Point, Aberdeen Bazaar, Port Blair 744104 Ph.03192 239000/237000 info@hoteldemarina@gmail.com www.hoteldemarina.com	Green	Port Blair	Atlanta Point
55.	Hotel Pearl Harbour, Attam Pahad, Port Blair 744101 Ph. 9679531504 / 9476052228 /9933295721 email- pearlharbourpb@gmail.com	Green	Port Blair	Attam Pahar
56.	HOTEL NILE BLUE, Garacharma, Attam Pahad Road, Port Blair, Andaman and Nicobar Islands PIN- 744105	Green	Port Blair	Attam Pahar
57.	HOTEL SRI KPN, SURVEY NO 99/A/13 , HOTEL SRI KPN	Orange	Port Blair	Austinabad

	BUILDING , PORT BLAIR **2611**			
58.	Hotel Beach Austinabad, Port Blair 9679541645	Green	Port Blair	Austinabad
59.	HOTEL BLUE REGENT, Supply Line, Aberdeen Bazar, Port Blair, Andaman and Nicobar Islands -744101 Ph No.095662 28881	Green	Port Blair	Austinabad
60.	HOTEL KRISHNA & SON, Near Bridge Gunj Colony , Austinabad, Port Blair-744103	Green	Port Blair	Austinabad
61.	HOTEL RAJAMANI, Dollygunj, Port Blair, South Andaman.	Green	Port Blair	Austinabad
62.	Hotel Royal Palace, Babulane, Port Blair 03192-230999, 9434269999 hotelroyalpalacekvr@gmail.com	Orange	Port Blair	Babu Line
63.	Hotel Island Plaza, Babu line, Aberdeen Bazaar, Port Blair 03192-235436 kvfarmresort@gmail.com	Green	Port Blair	Babu Line
64.	Hotel Kanniga, Opp Lord Rama Temple, Babu Lane, Aberdeen Bazaar, Port Blair 744101 Ph.03192 234690/9434281581 www.hotelkanniga.com	Green	Port Blair	Babu Line
65.	Hotel SKB, Near Indian Bank, Babu Lane, Port Blair Ph.03192 237088/ 9434263317	Green	Port Blair	Babu Line
66.	Hotel Sunrise, Babu Lane, Port Blair 003192-235943, 8900907661 hotelsunrisempt@rediffmail.com	Green	Port Blair	Babu Line
67.	Katchal Inn Babu Iane, Port Blair 03192-235098 katchalinn@outlook.com	Green	Port Blair	Babu Line

68.	Hotel Diamond City,Bathubasti, Port Blair9679574905, diamondcityandaman@gmail.com	Green	Port Blair	Bhatubasti
69.	Hotel Galaxy, CARI road, Bathubasti, Port Blair 9474208328 vineesh3693@gmail.com	Green	Port Blair	Bhatubasti
70.	SAGAR INTERNATIONAL, Housing Colony, Bhathu Basti, Port Blair, Andaman and Nicobar Islands. PIN: 744103	Green	Port Blair	Bhatubasti
71.	AMR Grand bathubasthi, Port Blair 9531885297 amrgrand@gmail.com	Green	Port Blair	Bhatubasti
72.	Hotel Lake View, Great Andaman Trunk Rd, Garacharama, Port Blair, Andaman and Nicobar Islands 744103	Green	Port Blair	Bimblitan
73.	Shree Karpagam Dreams Bird line Near Airforce station, Port Blair 8001443111,03192-261300 email- reservations@skdreams.co.in	Orange	Port Blair	Bird Line
74.	Sidzern resort (old name-Hotel De Meadows Pvt. Ltd.), Birdline Port Blair 744105 Ph.03192-260777/9609976663 demeadowsandaman@gmail.com www.demeadows.in	Green	Port Blair	Bird Line
75.	Hotel C.S.International, Prothrapur, Port Blair, Andaman and Nicobar Islands -744103	Green	Port Blair	Bird Line
76.	De lamour brichgunj, Port Blair 8900960888 Email- delamourhotel@gmail.com	Green	Port Blair	Brichgunj

77.	Hotel Dayasagar, Savio Market, Brichgunj Chowk, Port Blair 744103 Ph.03192 260185/9434281791 hoteldayasagar@yahoo.co.in	Green	Port Blair	Brichgunj
78.	HOTEL SAGAR Residency, Dollygunj, Port Blair, Andaman and Nicobar Islands 744103	Green	Port Blair	Brichgunj
79.	Hotel Aqua Breeze Buniyadabad, Port Blair 9747210736 email- hotelaquabreeze103@gmail.com	Green	Port Blair	Buniyadabad
80.	Adhvasha Beach Spa Resort, Rangachang, Port Blair, Andaman and Nicobar Islands-744105	Green	Port Blair	Burmanallah
81.	Hotel Rainforest (ANDAMAN DIFFERENTLY ANIL GAYAL), Burmanallah, Port Blair, South Andman, Andman Island-744105	Green	Port Blair	Burmanallah
82.	M/s Peerless Resort, Carbyn cove, Port Blair 9531961205, fomprp@peerlesshotels.com	Orange	Port Blair	Carbyn Cove
83.	Seven Island, Chidiyatapu, Port Balir	Orange	Port Blair	Carbyn Cove
84.	M/s Wild Grass, Bada Balu Road, Chidyatapu, South Andaman email- avtarbaath495@gmail.com Ph.-9474204508	Green	Port Blair	Chidiyatapu
85.	Hote 2A, 2A Lane Carbyn's Cove Beach Road, Port Blair, Andaman and Nicobar Islands 744112	Green	Port Blair	Chidiyatapu
86.	BIG TREEE HOSPITALITY, Chidiyatapu, Port Blair, Andaman and Nicobar Islands 744105	Green	Port Blair	Chidiyatapu
87.	JM Saha Hotel & Resort Pvt,. Dairy Farm, Port Balir	green	Port Blair	Dairy Farm
88.	Hotel Adarsh, (Boarding and Lodging) Near Ice Factory, Diary Farm Junction, Port Blair- 744103 Ph. 03192 230516/9434260862/9933253266	Green	Port Blair	Dairyfarm

	email- adarshhotel@gmail.com **2614**			
89.	Hotel MSM, Diary Farm Junction, Port Blair	Green	Port Blair	Dairyfarm
90.	The Pearl Dairyfarm, Port Blair 03192-235624	Green	Port Blair	Dairyfarm
91.	ISLAND HOTELS AND RESORTS, Port Blair, South Andaman	Green	Port Blair	Dairyfarm
92.	Hotel Bharat Residency, 15-AIR Road, Delanipur, Port Blair 744102 Ph.03192 236896/ 9933299553 dchandaandaman@gmail.com www.triptoandaman.co.in	Green	Port Blair	Delanipur
93.	Classic RegencyAIR Road, Delanipur, Port Blair 744102Ph. 03192 241111 / 9474230672 classicregencyandaman.info@gmail.co mwww.classicregencyandaman.com	Green	Port Blair	Delanipur
94.	Holiday Inn, Delanipur Jn, Port Blair 744102 Ph.03192-240996/ 9933268500/9434271118 arun_hi@yahoo.com www.hotelholidayinnandaman.com	Green	Port Blair	Delanipur
95.	Hotel Attithi Palace, Near Delanipur Junction, Port Blair 9531839515 anandmba1205@gmail.com	Green	Port Blair	Delanipur
96.	Hotel Island Paradise, Near Petrol Pump, Delanipur, Port Blair Ph. 9647122004 / 7872000098/ 9932080902 email- hotelIslandparadise.port blair@gmail.com	Green	Port Blair	Delanipur
97.	Hotel Shalimar, Delanipur, Port Blair	Green	Port Blair	Delanipur
98.	Kapoor Tourist Cottage, Delanipur, Port Blair	Green	Port Blair	Delanipur
99.	HONEY HIVE, No.532, Anarkali Road, Delanipur, Port Blair, Andaman and Nicobar Islands- 744101	Green	Port Blair	Delanipur

100.	Hotel Lalaji Bay View dignabad 9476005820 lalajibayview@gmail.com	Green	Port Blair	Dignabad
101.	Hotel North Bay View, Dignabad, Port Blair,A&N Island Ph. 03192 230417/ 9434292367/9933269367 email- booking@hotelnorthbayview.com www.hotelnorthbayview.com	Green	Port Blair	Dignabad
102.	M/s Hotel Park, Bidnabad, Port Blair, South Andaman	Green	Port Blair	Dignabad
103.	The Seaview Residency Seashore, Near Haddo Jama Masjid, Port Blair 744102 Ph.9434261271 seaviewandamans@gmail.com www.seaviewandamans.com	Green	Port Blair	Dignabad
104.	HOTEL-THE SHELTER, No 4, Shahid Road, Dignabad, Port Blair Andaman Islands - 744101	Green	Port Blair	Dignabad
105.	REEF ATLANTIS, Sisty Nagar, Marine Gate, Port Blair, A ndaman and Nicobar Islands -744101	Green	Port Blair	Dignabad
106.	Vedant Residency near Airport, ATR main road, Dollygunj Por BLair 9933242881 8001744442 vedanthotelandaman@gmail.com	Orange	Port Blair	Dollygunj
107.	Comfort Inn Blue Waves ATR main road, Dollygunj 03192-259336/259338 9679579248 reservations@comfortinnbluewaves.com	Orange	Port Blair	Dollygunj
108.	M/s TSG Grand, Dollygunj, Port Blair Ph. 03192-259259 / 9932082431 Email-tsg-hotel@rediffmail.com.	Orange	Port Blair	Dollygunj
109.	HOTEL SEA PORT	Orange	Port Blair	Dollygunj

110.	Hotel Rajadeepam, Old Pahargoan, Dollygunj, Port Blair Ph. 03192-259496/ 9531854359 / 9531854360 / 9531854361 email- info.hotelrajadeepam@gmail.com www.hotelrajadeepam.com	Green	Port Blair	Dollygunj
111.	Hotel Unique Dollygunj 03192-259846 holidaypackages08@gmail.com	Green	Port Blair	Dollygunj
112.	Ryan's Residency Dollygunj, Port Blair 7063932707	Green	Port Blair	Dollygunj
113.	Sunrise Inn, Dollygunj Chowk, Opp. Airport Runway, ATR Road, Pahargoan, Port Blair Ph. 03192 252392 / 9474295460 /9933288154 /9933269977	Green	Port Blair	Dollygunj
114.	HOTEL RUNWAY INN, OLD PAHARGAON , PORT BALIR , DOLLYGUNJ , 744103	Green	Port Blair	Dollygunj
115.	HOTEL PIGEONS NEST, Dollygunj, Port Blair, Andaman and Nicobar Islands 744103	Green	Port Blair	Dollygunj
116.	TGS DINE INN, Near Sahara Hotel, Dollygunj, Port Blair, Andaman and Nicobar Islands PIN -744103	Green	Port Blair	Dollygunj
117.	Hotel G International Dollygunj 7063929702	Green	Port Blair	Dollygunj
118.	Hotel Heritage Inn,Pahargoan, Dollygunj, Port Blair9434282471heritageinnanadaman @gmail.com	Green	Port Blair	Dollygunj
119.	JUNGLEE MIRCHI RESORT, Caddlegunj, Andaman and Nicobar Islands 744103	Green	Port Blair	Ferrargunj
120.	Andaman Planet, Foreshore Road, Port Blair	Green	Port Blair	Foreshore Road

121.	Hotel Guru International, Opp. CE's Office, APWD, Port Blair A&N Island 744101 Ph. 9476006000 / 8001313000 email- gk.guruinternational@gmail.com www.guruinternationalandaman.com	Green	Port Blair	Foreshore Road
122.	CORAL REEF	Orange	Port Blair	Garacharma
123.	Hotel F Garacharma 9933254993 fhotel@gmail.com	Green	Port Blair	Garacharma
124.	HOTEL BIPASHA, Garacharama, Port Blair, South Andaman	Green	Port Blair	Garacharma
125.	HOTEL RED CARPET, ATR Road, Garacharama, Port Blair, South Andaman	Green	Port Blair	Garacharma
126.	BLUE BIRD NEST HOTEL, Garacharma 2, (Near primary school), Port Blair, Andaman and Nicobar Islands- 744105	Green	Port Blair	Garacharma
127.	V KNOT HOTEL, Lotus Colony, Garacharama, Port Blair, Andaman and Nicobar Islands. PIN- 744105	Green	Port Blair	Garacharma
128.	M/s Hotel VRK, Bhathu Basti, Port Blair, Andaman and Nicobar Islands 744103	Green	Port Blair	Garacharma
129.	M/s A. J. Residency, Garacharma, Port Blair- 744105	green	Port Blair	Garacharma
130.	Hotel Royal Cliff, kalimandir road, near panchayat bhawan Garacharma, Port Blair 9831664066/9874088314	Green	Port Blair	Garacharma
131.	Aastha Hotel, Goalghar, Port Blair	Green	Port Blair	Goalghar

132.	Andaman Residency, Goal Ghar, Port Blair 744102 Ph.03192-242200/243200 andamanresidencyhotel@gmail.com	Green	Port Blair	Goalghar
133.	Hotel Guj International, Goalghar, Port Blair 9434262152	Green	Port Blair	Goalghar
134.	Hotel Nakshatra Inn, 23, Church Lane, Goal Ghar, Port Blair A&N Island, Pin. 744101 Ph. 03192 235771 / 9476002283 / 9701078592 Fax No. 03192 235546 email- bharath.nakshatrahotel@gmail.com www.andamannakshatrainn.com	Green	Port Blair	Goalghar
135.	The Gem Continental, Link Road, Goalghar, Port Blair 03192-234534 thegemcontinental@gmail.com	Green	Port Blair	Goalghar
136.	The Roof Goal ghar, Port Blair 9933222299 email- holidayhomeportblair@gmail.com	Green	Port Blair	Goalghar
137.	ANDAMAN GALLEY, Central Lodge Complex, Link Rd, Goal Ghar, Port Blair, Andaman and Nicobar Islands 744101	Green	Port Blair	Goalghar
138.	RICKY'S PARADISE, Junglighat, Port Blair, South Andaman.	Green	Port Blair	Goalghar
139.	Hotel Chatura nest Gurudwara lane 9531917472	Green	Port Blair	Gurudwara Lane
140.	Hotel Bijiya Gurudwara lane Aberdeen Bazar Port Blair 9933224970 email- hotelbijiya@gmail.com	Green	Port Blair	Gurudwara Lane
141.	Hotel Amigrace Gurudwara lane, Port Blair 03192-295800, 7595815707 hotelamigrace@gmail.com	Green	Port Blair	Gurudwara Lane
142.	THE LUXOR, haddo, Lillypur	Orange	Port Blair	Haddo

143.	Andaman Anchorage, Near Haddo Jama Masjid, Foreshore Raod, Port Blair	Green	Port Blair	Haddo
144.	De pebbles haddo 7063939979 hoteldepebbles@gmail.com	Green	Port Blair	Haddo
145.	Hotel Anmol PalaceHaddo9434260265singhskbibipb@gmail.com	Green	Port Blair	Haddo
146.	Hotel harbour View Haddo 9679515511 pbharbourview@gmail.com	Green	Port Blair	Haddo
147.	Hotel Hilltop International, JN Road, Haddo, Port Blair Ph.03192-230636/ 9933266605/ 9531800555 info@hilltopinternational.in www.hilltopinternational.in	Green	Port Blair	Haddo
148.	Hotel Rainbird Haddo 03192-235648 hotelrainbird@gmail.com	Green	Port Blair	Haddo
149.	Hotel Sea View, 2nd Floor, H No. 2, Sea Shore Area, Haddo Port Blair 9434261271, 9679556599, 9933292424 email- hotelseaviewandaman@gmail.com www.seaviewandaman.com	Green	Port Blair	Haddo
150.	Hotel Seagull, Anarkali, Near Delanipur Petrol Pump. Haddo PO, Port Blair 7063912127, hotelseagull29@gmail.com	Green	Port Blair	Haddo
151.	Hotel Tejas Haddo 9748735612 hoteltejasmails@gmail.com	Green	Port Blair	Haddo
152.	LYMS HOTELS, Haddo, Port Blair, South Andaman	green	Port Blair	Haddo
153.	D R HOSPITALITY AND LEISURE, haddo, Port Blair, South Andaman	green	Port Blair	Haddo
154.	L L TRADERS COMPANY, Haddo, Port Balir	green	Port Blair	Haddo

155.	Hotel Sweneha near confidental clinic junglighat, Port Blair 9933217482 rswenehahotel107@gmail.com	Orange	Port Blair	Junglighat
156.	A.R Pride Residency, Junglighat, Port Blair 9679580818 arprideresidency@gmail.com	Orange	Port Blair	Junglighat
157.	Silver Spring Junglighat, Port Blair 03192-242430, gm@silverspringhotels.in	Orange	Port Blair	Junglighat
158.	WANDERERS HOWFF, VIP ROAD JUNCTION , PORT BLAIR , JUNGLIGHAT , 744103, 9434288772	Orange	Port Blair	Junglighat
159.	Dharma Hotel, Opp HDFC Bank, PB. No. 200, Junglighat, Port Blair 744103 Ph.03192 231139/9434280882 rdharmahotel07@gmail.com	Green	Port Blair	Junglighat
160.	Hotel RD International, Junglighat, Port Blair, 744103 Ph. 03192-212525 / 9933292224 www.hotelrd.com email- enquiry@hotelrd.in hotelrdintl@gmail.com	Green	Port Blair	Junglighat
161.	M/s Hotel Marina Manor, Junglighat, Port Blair, A&N Island Ph: 234793 / 9933231234/ 8900947730 email- hotelmarinamanor@gmail.com	Green	Port Blair	Junglighat
162.	PS Grand Dean Street Junglighat Near DTDC 9476052873	Green	Port Blair	Junglighat
163.	SKS Goldmine, VIP Road Junction, Port Blair	Green	Port Blair	Junglihat
164.	Grand Oceanus Resort Near Chidyatapu Kodiyaghat 9679505185 gdoceanusresort@gmail.com	Green	Port Blair	Kodiyaghat

165.	M/s The Oceanus Resort, Kodiya Ghat, Near Chidyatapu, South Andaman 744105 email-gdoceanusresort@gmail.com booking@theoceanusresort.com www.theoceanusresort.com Ph.-03192 281044 / 9679505185	Green	Port Blair	Kodiyaghat
166.	M/s Hotel Aqua green, (Lemon tree) Lamba Line Port Blair	Orange	Port Blair	Lamba Lane
167.	Hotel Eastern Gate,U/o MRV hosbitality Services Pvt Ltd	orange	Port Blair	Lamba Lane
168.	SAND HEAVEN, Opp. Veer Savakar international Airport, Lamba Line, Port Blair, Andaman and Nicobar Islands PIN- 744103	Green	Port Blair	Lamba Lane
169.	HOTEL RAJ PRAKASH, Lamba Line, Port Blair, South Andaman. PIN - 744103	Green	Port Blair	Lamba Lane
170.	M/s Nagri Inn, Opp. Airport, Entrance Gate, Lamba Line, Port Blair, A&N Island- 744103 email- joy_yacht@yahoo.co.uk andamannagriinn@gmail.com Ph.-9434260074 /9679593561 /9933259702 / 9434297700	Green	Port Blair	Lamba Line
171.	Hotel La Marina (Marine View)Marine hill, Port Blair03192-243500/973448899 email hotelmarinaview@gmail.com	Orange	Port Blair	Marine Hill
172.	M/s Welcome Hotel (Old name M/s Fortune Resort Bay Islands), Marine Hill, Port Blair 7063949605 ce.frbi@fortunehotels.in	Orange	Port Blair	Marine Hill
173.	Hotel Abhinav Marine Hill, Port Blair 9434266898 hotelabhinav@gmail.com	Green	Port Blair	Marine Hill
174.	Hotel SSK Marine Hill, Port Blair 9434281134	Green	Port Blair	Marine Hill

175.	M/s Aashiaanaa Residency Inn, Marine Hill, Port Blair, Andaman and Nicobar Islands 744104.	Green	Port Blair	Marine Hill
176.	Hornbill Nest, Near Mazaar Pahar, Port Blair 9491106969	Green	Port Blair	Mazar Pahar
177.	HOTEL CORAL INN, Middle Point, (near State Library) Port Blair, Andaman and Nicobar Islands 744101 Phone: 094342 67010	Green	Port Blair	Middle Point
178.	Hotel Vintage, Mohanpura, Port Blair	Green	Port Blair	Mohanpura
179.	Hotel King Safire, Nayagaon, Nayagaon Chowk, Port Blair 744105 Ph.03192 228003/228123/9531907227 hotelkingsafire@gmail.com www.kingsafirehotelandservices.com	Orange	Port Blair	Nayagaon
180.	Hotel Ariees Grand, Nayagaon , Port Blair, 9476012345, 8900950786	Orange	Port Blair	Nayagaon
181.	HOTEL SEA SCAPE	Orange	Port Blair	Nayagaon
182.	Hotel Arasi, Nayagaon, Port Blair 9434281691/9933217715	Green	Port Blair	Nayagaon
183.	Hotel Aries , Opp. Children Home, Nayagaon, Shadipur Port Blair 744106 Ph.03192 228008/ 9476012345/ 8189983256 ariesmuruganpb@gmail.com www.hotelariesandaman.com	Green	Port Blair	Nayagaon
184.	Hotel RNP, M.B 193 Dudhlane Chowk, Nayagaon, Port Blair 744106 Ph.03192 229872/9434272417 hotelrnp@gmail.com www.hotelrnp.com	Green	Port Blair	Nayagaon

185.	HOTEL RELAX, Doctors Colony, Nayagaon, Port Blair, Andaman and Nicobar Islands 744101	Green	Port Blair	Nayagaon
186.	OCEAN 16, Nice Colony, Nayagaon, Port Blair, Andaman and Nicobar Islands 744104	Green	Port Blair	Nayagaon
187.	NANDA HOTELS AND RESORTS NAYAGOAN	orange	Port Blair	nayagoan
188.	Hotel GKM Grand, Near Joggers Park, Port Blair, A&N Island Ph. 9434262082/ email-gkmgrand@gmail.com	Orange	Port Blair	Nayagoan
189.	Airport Hotel, Pahargoan, ATR Main Road, Port Blair 744105 Ph. 9531912721 / 03192 250399 booking.airporthotelportblair@gmail.com www.airporthotelandamans.com	Green	Port Blair	Pahargaon
190.	Hotel Islands Cove, 219 MG Road Junction, Port Blair Ph. 9933265515 / 03192-241494 email- hotelislandscove@gmail.com	Green	Port Blair	Pahargaon
191.	HOTEL MOUNT VIEW PRISTINE, 7063920583, Sy.No.178/1 , PAHARGAON , PATHER GUDDA, , 744105	Orange	Port Blair	Pathargudda
192.	BMG HOTEL, Bhathubasthi, Port Balir, South Andaman	Green	Port Blair	Pathargudda
193.	Hotel Mansha Regency phoenix Bay, Port Blair 03192-233772 bookus@hotelmansharegency.com	Orange	Port Blair	Phoenix Bay
194.	Hotel Phoenix, Phoenix Bay 9933249152	Orange	Port Blair	Phoenix Bay
195.	Anchorage Inn, MA Road, Phoenix Bay, Port Blair 03192-240077, 8001070007 hotelanchorageinn@gmail.com	Green	Port Blair	Phoenix Bay

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196.	Grand Paradise Phoenix Bay 9933215552 grandparadiseportblair@gmail.com	Green	Port Blair	Phoenix Bay
197.	Hotel Atlantic, 70-A, MA Road, Phoenix Bay, Port BlairPh. 03192 241777 / 9933245222/9434274921www.hotelatl anticandaman.comemail- hotelatlanticandaman@gmail.com	Green	Port Blair	Phoenix Bay
198.	Hotel NK Grand Days, opp. Andaman Tamizhar sangam Phoenix Bay, Port Blair 03192-230708 9679530779 n.kgranddays@gmail.com	Green	Port Blair	Phoenix Bay
199.	Hotel Surya Phoenix Bay 03192-235936	Green	Port Blair	Phoenix Bay
200.	Hotel Velocity, Opp. Tamizhar Sangham, Phoenix Bay, Port Blair. Ph. 9434288899/7063919899 www.hotelvelocity.com email- hotel.velocity@gmail.com	Green	Port Blair	Phoenix Bay
201.	M/s Hotel Haywizz, #36, MA Road, Phoenix Bay, Port Blair 744101 Ph.03192-23777/246666/ 8001414800 hotelhaywizz@gmail.com www.haywizz.com	Green	Port Blair	Phoenix Bay
202.	Park Inn phoenix Bay 9434261311 parkinnportblair@gmail.com	Green	Port Blair	Phoenix Bay
203.	HOTEL INFINITY, Phoenix Bay, Port Blair, Andaman and Nicobar Islands 744101	Green	Port Blair	Phoenix Bay
204.	Olive Hotel & Suites, 55, Maulana Azad Road, Near Lakme Salon, Phoenix Bay, Port Blair, Andaman and Nicobar Islands-744101	Green	Port Blair	Phoenix Bay

205.	SERINITY INN, Nice Colony, Nayagaon, Port Blair, Andaman and Nicobar Islands 744106	Green	Port Blair	Phoenix Bay
206.	SAI RESIDENCY, Great Andaman Trunk Road, Dollygunj, Port Blair, South Andaman	Green	Port Blair	Phoenix Bay
207.	Sagarika Guest House, DAG Colony, Port Blair, Andaman and Nicobar Islands 744101	Green	Port Blair	Phoenix Bay
208.	HOTEL STAR PARADISE, Marine Hill, Port Blair, Andaman and Nicobar Islands 744101	Green	Port Blair	Phoenix Bay
209.	M/s Jagannath Guest House, Aberdeen Bazar, Rajiv Gandhi Nagar, Port Blair, South Andaman, PIN-744101.	Green	Port Blair	Phoenix Bay
210.	Hotel Andaman sea resort, Phoenix Bay, Port Blair	green	Port Blair	Phonnix Bay
211.	Shine View Hotel, Near VIP Road, Opp. Chinmaya Mission, Police Line , Port Blair-744103 Ph. 9474293331 email-hotelshineviewportblair@gmail.com www.shineviewhotel.com	Green	Port Blair	Police Line
212.	Tango Waves, Police Line, Near VIP Road, Port Blair Ph.03192 230396/9933292984 tangoandaman@gmail.com www.tangobeachandaman.com	Green	Port Blair	Police Line
213.	Hotel Destination , Near Shiv Krishna Temple,Port Blair 744103 Ph. 03192 259152/9474249152 /7063921752	Green	Port Blair	Port Blair
214.	RISHIKALA, Porthrapur, Port Blair South Andaman	green	Port Blair	Porthrapur

215.	Ambika Residency Near Kalimandir, Prem nagar, Port Blair 03192-234855 8900911901 ambika.residency02@gmail.com	Orange	Port Blair	Prem Nagar
216.	Holiday Resort, Prem Nagar, Port Blair 744102 Ph.9831519005 holidayresortpb@gmail.com	Green	Port Blair	Prem Nagar
217.	Hotel IslandsTourister Prem nagar, Port Blair 7063990194 islandstourister@gmail.com	Green	Port Blair	Prem Nagar
218.	Hotel Roxel inn Kalimatha Mandir Prem Nagar 9679574083	Green	Port Blair	Prem Nagar
219.	Hotel Sea Rock Behind Kali Bari, Prem nagar, Port Blair 03192-242300/311 andamanhotelsearock@gmail.com	Green	Port Blair	Prem Nagar
220.	Hotel Heritage MNR , Prothrapur, 9932085031 03192-251313, heritagemnr@gmail.com	Orange	Port Blair	Prothrapur
221.	Hotel Sheetal, C-1/7, Prothrapur, Port Blair, 744105Ph.9476000046/9933277448sheetal.tourstravels@gmail.comwww.andamanhotelsheetaltourstravels.com	Green	Port Blair	Prothrapur
222.	SM Hotel, Prothrapur Chowk, Port Blair 9933210096 smhotel123@gmail.com	Green	Port Blair	Prothrapur
223.	NORTHEN LIGHTS HOTEL, Pahargaon, Port Balir, South Andaman.	Green	Port Blair	Prothrapur
224.	Hotel White Perk, Austinabad, Port Blair, South Andaman.	Green	Port Blair	Prothrapur

225.	Hotel Ritz, Phoenix Bay, Port Blair, Andaman, 744101 Ph. 03192-234171/ 9474209333/9474260666 email-reservation@hotelritzandaman.com www.hotelritzandaman.com	Green	Port Blair	Quarry Hill
226.	Raja Monsoon Villa, Round Basti, Port Blair	Green	Port Blair	Round Basti
227.	Sea hill, Shadipur	Orange	Port Blair	Shadipur
228.	Hotel ARS Grand New Shadipur, Port Blair 03192-229395 hotelarsgrandnew786@gmail.com	Green	Port Blair	Shadipur
229.	Hotel Blue Horizon Opp. GSSS Shadipur, Port Blair 03192-229070/229080, reservations@bluhorizonhotel.com	Green	Port Blair	Shadipur
230.	Hotel Serena Palace Rajasthan Temple Jn. Shadipur, Port Blair 03192-233719/ 8900982065 / 9933216297 serenepalacehotel@gmail.com	Green	Port Blair	Shadipur
231.	Hotel Tamarind Tree Dudhline junction Shadipur 7063988855	Green	Port Blair	Shadipur
232.	M/s Andaman Castle, Aysha Manzil, 1st Street Chandini Chowk, South Point, Port Blair, South Andaman Island 744106	Green	Port Blair	South Point
233.	Pearl Marine, Rina Rd, Port Blair, South Andaman Island -744106.	Green	Port Blair	South Point
234.	DS RESORT AND HOTEL (Bay Walk), Machhi Line, Near, JNRM College Rd, Shadipur, Port Blair, Andaman and Nicobar Islands 744101	Green	Port Blair	South Point

235.	ANANYA RESIDENCY, South Point, Shadipur, Port Blair, Andaman and Nicobar Islands 744106	Green	Port Blair	South Point
236.	HOTEL ORIENTAL LUXURE, Govind Nagar, Beach No.5, Swaraj Dweep, South Andaman- 744211	Green	Port Blair	South Point
237.	Hotel Ross View Opp. Netaji Stadium, Supply Lane, Port Blair 03192-231189/9434281740 rossviewandamans@gmail.com	Green	Port Blair	Supply Line
238.	City King Palace supply line 9933241567	Green	Port Blair	Supply Line
239.	Kavitha Regent Gurunanak Building,Supply Line, Port Blair 03192-233762 hotelkavitharegent@gmail.com	Green	Port Blair	Supply Line
240.	Tourist Nest Lodge Supply lane, Port Blair 8900908489	Green	Port Blair	Supply Line
241.	MAYA RAJ- LODGE, Panipat Rd, Coast Guard Enclave, Haddo, Port Blair, Andaman and Nicobar Islands 744102.	Green	Port Blair	Supply Line
242.	Hotel Sarvottam Pvt Ltd., Teylarabad, ATR Road, Port Blair	Green	Port Blair	Teylarabad
243.	M/s SKM Lodge, Baratang,	Green	Rangat	Baratang, Rangat
244.	Coral Creek Resort , South Creek, Baratang	Green	Rangat	Baratang, Rangat
245.	M/s Dew Dale Resort, Baratang	Green	Rangat	Baratang, Rangat
246.	M/s Hawks Bill Nest, Betapur, ph-215150	Green	Rangat	Betapur, Rangat
247.	Bliss Holiday Resort & Restaurant, Padmanabhapuram, Betapur	Green	Rangat	Betapur, Rangat
248.	M/s RG Lodge, Dasaratpur Road, Rangat, Pin: 744205, Ph: 9434267591, 9434267630	Green	Rangat	Dasaratpur, Rangat
249.	U.K.Nest, Dasaratpur, Rangat, Middle Andaman, 744205, Ph: 274177, 9474213128	Green	Rangat	Dasaratpur, Rangat

250.	M/s Hotel Avis, Dasaratpur, Rangat, North Andaman Island, 744205, Ph: 9474240941	Green	Rangat	Dasaratpur, Rangat
251.	Deepa Resaurant, Kadamtala Bazar	Green	Rangat	Kadamtala, Rangat
252.	M/s Ashu Lodge, Nimbutala Junction, Pin: 744205	Green	Rangat	Nimbutala Rangat
253.	M/s Sea Shore Lodge, Rangat bay, Nimbutala, Ph: 9474216793	Green	Rangat	Nimbutala, Rangat
254.	Bridge, Rampur, Pin: 744205, Ph: 275013	Green	Rangat	Rampur, Rangat
255.	M/s Hotel Priya International, Teja Tower, Rangat, Middle Andaman, Mobile: 09434282623, 09434289383, 09476056254, Landline: 03192 274030, Email Id: priyainternational.teja@gmail.com	Green	Rangat	Rangat
256.	M/s Krishna International, Ananta High, Rangat Bazaar, Pin: 744205, Ph: 9432674693, 9476027112	Green	Rangat	Rangat
257.	M/s Harikrishna Lodge, Opp: Veg. Market, Pin: 744205, Ph: 9474251550, 9531935475	Green	Rangat	Rangat
258.	M/s Hotel PLS Bhawan, Near SBI Rangat, Ph: 274589, 9531809271, 9434270192	Green	Rangat	Rangat
259.	R. K. Lodge, Rangat Bzar	Green	Rangat	Rangat
260.	Hotel Ross & Smith, Rangat, BJP Chowk	Green	Rangat	Rangat
261.	M/s Laxmi Villa, Rangat	Green	Rangat	rangat
262.	CS Empire Neil Kendra, Shaheed Dweep, 9531919154, reservation@csempire.inm. Chitambaram, Owner, Phn.9933292171	Orange	Shaheed Dweep	Shaheed Dweep
263.	Deep Sea Resort, Ramnagar, Neil Island, South Andaman, 7063980454 deepsearesortneil@gmail.com Sukhal Mondal, Owner, Phn. 9933292950	Orange	Shaheed Dweep	Shaheed Dweep
264.	Pearl Park Beach Resort Laxmanpur no1, Neil Island, South Andaman	Orange	Shaheed Dweep	Shaheed Dweep
265.	Hotel Neha Palace Laxmanpur no1 Neil Island, South Andaman	Orange	Shaheed Dweep	Shaheed Dweep
266.	Sea Shell Samssara, Laxmanpur	Orange	Shaheed Dweep	Shaheed Dweep

267.	Sea Shell Neil ,Laxmanpur	Orange	Shaheed Dweep	Shaheed Dweep
268.	TSG Aura, Sitapur	Orange	Shaheed Dweep	Shaheed Dweep
269.	Reef Valley Resort Laxmanpur, Shaheed Dweep, South Andaman, 7063918995, reefvalleyresort@gmail.com Dr. Bhagirat Debnath, Owner, Phn. 9474219302	Orange	Shaheed Dweep	Shaheed Dweep
270.	Seven sea dream castle neil Island	Orange	Shaheed Dweep	Shaheed Dweep
271.	Hotel Shreesh Neil, Neil Kendra, Shaheed Dweep- 744104	Orange	Shaheed Dweep	Shaheed Dweep
272.	Vacation Village Resort, Bharatpur, Neil Island,	Green	Shaheed Dweep	Shaheed Dweep
273.	Save green Resort, Bharatpur, Shaheed Dweep	Green	Shaheed Dweep	Shaheed Dweep
274.	Dream Heaven Resort Near Bharatpur Beach, Neil Island, A&N Islands	Green	Shaheed Dweep	Shaheed Dweep
275.	Sunshine Resort, Near Bharatpur Beach, Neil Island, A&N Islands	Green	Shaheed Dweep	Shaheed Dweep
276.	Green Island Resort, Near Beach No.5 Bharatpur, Neil Island	Green	Shaheed Dweep	Shaheed Dweep
277.	Mayfare resort Bharatpur No.4	Green	Shaheed Dweep	Shaheed Dweep
278.	Akash resort, Baratpur No.4,Neil Island (Shaheed Dweep) 744104	Green	Shaheed Dweep	Shaheed Dweep
279.	Lilika Palace, Neil kendra, Neil Island	Green	Shaheed Dweep	Shaheed Dweep
280.	Hotel Jayanti Neil Kendra Bazzar, Neil Island,S.Andaman	Green	Shaheed Dweep	Shaheed Dweep
281.	KP Guest House Neil Kendra	Green	Shaheed Dweep	Shaheed Dweep
282.	NK Neil Eco resort, Neil Kendra	Green	Shaheed Dweep	Shaheed Dweep
283.	Coral Garden, Near Bharatpur Beach Neil Kendra, Shaheed Dweep	Green	Shaheed Dweep	Shaheed Dweep
284.	Megha Resort Neil Kendra	Green	Shaheed Dweep	Shaheed Dweep
285.	Emerald Geeko Sitapur No.5	Green	Shaheed Dweep	Shaheed Dweep
286.	Hotel Jasodha Sitapur, Shaheed Dweep (Neil Island),	Green	Shaheed Dweep	Shaheed Dweep

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287.	Hotel Highness Sea Rock Sitapur No.5	Green	Shaheed Dweep	Shaheed Dweep
288.	Hotel Lagoon (Blue agoon Resort), Sitapur No.5	Green	Shaheed Dweep	Shaheed Dweep
289.	Dream Garden Restaurant & Resort Sitapur, Neil Island, S. Andaman	Green	Shaheed Dweep	Shaheed Dweep
290.	Mallik Palace, Hotel & Restaurants Ramnagar-3, Shaheed Dweep (Neil Island)	Green	Shaheed Dweep	Shaheed Dweep
291.	Break Water Beach Resort, Neil Island No. 3, Ramnagar, South Andaman	Green	Shaheed Dweep	Shaheed Dweep
292.	Elephant & Four wise men	Green	Shaheed Dweep	Shaheed Dweep
293.	Garden View resort Ramnagar	Green	Shaheed Dweep	Shaheed Dweep
294.	Halder Restaurent & resort Ramnagar	Green	Shaheed Dweep	Shaheed Dweep
295.	Silver Pearl Resort Laxmanpur no1	Green	Shaheed Dweep	Shaheed Dweep
296.	Sarthak Residency Neil Kendra, Neil Island, South Andaman	Green	Shaheed Dweep	Shaheed Dweep
297.	Laxmi Continental Resort Laxmanpur no1	Green	Shaheed Dweep	Shaheed Dweep
298.	Moon Shine Garden Laxmanpur no1	Green	Shaheed Dweep	Shaheed Dweep
299.	Purnima Residency Laxmanpur Beach No.1 Neil Island, South Andaman	Green	Shaheed Dweep	Shaheed Dweep
300.	Blue Birds Residency	Green	Shaheed Dweep	Shaheed Dweep
301.	Dream Valley Resort Laxmanpur, Shaheed Dweep, Neil Kendra	Green	Shaheed Dweep	Shaheed Dweep
302.	Hotel Exotica Squares Laxmanpur Beach No 2 Neil Island, South Andaman	Green	Shaheed Dweep	Shaheed Dweep
303.	Hotel Green Park (Green Park Resort), Laxmanpur no 2	Green	Shaheed Dweep	Shaheed Dweep
304.	Sunrise Beach Resort & Restaurants Sitapur, Neil Island, South Andaman	Green	Shaheed Dweep	Shaheed Dweep
305.	Hawabill Nest	Green	Shaheed Dweep	Shaheed Dweep
306.	Blue Whale Resort Neil kendra	Green	Shaheed Dweep	Shaheed Dweep
307.	Sunset Garden Resort	Green	Shaheed Dweep	Shaheed Dweep

308.	Rajendran (TBA) [Perfect South Indian Hotel], Neil Kendra-1	Green	Shaheed Dweep	Shaheed Dweep
309.	Gyan Gardern	Green	Shaheed Dweep	Shaheed Dweep
310.	Nirala Guest House	Green	Shaheed Dweep	Shaheed Dweep
311.	Elangovan (TBA), Ramnagar	Green	Shaheed Dweep	Shaheed Dweep
312.	Saravanan (PLA) Ramnagar	Green	Shaheed Dweep	Shaheed Dweep
313.	Sanjay Das (TBA), Bharathpur	Green	Shaheed Dweep	Shaheed Dweep
314.	Blue Stone Lodge, Lakshamanpur, Shaheed Dweep	Green	Shaheed Dweep	Shaheed Dweep
315.	Dancing Dugong, Saheed Dweep	Green	Shaheed Dweep	Shaheed Dweep
316.	Neil Banjara Laxmanpur no1, Neil Island, South Andaman	Green	Shaheed Dweep	Shaheed Dweep
317.	Coconut Grove Beach Resort, No. 5 Vijay Nagar beach, Havelockwww.coconutgrovebeachresort.com	Green	Swaraj Dweep	Swaraj Dweep
318.	M/s Vivanta By Taj Exotica Resort & Spa, Radha Nagar, Havelock	Red	Swaraj Dweep	Swaraj Dweep
319.	Sandy Waves Beach Resort, Vijay Nagar Beach, No. 5, Swaraj Dweep Island S. Andaman 744211	Orange	Swaraj Dweep	Swaraj Dweep
320.	Green Valley Resort Vijay Nagar, Havelock- 5, South Andaman, 9474275909 9476002984 greenvalleyresorthavelock@gmail.com Jacob, Manager, Phn. 9933220000	green	Swaraj Dweep	Swaraj Dweep
321.	JADWET RESORTS AND LEISURE PVT LTD, Vijay Nagar, Beach no. 5 Swaraj Dweep, S. Andaman	Orange	Swaraj Dweep	Swaraj Dweep
322.	Joye Grand Hotel & Resort Pvt. Ltd., Govind Nagar, Beach No. 3, Swaraj Dweep	Orange	Swaraj Dweep	Swaraj Dweep
323.	Aparupa Sands Marina, Govind Nagar, Beach No.2, Swaraj dweep, S/ Andaman	Orange	Swaraj Dweep	Swaraj Dweep

324.	Sea Shell, Govind Nagar, Beach No.2, Swaraj Dweep - 744211	Orange	Swaraj Dweep	Swaraj Dweep
325.	Hotel haywizz, Govind Nagar, Beach No. 1, Swaraj Dweep	Orange	Swaraj Dweep	Swaraj Dweep
326.	Bowfins Resort, Radha Nagar, beach No. 7, Swaraj Dweep	Orange	Swaraj Dweep	Swaraj Dweep
327.	TSG Blue Resort, beach No7, Radha Nagar, Swaraj dweep A & N Island, 744211	Orange	Swaraj Dweep	Swaraj Dweep
328.	Dolphin Resort, ANIIDCO Ltd, Havelock,Beach No. 5, S/Andaman	Orange	Swaraj Dweep	Swaraj Dweep
329.	Ocean Pearl Beach Resort, Goving Nagar Beach, Village No-II, Swaraj Dweep Island, booking@resortoceanpearl.com www.resortoceanpearl.com Ph.No.- 03192-28148, 9958549347 Email-	green	Swaraj Dweep	Swaraj Dweep
330.	Senses Havelock, Vijay Nagar, No. 5	Orange	Swaraj Dweep	Swaraj Dweep
331.	N. K. Havelock Eco-Resort, Govind Nagar	Orange	Swaraj Dweep	Swaraj Dweep
332.	ILE Bay Resort, #2,GOVINDA NAGAR, SWARAJ DWEEP	Orange	Swaraj Dweep	Swaraj Dweep
333.	Flying Elephant, Kalapather Havelock, PIN: 744211	Green	Swaraj Dweep	Swaraj Dweep
334.	Honey Moon Beach Resort, Vijay Nagar No. 5, S.Andaman,Swaraj Dweep, 744211	Green	Swaraj Dweep	Swaraj Dweep
335.	Island & Blue Beach Resort, Vijay Nagar, No.5, Havelock, Email- a	Green	Swaraj Dweep	Swaraj Dweep
336.	Andaman Delta Resort,Vijay Nagar, No. 5, S. Andaman, Swaraj Dweep	Green	Swaraj Dweep	Swaraj Dweep
337.	Crystal Sand Resort Vijaya Nagar, No.5, Havelock Ph.No- 9474204586	Green	Swaraj Dweep	Swaraj Dweep
338.	Emerald Gecko, Vijaya Nagar, No.5, Havelock	Green	Swaraj Dweep	Swaraj Dweep
339.	Green Wood Beach Resort, Beach No.5,Havelock, S/Andaman Ph.No-9531812100	Green	Swaraj Dweep	Swaraj Dweep

340.	Ocean Tree Beach Resort & Spa, Vijay Nagar, Beach 5 Swaraj Dweep, S. Andaman	Green	Swaraj Dweep	Swaraj Dweep
341.	Star Glory Resort, Vijay Nagar No.5 Swaraj Dweep,	Green	Swaraj Dweep	Swaraj Dweep
342.	Wild Orchid, Vijaya Nagar,Beach No.5,Havelock, Pin No.-744211	Green	Swaraj Dweep	Swaraj Dweep
343.	J.K Resort, Vijay Nagar No. 5 Swaraj Dweep	Green	Swaraj Dweep	Swaraj Dweep
344.	Havelock Farms, Govind Nagar No.5, Swaraj Dweep	Green	Swaraj Dweep	Swaraj Dweep
345.	Sweet Dream Resort, Govind Nagar, Swaraj Dweep	Green	Swaraj Dweep	Swaraj Dweep
346.	Fleming Resort, Govind Nagar, Swaraj Dweep	Green	Swaraj Dweep	Swaraj Dweep
347.	Coco Beach Resort, No.5, Havelock, 744211	Green	Swaraj Dweep	Swaraj Dweep
348.	Lee Meridian Resort, Beach No. 5, Havelock	Green	Swaraj Dweep	Swaraj Dweep
349.	The Blue Bird Resort, Beach No.5, Havelock	Green	Swaraj Dweep	Swaraj Dweep
350.	The Ocean Blue Resort, Vijay Nagar, Havelock, A & N Island	Green	Swaraj Dweep	Swaraj Dweep
351.	Out Back, Beach No. 5, Goind Nagar, havelock	Green	Swaraj Dweep	Swaraj Dweep
352.	Green Imperial Resort, Govind Nagar, Havelock	Green	Swaraj Dweep	Swaraj Dweep
353.	Hotel Summit, Govind Nagar, Havelock-3,	Green	Swaraj Dweep	Swaraj Dweep
354.	Pelicon Beach Resort, Beach No.5, Havelock	Green	Swaraj Dweep	Swaraj Dweep
355.	Wonder Land Beach Resort, Govind Nagar,Havelock	Green	Swaraj Dweep	Swaraj Dweep
356.	Larcid Garden Resort Govind Nagar, Havelock Islands	Green	Swaraj Dweep	Swaraj Dweep
357.	White Sands Beach Resort	Green	Swaraj Dweep	Swaraj Dweep
358.	Nandini Beach Resort Sham Nagar, Swaraj Dweep	Green	Swaraj Dweep	Swaraj Dweep
359.	Pano Eco resort, Govind Nagar, Swaraj Dweep	Green	Swaraj Dweep	Swaraj Dweep
360.	Barefoot Scuba Resort, Beach No. 3, Goving Nagar, Swaraj Dweep	Green	Swaraj Dweep	Swaraj Dweep
361.	Moon Moon, Resort & Restaurant, Govind Nagar, Swaraj Dweep	Green	Swaraj Dweep	Swaraj Dweep

362.	Cross Bill Resort, Govindnagar, Swaraj Dweep	Green	Swaraj Dweep	Swaraj Dweep
363.	Odessy Inn, Govind Nagar, Swaraj Dweep	Green	Swaraj Dweep	Swaraj Dweep
364.	Hotel Saurav, Govind Nagar, Beach no 2, Swaraj Dweep	Green	Swaraj Dweep	Swaraj Dweep
365.	Hotel Virgin Beach Resort, Beach 1, Govind Nager, Swaraj Dweep	Green	Swaraj Dweep	Swaraj Dweep
366.	Sundaze Beach Resort, Beach No-1, Govind Nagar, Swaraj Dweep, S/Andaman	Green	Swaraj Dweep	Swaraj Dweep
367.	Hotel Sumathi, Govind Nagar No. 2, Swaraj Dweep	Green	Swaraj Dweep	Swaraj Dweep
368.	Dew Drop Residency, Govind Nagar, Beach No.1, Swaraj Dweep	Green	Swaraj Dweep	Swaraj Dweep
369.	Arora Beach Resort, Govind Nagar, Beach No.1, Swaraj Dweep	Green	Swaraj Dweep	Swaraj Dweep
370.	Hotel Royal Palace, Govind Nagar, Swaraj Dweep, Beach No.3, S/Andaman	Green	Swaraj Dweep	Swaraj Dweep
371.	V Knot Residency, Govind Nagar beach Road, Havelock-3 email-"	Green	Swaraj Dweep	Swaraj Dweep
372.	All Season Residency, Govind Nagar, Beach No.3, Swaraj Dweep	Green	Swaraj Dweep	Swaraj Dweep
373.	Green Land Resort, Radhanagar (No. 7) swaraj Dweep	Green	Swaraj Dweep	Swaraj Dweep
374.	Hotel Nagri Inn Road No. 7, Radhanagar, Swaraj Dweep	Green	Swaraj Dweep	Swaraj Dweep
375.	Harmony Resort, Radha Nagar, Swaraj Dweep, S/Andaman www.havelockharmony.com	Green	Swaraj Dweep	Swaraj Dweep
376.	The Ocean Blue Resort Vijay nagar, Havelock	Green	Swaraj Dweep	Swaraj Dweep
377.	Dream Land Resort, Radha Nagar Beach, Swaraj Dweep S/Andaman	Green	Swaraj Dweep	Swaraj Dweep
378.	Moon Lit Sands, Beach No.1 Govind Nagar, Swaraj Dweep	Green	Swaraj Dweep	Swaraj Dweep
379.	Sea View tourist Complex, Beach No. 1, Govind Nagar, Swaraj Dweep	Green	Swaraj Dweep	Swaraj Dweep
380.	Nikita Tourists Complex , Beach No. 1 Govind Nagar, Swaraj Dweep	Green	Swaraj Dweep	Swaraj Dweep

381.	Bilashi Lodge, Havelock Jetty, Near Durga Temple, Swaraj Dweep	Green	Swaraj Dweep	Swaraj Dweep
382.	Neha Lodge, Beach No. 1 Swaraj Dweep	Green	Swaraj Dweep	Swaraj Dweep
383.	Hotel Gaurav, Beach No. 1, Swaraj Dweep	Green	Swaraj Dweep	Swaraj Dweep
384.	Radha Krishna Residency, Beach No. 1, Swaraj Dweep	Green	Swaraj Dweep	Swaraj Dweep
385.	Havelock Inn, Govind Nagar, Swaraj Dweep	Green	Swaraj Dweep	Swaraj Dweep
386.	U and I Resorts Pvt Ltd. (Jalkara) ,village No. 4 Jalakara, Havelock, S/Andaman-744211	Green	Swaraj Dweep	Swaraj Dweep
387.	Dive India, Vijay nagar, Beach No.5, Havelock,	Green	Swaraj Dweep	Swaraj Dweep
388.	Amazon Resort, Govind Nagar, Havelock NO.2	Green	Swaraj Dweep	Swaraj Dweep
389.	Eco Villa Palm Beach Resort, Beach 2,, Govind nager, Swaraj Dweep- 744211	Green	Swaraj Dweep	Swaraj Dweep
390.	M/s Sea Grass Resort, Swaraj Dweep	Green	Swaraj Dweep	Swaraj Dweep
391.	White Coral Beach Resort,Vijay Nagar,No.5 S.Andaman, Swaraj Dweep	Green	Swaraj Dweep	Swaraj Dweep
392.	Golden Pebble, Govind Nagar, Swaraj Dweep, South Andaman	Green	Swaraj Dweep	Swaraj Dweep
393.	Blue Ocean Resort	Green	Swaraj Dweep	Swaraj Dweep
394.	Hotel Gourav	Green	Swaraj Dweep	Swaraj Dweep
395.	De Foret Hotels and Resorts Pvt. Ltd	Green	Swaraj Dweep	Swaraj Dweep
396.	Island Quest	Green	Swaraj Dweep	Swaraj Dweep
397.	Satya Andaman	Green	Swaraj Dweep	Swaraj Dweep

ANNEXURE-R3

SUMMARY OF BEST PRACTICES

IN CONNECTION WITH SOLID WASTE MANAGEMENT

ANDAMAN & NICOBAR ISLANDS

(MAY TO OCTOBER, 2024)

2638

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3. TRANSFORMATION OF GARBAGE VULNERABLE POINTS
4. SPECIAL BEACH CLEAN UP DRIVES
5. ZERO-HOUR CLEARANCE
6. (Daily clearance of all Cleanliness Target Units by 1pm with declarations by Sanitary Inspectors)
7. MATERIAL TRANSIT CENTRE – FACILITATING WASTE TRANSPORTERS
8. WALL MURAL AT FISH LANDING FACILITY
9. AWARENESS, IEC POSTERS AND INFORMATION BROUCHERS
10. 3-R CENTRE- UPCYCLING OF WASTE
11. DEDICATED R-R-R CENTRE FOR DONATION OF OLD/ USABLE ITEMS
12. CLAEAN UP PORT BLAIR CAMPAIGN
13. BUY BACK & DEPOSIT REFUND SCHEME FOR MILK POUCHES (ONGOING ACTIVITY)
14. OUTREACH & SENSITIZATION PROGRAMS
15. AT COMMUNITY LEVEL
16. ROAD CONSTRUCTION USING WASTE PLASTICS
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19. OUR DRAIN OUR RESPONSIBILITY
20. PLASTIC LAO, UPHAR PAO CAMPAIGN
21. COMMUNITY AWARENESS THROUGH PUBLIC ENGAGEMENT
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24. BEST PRACTICES OF RURAL DEVELOPMENT & PANCHAYAT
25. IN CONNECTION WITH SOLID WASTE MANAGEMENT
26. BEST PRACTICES OF ANDAMAN AND NICOBAR POLLUTION CONTROL COMMITTEE
27. IN CONNECTION WITH SOLID WASTE MANAGEMENT

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BEST PRACTICES OF SRI VIJAYA PURAM MUNICIPAL COUNCIL

IN CONNECTION WITH SOLID WASTE MANAGEMENT

2640

WEEKLY SPECIAL CLEAN UP DRIVES



2641


GPS Map Camera
Sri Vijaya Puram, Andaman and Nicobar Islands, India
Google

2642

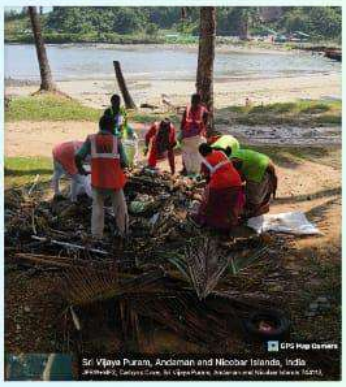

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Sri Vijaya Puram, Andaman and Nicobar Islands, India


GPS Map Camera
Sri Vijaya Puram, Andaman and Nicobar Islands, India


GPS Map Camera
Sri Vijaya Puram, Andaman and Nicobar Islands, India

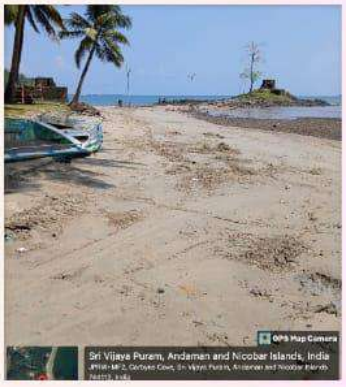

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Sri Vijaya Puram, Andaman and Nicobar Islands, India


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Sri Vijaya Puram, Andaman and Nicobar Islands, India


GPS Map Camera
Sri Vijaya Puram, Andaman and Nicobar Islands, India


GPS Map Camera
Sri Vijaya Puram, Andaman and Nicobar Islands, India


GPS Map Camera
Sri Vijaya Puram, Andaman and Nicobar Islands, India

2643











2644



2645











2646


GPS Map Camera
Sri Vijaya Puram, Andaman and Nicobar Islands, India
PBHC
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Sri Vijaya Puram, Andaman and Nicobar Islands, India
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Sri Vijaya Puram, Andaman and Nicobar Islands, Ind
Lat 11.658255°
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Sri Vijaya Puram, Andaman and Nicobar Islands, India

2647


GPS Map Camera
Sri Vijaya Puram, Andaman and Nicobar Islands, India
Google


GPS Map Camera
Sri Vijaya Puram, Andaman and Nicobar Islands, India
Google








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Google


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Google


GPS Map Camera
Sri Vijaya Puram, Andaman and Nicobar Islands, India
Google

2648



2649


Sri Vijaya Puram, Andaman And Nicobar Islands, Ind
Sng, Nayagaon, Sri Vijaya Puram, Andaman And Nicobar
Islands 744112, India
Lat 11.645557° Long 92.742082°
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Andaman And Nicobar Islands 744101, India
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And Nicobar Islands 744112, India
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Andaman And Nicobar Islands 744101, India
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Sng, Nayagaon, Sri Vijaya Puram, Andaman And Nicobar
Islands 744112, India
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09/11/24 10:14 AM GMT +05:30


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Sri Vijaya Puram, Andaman and Nicobar Islands, India


Sri Vijaya Puram, Andaman and Nicobar Islands, India


Sri Vijaya Puram, Andaman and Nicobar Islands, India

2650



2651


GPS Map Camera
Sri Vijaya Puram, Andaman and Nicobar Islands, India
MP5W+6C7, Shadipur, Sri Vijaya Puram, Andaman and Nicobar Islands
744106, India
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Long 92.746167°
09/11/24 10:40 AM GMT +05:30
Google

2652



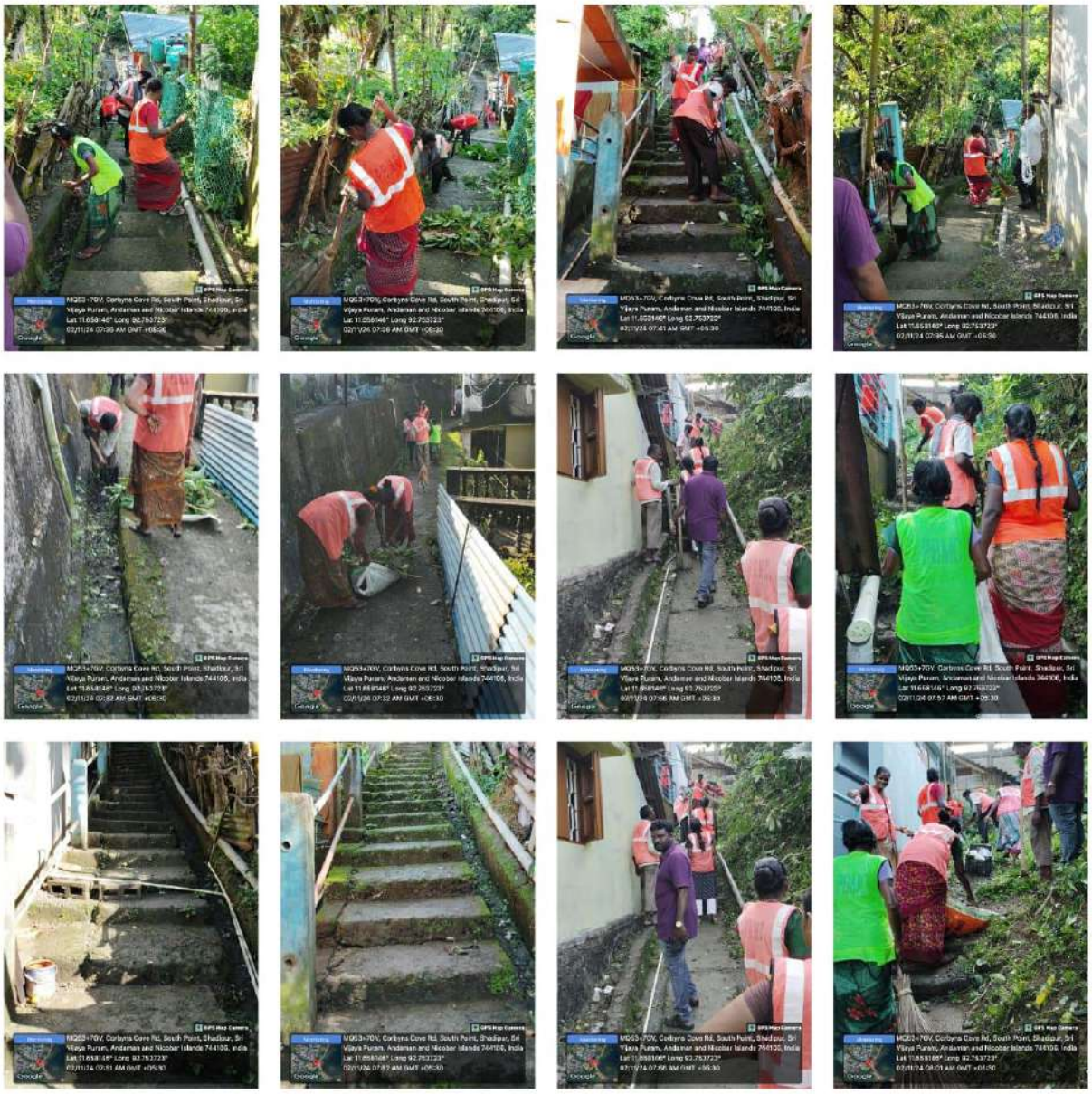








2653



2654

AWARENESS TABLAUE DISPLAYED AT CITY PARADE - IMPORTANCE OF WASTE SEGREGATION



2655

TRANSFORMATION OF GARBAGE VULNERABLE POINTS



2656

SPECIAL BEACH CLEAN UP DRIVES





2657


SRI VIJAY PURAM MUNICIPAL COUNCIL
SWACHH BHARAT DIWAS
SWACHHATA HI SEVA 2024
HADDO BEACH CLEANUP
Follow US:
@PBMC_ANI
/PortBlairMunicipalcouncil
@PBMC_ANI
@PBMC_ANI
SRI VIJAY PURAM MUNICIPAL COUNCIL
SWACHH BHARAT DIWAS
HADDO BEACH CLEANUP
Follow US:
@PBMC_ANI
/PortBlairMunicipalcouncil
@PBMC_ANI
@PBMC_ANI
SRI VIJAY PURAM MUNICIPAL COUNCIL
SWACHHATA HI SEVA 2024
SWACHH BHARAT DIWAS
STUDENTS CLEANUP DRIVE
Follow US:
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@PBMC_ANI
@PBMC_ANI
SRI VIJAY PURAM MUNICIPAL COUNCIL
SWACHHATA HI SEVA 2024
SWACHH BHARAT DIWAS
STUDENTS CLEANUP DRIVE
Follow US:
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/PortBlairMunicipalcouncil
@PBMC_ANI
@PBMC_ANI

2658


SRI VIJAY PURAM
MUNICIPAL COUNCIL
SWACHH
BHARAT
DIWAS
STUDENTS CLEANUP DRIVE
Follow US:
@PBMC_ANI
/PortBlairMunicipalcouncil
@PBMC_ANI
@PBMC_ANI
SRI VIJAY PURAM
MUNICIPAL COUNCIL
BEACH CLEAN-UP DRIVE
SWACHH
BHARAT
DIWAS
STUDENTS CLEANUP DRIVE
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@PBMC_ANI
/PortBlairMunicipalcouncil
@PBMC_ANI
@PBMC_ANI

2659

ZERO-HOUR CLEARANCE

(Daily clearance of all Cleanliness Target Units by 1pm with declarations by Sanitary Inspectors)











2660



INSPECTION REPORT

Date: 09/11/24

I have inspected at the primary and secondary collection points, dustbins, Garbage Vulnerable Points (GVPs) and open dumping points in my visit and have been cleared by 01:00 PM.

Signature with date:

Name & Designation: Sanitary Inspector

Ward No.: PBMC

Ward No.: 23

















2661


Sri Vijaya Puram, Andaman And Nicobar Islands
Corbyns Cove Rd, Sri Vijaya Puram, Andaman And Nicobar Islands 744112, India
Lat 11.645177° Long 92.748854°
08/11/24 11:41 AM GMT +05:30
Sri Vijaya Puram, Andaman And Nicobar Islands
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2662


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Index number: 1897
Nov 7, 2024 12:03:36 PM
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190° S
Index number: 1901
Sri Vijaya Puram, Andaman And Nicobar Islands, India

2663

MATERIAL TRANSIT CENTRE – FACILITATING WASTE TRANSPORTERS



2664

WALL MURAL AT FISH LANDING FACILITY













AWARENESS, IEC POSTERS AND INFORMATION BROUCHERS















2666


Clean Up Port Blair
HELP US CONVERT YOUR WASTE INTO WEALTH
Know Your Bins and Segregate


Clean Up Port Blair
BIN IT RIGHT
Segregate your waste at source
DRY WASTE
WET WASTE
DOMESTIC HAZARDOUS WASTE
#Preventlitter
#Cleanupportblair


Clean Up Port Blair
आप सभी से अनुरोध है कि श्री मुरुगन की पूजा में
" एकल उपयोगी प्लास्टिक के उपयोग "से बचें !!!
आइए अपने पर्यावरण की रक्षा करें और
भगवान श्री मुरुगन की कृपा प्राप्त करें !!!
Celebrate this Festival with Cleanliness
SAY NO
SINGLE USE PLASTIC
a Clean Up Port Blair Initiative


Clean Up Port Blair
Let us avoid plastic in Mariamman worship!!!
Avoid plastic going to the sea!!!
Save our life ...
by saving life in the sea!!!
Celebrate this Festival with Cleanliness
SAY NO TO PLASTIC
a Clean Up Port Blair Initiative


Clean Up Port Blair
आप सभी से अनुरोध हैं कि मारीयम्मन देवी की पूजा में
"एकल उपयोगी प्लास्टिक के उपयोग" से बचें !!!
आइए अपने पर्यावरण की रक्षा करें
Celebrate this Festival with Cleanliness
SAY NO TO PLASTIC
a Clean Up Port Blair Initiative


Clean Up Port Blair
Celebrate this Festival with Cleanliness
SAY NO TO PLASTIC
a Clean Up Port Blair Initiative

2667

3-R CENTRE- UPCYCLING OF WASTE











2668



2669

DEDICATED R-R-R CENTRE FOR DONATION OF OLD/ USABLE ITEMS













2670

CLAEAN UP PORT BLAIR CAMPAIGN

















2671





2672

BUY BACK & DEPOSIT REFUND SCHEME FOR MILK POUCHES (ONGOING ACTIVITY)













2673





2674

OUTREACH & SENSITIZATION PROGRAMS

AT COMMUNITY LEVEL

















2675





2676

ROAD CONSTRUCTION USING WASTE PLASTICS











2677



2678

WASTE TO WONDER ACTIVITIES IN SCHOOLS







2679





2680

DOOR TO DOOR WASTE SEGREGATION CAMPAIGN



2681







2682

OUR DRAIN OUR RESPONSIBILITY















2683




Use This Garbage Bin


Clean Port Blair
मछली पकड़ने के दौरान उत्पन्न प्लास्टिक कचरे को वापस लाकर कूड़ेदान में डाल देना चाहिए।
చేపల వేటలో ఉత్పత్తి అయ్యే ప్లాస్టిక్ వ్యర్థాలను తిరిగి తీసుకొచ్చి చెత్త కుండీలో వేయాలి.
The plastic waste generated during Fishing should be brought back and disposed of in the garbage bin.



2684

PLASTIC LAO, UPHAR PAO CAMPAIGN



2685

COMMUNITY AWARENESS THROUGH PUBLIC ENGAGEMENT



2686

RECOGNITION OF BEST COMMUNITY MEMBER







2687

AWARENESS BROUCHERS









2688

BEST PRACTICES OF RURAL DEVELOPMENT & PANCHAYAT

IN CONNECTION WITH SOLID WASTE MANAGEMENT

ACTIVITIES
• ANI Administration has conducted special weekly cleanliness drive in all the rural areas including Swaraj Dweep to clear all waste from public or tourist locations.
• 189 villages of ANI including all villages of Swaraj Dweep and Shaheed Dweep has been declared as ODF plus.
• Andaman & Nicobar Islands was declared as 1st Swachh Sujal Pradesh by Hon'ble Minister of Jal Shakti.
• Hon'ble President of India confers National Award to the UT of Andaman & Nicobar Islands under Swachh Survekshan Grameen.
• Wet waste facility for hotels/resorts is being processed in Swaraj Dweep & Shaheed Dweep.
• RD department at Swarajdweep and AC Office has appointed Dakshin Foundation as technical partner and consultant for Solid Waste management. They are providing Accelerated Anaerobic Composting (AAC) along with CSIR.AAC is a rapid composting method designed to handle wet waste in a low –oxygen environment. It significantly reduces composting time compared to traditional techniques. Developed by the Council of Scientific & Industrial Research (CSIR) and licensed to Khar Energy Optimisers, this process combines scientific innovation with practical waste management solutions.

2689

BEST PRACTICES OF ANDAMAN AND NICOBAR POLLUTION CONTROL COMMITTEE

IN CONNECTION WITH SOLID WASTE MANAGEMENT

2690

1. **Eco-friendly Durga Puja** was celebrated for reduction of Plastic & Waste. SVPMC directed all Durga Puja Committees towards reducing Single-Use Plastic (SUP), use of bio-degradable material, generating awareness and reducing all forms of plastic and non-biodegradable waste. In order to increase participation of Puja committees in this initiative of SVPMC and effective action, the Port Blair Municipal Council organized a competition for all the Durga Puja Committees of the Port Blair Municipal area, in 2024.



2. Awareness activities are conducted regularly viz. **free distribution of cloth bags** are carried out in various market places and on various occasions and plastic bags are collected in exchange of cloth bags to eradicate the use of Single use Plastic bags and to create awareness among the people about the impact of plastic items in the environment.The cloth bag distribution was carried out by ANPCC on Sunday market at Junglighat on 02.06.2024, where plastic bags were exchanged for cloth bags, promoting eco-friendly alternatives.To raise public awareness about plastic pollution, on the occasion of International Ozone Day, the Department of Science and Technology distributed approximately 250 cloth bags to students, encouraging them to adopt eco-friendly alternatives to single-use plastics.





3. **Beach clean-up drives** have been conducted by departments for creating public awareness about the plastic pollution. A beach clean-up drive was organized by ANPCC on 05.06.2024 in association with Directorate of Industries and SVPMC, Andaman & Administration at Carbyns Cove Beach.



4. ANPCC conducted a **handicraft competition** on 03.06.2024 among industrial trainees in association with the Directorate of Industries and SVPMC, Andaman & Nicobar Administration. The event commenced with an informative and practical demonstration on waste segregation by Swachtha Awareness Team of SVPMC. The theme of the competition was "Our Land Our Future", and the students showcased their creative skills by making artefacts from recycled and waste materials. A total of 50 students participated in the competition, showcasing their talent and innovative thinking.

5. To create awareness about the importance of clientless among Sanitary workers, **Sanitation kits** were including gum boots, gloves, and first aids to the sanitation workersby RD&Pin Gram Panchayat Kalighat of Diglipur block as a part of the Swachhata Hi Seva Campaign 2024 campaign.

6. For creating awareness about cleanliness among citizens,as a part of the Swachhata Hi Seva Campaign 2024 Gram Panchayat, Kaushalyanagar and Urmilapur of block Diglipur has conducted **Nukkad Natak / Street play** show performed by Government Secondary and Middle School students to promote. The entire event portrayed the words, “environment conservation and cleanliness of land go in hand towards the building of an ideal nation beautifully.”

7. As part of the 10th anniversary celebration of the Swachh Bharat Mission, RD&P organized a series of events aimed at raising awareness among school students about the importance of maintaining a cleaner, healthier, and more sustainable environment. The initiative included **drawing, painting, poster-making, and essay writing competitions for students** across the Andaman and Nicobar Islands. These activities not only encouraged creativity but also aimed to instill a sense of responsibility in young minds regarding environmental cleanliness and sustainability. Through this engagement, the RD&P hopes to empower the next generation to actively contribute to the goals of the Swachh Bharat Mission and promote a culture of hygiene and environmental stewardship.

8. As part of the Swachhata Hi Seva (SHS) 2024 campaign, which ran from September 17 to October 2, the Ram Panchayat Shorepoint in the Ferrargunj Block and the Gram Panchayat Laxmi Nagar in Campbell Bay collaborated to organize **wall painting initiatives.** These artistic efforts aimed to raise public awareness about cleanliness and its vital importance in daily life. By using vibrant murals and informative designs, the wall paintings sought to engage the community, encouraging individuals to adopt better hygiene practices and foster a culture of cleanliness. This initiative not only beautified public spaces but also served as a constant reminder of the collective responsibility to maintain a clean and healthy environment. Through this campaign, the local panchayats

aimed to inspire positive behavioral changes and enhance community participation in the ongoing cleanliness efforts.

9. As part of the ongoing 'Swachhata Hi Seva' 2024 campaign, Ferrargunj Block of Andaman and Nicobar Islands organized a **special health check-up camp** titled 'Safai Mitra Suraksha Shivir'. This initiative emphasizes commitment to the wellbeing of the safaimitras (cleanliness workers), who play a crucial role in ensuring cleanliness across the state. The 'Safai Mitra Suraksha Shivir' aims to provide essential health check-ups and medical support to the safaimitras, recognizing their valuable contribution to the cleanliness mission.