☎: General: 0471- 2312910, 2318153, 2318154, 2318155 Chairman: 2318150 Member Secretary: 2318151
e-mail: ms.kspcb@gov.in FAX: 0471 – 2318134, 2318152 web: www.keralapcb.nic.in

KERALA STATE POLLUTION CONTROL BOARD

കേരള സംസ്ഥാന മലിനീകരണ നിയന്ത്രണ ബോർഡ്

Pattom P.O., Thiruvananthapuram – 695 004
പട്ടം പി.ഒ., തിരുവനന്തപുരം – 695 004

PCB/HO/SEE-2/ SWM-AR/2020 Date: 04/08/2020

From

The Member Secretary

To

The Member Secretary
Central Pollution Control Board
Parivesh Bhavan
East Arjun Ngar
New Delhi-110032

Sub: Annual report 2019-2020 on implementation of Solid Waste Management Rules,2016-Reg

Ref: Solid Waste Management Rules, 2016

Sir,

Annual report for the year (2019-20) as per the provision 24(3) of the Solid Waste Management Rules,2016 is submitted herewith.

Yours faithfully
Sd/-
MEMBER SECRETARY

Encl: As above

Copy to:

Regional Director, CPCB, Bangalore
All ROs and Dos
IT Cell
CA to Chairman
CA to Member Secretary

FORWARDED BY ORDER

SENIOR ENVIRONMENTAL ENGINEER-2

Form – V

[see rule 24(3)]

Format of annual report to be submitted by the state pollution control board or pollution control committee committees to the central pollution control board

PART A

To,

The Chairman

Central Pollution Control Board

Parivesh Bhawan, East Arjun Nagar

DELHI- 110 0032

ANNUAL REPORT '2019 - 2020'

1.	Name of the State/Union territory	:	**Kerala**
2.	Name & address of the State Pollution Control	:	**Kerala State Pollution Control Board Plamoodu, Pattom P.O., Thiruvananthapuram, Kerala -695004**
3.	Number of local bodies responsible for management of solid waste in the State/Union territory under these rules	:	**93**
4.	No. of authorisation application Received	:	**35**
5.	A Summary Statement on progress made by local body in respect of solid waste management	:	Attached as **Annexure I**.
6.	A Summary Statement on progress made by local bodies in respect of waste collection, segregation, transportation and disposal	:	Attached as **Annexure II**
7.	A summary statement on progress made by local bodies in respect of implementation of Schedule II	:	Attached as **Annexure-III**

Date: …….	Chairman or the Member Secretary
Place: ……..	State Pollution Control Board/
	Pollution Control Committee

PART B

Towns/cities	
Total number of towns/cities	**6 Corporations & 87 Municipality**
Total number of ULBs	**93**
Number of class I & class II cities/towns	**Class I – 16; Class II - 23**
Authorisation status (names/number)	
Number of applications received	**35**
Number of authorisations granted	**8**
Authorisations under scrutiny	**26**
SOLID WASTE Generation status	
Solid waste generation in the state(TPD)	**3521TPD (Based on population)**
collected	**880TPD**
treated	**1837TPD**
landfilled	

Compliance to Schedule I of SW Rules (Number/names of towns/capacity)

Good practices in cities/towns	Windrow composting, vermi composting, aerobins, biogas plants, kitchen bins, bio composter, biobin, pipe compost, ring compost, compost pits, Material Collection facilities, Resource. Material collection and recovery facilities are provided. (Details attached as **Annexure I**). The status of compliance of model cities/town/panchayaths is enclosed as **Annexure IA**.
House-to-house collection	
Segregation	
Storage	
Covered transportation	

Processing of SW (Number/names of towns/capacity)

Solid Waste processing facilities setup:

Sl. No.	Composting	Vermi-composting	Biogas	RDF/Pelletization
1.	**Centralised windrow composting plants – 2(Large); 12(Small)**	**Community level-7**	**Community level-287**	Nil
2.	**Community level-1,193(aerobin, biobins)**		**Household level-25255**	
3.	**Household level -3,37,039**			

Processing facility operational:

Sl. No.	Composting	Vermi-composting	Biogas	RDF/Pelletization
1.	**Centralised windrow composting plants – 2(Large); 12(Small)**	**Community level-7**	**Community level-287**	Nil
2.	**Community level-1,193(aerobin, biobins)**		**Household level-25255**	
3.	**Household level-3,37,039**			

Processing facility under installation/planned:

Sl. No.	Composting	Vermi-composting	Biogas	RDF/Pelletisation
	Being planned/installation for decentralized units	-	Being planned/installation for decentralized units	-

Waste-to-Energy Plants: (Number/names of towns/capacity)

Sl. No.	Plant Location	Status of operation	Power generation (MW)	Remarks
1.	**Kozhikode**	**Work awarded – Construction to be started**		
2.	**Sulthan Bathery**	**Work awarded – work started**		
3.	**Kannur**	**Tendering for WtE plant completed and bidders were identified**	**DPR stage**	
4.	**Kollam**	**Tendering for WtE plant completed and bidders were identified**	**DPR stage**	
5.	**Palakkad**	**Tendering for WtE plant at completed and bidders were identified**	**DPR stage**	
6.	**Kochi**	**Retendering**	**Retendering stage**	
7.	**Thiruvananthapuram**	**Tendering**	**Tendering stage**	
8.	**Munnar**	**Tendering**	**Tendering stage**	
9	**Thrissur**	**Land identified**		
10.	**Malappuram**	**Land identified**		

Disposal of solid waste (number/names of towns/capacity):

Landfill sites identified **2** (One at the regional level at Ernakulum)

Landfill constructed Nil

Landfill under construction **1**

Landfill in operation Nil

Landfill exhausted Nil

Landfilled capped

Solid Waste Dumpsites (number/names of towns/capacity):

Total number of existing dumpsites **38**

Dumpsites reclaimed/capped **6**

Dumpsites converted to sanitary landfill

Monitoring at Waste processing/Landfills sites

Sl. No.	Name of facilities	Ambient air	Groundwater	Leachate quality	Compost quality	VOCs
1.	Windrow composting plant, Kozhikode	Yes	Yes	Yes	No	No
2.	Windrow Composting plant, Brahmapuram	Yes				

Status of Action Plan prepared by Municipalities

Total number of Corporations/municipalities: 97

Number of Action Plan submitted:

Annexure I

SUMMARY STATEMENT ON PROGRESS MADE BY LOCALBODY IN RERSPECT OF SOLID WASTE MANAGEMENT

The Government of Kerala have taken efforts to implement the Solid Waste Management Rules, 2016 in the State. There are 6 Corporations, 87 Municipalities and 941 GPs in the State. The Kerala State Pollution Control Board (KPSCB) issued repeated directions to all local bodies to ensure compliance of the Solid Waste Management Rules, 2016. 3521TPD of solid waste is generated from the cities and towns. The status of the present facilities is given below:

Facility	Type of plant	Number	
Centralised plant	Windrow composting plants (large)	2	Ernakulam, Kozhikode (100TPD)
	Windrow composting plant(Small)	12	1. Attingal(13TPD), 2.North Paravur(3TPD), 3. Chalakkudy(2 TPD), 4. Kodungallur (4 TPD), 5. Kothamangalam, 6. Kunnamkulam, 7. Guruvayoor (2.TPD), 8.Chittur Thathamangalam(4 TPD), 9. Ottappalam (5 TPD), 10. Palakkad(4 TPD), 11. Thaliparambum, 12. Payyannur
Community level	Vermi composting plants(Small)	7	1.Attingal(0.25TPD); 2.Thodupuzha; 3. North Paravur(1 TPD); 4.Chavakkad(1.5 TPD); 5. Manjeri(0.5TPD); 6.Koothuparamba; 7. Mattannur(5 TPD)
	Aerobins	406	
	Biogas plants	287	
	Biobins in flats	500+	Thiruvananthapuram, Ernakulam, Thrissur
	Material Collection Facility	483	
	Resource recover facility	68	
Household level	Pipe compost	1,34,270	Total-3,62,294
	Kitchen bin	50,399	
	Biogas plant	25,255	
	Biocomposter, biobin, pot bin	49,730	
	Ring compost	20,283	
	Bucket compost	6,903	
	Compost pit	75,454	
Institutional level	Biogas plants, aerobins, biobins		

The Government of Kerala constituted a State Level Advisory Committee on Waste Management chaired by the Chief Secretary; this Committee has conducted 36 meetings, till date, for monitoring solid waste management on monthly basis. The Government have accorded sanction for establishing Waste to Energy plants in 8 cites having 1 Lakh or more population and in two local bodies having population below 1 lakh. The progress is given below:

A. Progress in establishing Waste to Energy plants in eight cities/towns having population above 1 lakh

Sl. No	Corporation/ Municipality	Identified site	Area (acre)	Status
1)	Kozhikode	Njaliyanparambu (Govt. land)	12.67	• Work awarded to Zonta Infratech Private Limited for the construction of Waste to Energy Plant at Njaliyan parambu • A company namely M/s.Malabar Waste Management Limited was formed and they applied for registration in Kerala Single Window Clearance Portal (KSWIFT) and to individual departments for clearance. • The company obtained NOC from State Environmental Impact Assessment Authority • Suchitwa Mission submitted the proposal to Ministry of Housing and Urban Affairs for approval of their share in the VGF for the project. Clarification on the points was called for by the Ministry and the same is being processed. • M/s Zonta Infratech Pvt Ltd started the work of clearing of legacy waste on 3rd March, 2020. • The clearing work of legacy waste resumed at the dumpsite on 4th May 2020 and approximately 15000 cum of legacy waste has been cleared from the project site as on 12th May 2020.
2)	Kannur	Chelora (Govt. Land)	9.7 acres	• M/s Organic Recycling Systems Private Limited and M/s. Blue Planet Environment Solutions India Limited have completed the incorporation of SPVs in the name of Blue Planet Kannur Waste Solutions Private Limited to take up the development of the project. • Consortium has selected agency for the preparation of DPR, waste quantification and characteristic study in Kannur district and the agency could not commence due to lock down announced in connection with Covid 19 pandemic. • Govt vide GO(Rt) No. 714/2020/LSGD dated 27-3-2020 issued direction to Kannur Municipal Corporation to hand over the 9.75 acres of the land identified at Chelora on lease basis to KSIDC for the development of Waste to Energy project and to

Sl. No	Corporation/ Municipality	Identified site	Area (acre)	Status
				execute MoU with KSIDC for clearing the existing legacy waste at dump site in Chelora. • Detailed waste characterization of study of dumpsite at Chelora was done by the Pollution Control Board.
3)	Palakkad	Kanjikode (Land taken over from Kerala State Electricity Board Ltd. in advance possession)	15 acres	• M/s Organic Recycling Systems Private Limited and M/s. Blue Planet Environment Solutions India Limited have completed the incorporation of SPVs in the name of Blue Planet Kannur Waste Solutions Private Limited to take up the development of the project. • Consortium has selected agency for the preparation of DPR, waste quantification and characteristic study in Kannur district and the agency could not commence due to lock down announced in connection with Covid 19 pandemic.
4)	Kollam	Kureepuzha (Govt. land)	7.05	• Letter of Intent (LOI) issued to the consortium by M/s. Zonta Infratech Pvt Ltd.,the successful bidder of the project on 12-3-2020 and consortium accepted the LOI and the Consortium has taken steps to incorporate the SPV and reserved Venad Waste Management Private Limited as the name of the SPV with the Ministry of Corporation Affairs. Consortium requested for an extension of time for the incorporation of SPV due to current lock down announced as part of Covid 19 pandemic. • For biomining the site, the Corporation informed that draft agreement to be executed with M/s.Zonta Infratech Pvt Limited is vetted by the Corporation's Standing Counsel and the same will be placed in the next Council meeting for approval.
5)	Ernakulam	Brahmapuram (Govt. land)	20 acres	• Action is being taken for the widening of approach road • As the financial closure was not achieved by G. J. Ecopower Pvt Ltd., Secretary, Kochi Corporatation was directed to take steps to cancel the concession agreement executed. • KSIDC was authorized to take immediate steps to float an RFP for the selection of suitable concessionaire to set up Waste to Energy plant at Brahmapuram. • KSIDC floated e-tender to identify a suitable agency for the rehabilitation of MSW dump site at Brahmapuram. KSIDC submitted a proposal to

Sl. No	Corporation/ Municipality	Identified site	Area (acre)	Status
				constitute a Technical Evaluation Committee for technical evaluation of the bids.
6)	Thiruvananthapuram	Peringamala (Govt. Land)	15	• Land identified for the solid waste processing plant for setting up the plant at Vizhinjam. The approval of the Board of VISL is to be obtained by the Board for the transfer of 15 acres of land on lease to KSIDC. The Board approval is to be communicated to the Port Department to issue necessary orders. • Notice for environmental compensation was issued to Thiruvananthapuram Corporation for not identifying land for solid waste treatment plant and for not providing door to door collection. It has been stayed by the Hon'ble High Court. Land has been identified at Vizhinjam for setting up solid waste processing plant. • Retendering has been done for the development of centralized solid waste treatment plant.
7)	Thrissur	Laloor (Govt. Land)	15	• Thrissur Corporation identified land at Ollookkara village in Thrissur district. • Vide GO (Rt) No 111/2020/LSGD dated 13/01/2020 State Government has accorded sanction to Thrissur Municipal Corporation to purchase the identified land at Ollookkara Village in Thrissur district and to hand over the same on lease basis to KSIDC for the development of the project • The matter is being placed before the Council for approval and further proceedings.
8)	Malappuram	Panakkad (Land in possession with Kerala State Industrial Development Corporation)	10	• District Administration Malappuram has requested Revenue Department for issuing necessary orders to allot 8.09 acres of land in Kurumbathoor Village in Thirur Thaluk, Malappuram district to KSIDC for the development of the WtE project. • The file is now pending with Land Board. Land Board sought further details from the District Administration. District Administration has submitted the details as sought by the Land Board.

B. Progress in establishing Waste to Energy plants in two towns having population below 1 lakh

Sl. No	Municipality	Identified site	Area (acre)	Status
9)	Wayanad	Sulthan Bathery (Govt. Land)	0.5	• Construction started • Action to be taken on the installation of machinery
10)	Idukki	Munnar (Land handed over by M/s Kannan Devan Hills Plantations Pvt. Ltd)	2	• KSIDC has re – tendered project on 14th January 2020. • The technical bid submitted by the Consortium of Ms. Al Bucheeri Transport Est and M/s Organic Recycling Systems Pvt Ltd was opened and evaluated based on the minimum eligibility criteria detailed in the tender document and the bid found eligible for technical presentation. • The technical presentation by the bidder to be scheduled on issue of Govt orders reconstituting the Bid Evaluation Committee. • Ex Service Charitable Trust was earlier directed to re submit the proposal for clearing the legacy waste at the project site to Suchitwa Mission through Munnar Grama Panchayath. • The Munnar Grama Panchayath Secretary reported that the proposal document for the project for clearing the legacy waste has been finalized and submitted to DPC for approval.

The progress achieved is as follows:

- Setting of Waste to energy plants at 10 locations is at various stages
- **Single use plastic products was banned** all over the State and action being taken for its strict implementation
- **Implementation of EPR registration under Solid Waste Management Rules, 2016** for the collection of EPR fee for meeting the expenditure of Door to door collection by the local bodies is in an advanced stage. Development of online portal is also under progress.
- For **Regional Sanitary Landfill**, land (25 acre) has been identified at site of FACT at Ambalamedu, Ernakulam and action is being taken for take over.
- **Biomining** started at Njalianparmbu dumpsite and work awarded at Kureepuzha Kollam. Tendering stage at Kottayam, Bhramapuam, Chelora. Out of the 38 dumpsites, drone survey to be done in 10 large dumpsite and total station survey in remaining dumpsites
- **Proposal for co-incineration facility at Malabar cements is under consideration**

1A. Status on the implementation of Hon'ble NGT order dated 25-4-2019 in OA 606/2018

1.3. Compliance Status of Model City / Town / Village

As per Govt. Order. (Rt.) No. 45/2019/Envt. dated 31-5-2019 following local bodies are selected as model cities, model towns and model villages (3 each in 14 districts) in the State.

1.3.a Model city

- Work awarded for the waste to energy plant at Kozhikode and land land identified for waste to energy plant in other model cities namely Thiruvananthapuram and Thrissur
- More than 65% Door to door collection for dry and wet waste achieved for both household and establishment in Kozhikode Corporation. 87% door-to door collection provided for establishment through 12 agencies by Thiruvananthapuram Corporation.
- Biomining started at Kozhikode and clearing of landfills began at one place in Thiuvananthapuram Corporation and another one is undertaken under Smart City programme.

1.3.b Model town

- 100% Door-to-Door collection achieved for dry waste from households and establishments in Punalur and Kunnamkulam municipality. 100% Door-to-Door collection for dry waste from establishment in Attingal Municipality
- Dumpsite cleared in Punalur and for Attingal, it is under project preparation.

1.3.c Model villages

- Many local bodies achieved 100% Door to Door collection for dry wastes and majority of local bodies achieved more than 50% for Door to Door collection for dry wastes in households
- Waste collectors/ Haritha Karma Sena are provided in Panchayaths
- Waste treatment options include ring compost, biogas plants, compost pits. Compost pits are provided under Ayyankali scheme

Compliance of Rule 22 in Model Cities

No.	**Model cities**	**Thiruvananthapuram**	**Thrissur**	**Kozikode**
	Population (2011)	9,58,000	3,17,526	609000
	No of houses	2,72,820	86,604	1,26,100
	No of establishments	18,882	15,250	26,893
	Quantity of waste generated (TPD)	455	153	300
	Quantity of waste treated (TPD)	221	57	182
	Gap (TPD)	234	96	118
	Available facilities	Pipe compost- 50000, Kitchen bin-19000 , biogas plant (HH level)-3892 , Community level Biogas plant- 18 , Aerobin- 53 , bio bin-109[Total wet waste treated –(106 TPD)] 107 MLD common sewerage treatment plant and there is provision for treatment of septage.	Pipe compost- 2272, biogas plant(HH level)- 23, biocomposter- 50, OWC	Windrow composting-100 TPD, Aerobins, Biogas plants, Pipe compost, compost pits, Kitchen bins, Rendering plant for treating wastes from chicken stall
Compliance of Rule 22				
22(1)	Identification of suitable site for solid waste processing plant	Land is identified at Vizhinjam	Land is identified at Ollookkara	Land identified at Njaliyanparmba
22(3)	Procurement of suitable site for setting up solid waste processing facilities and sanitary landfill facilities	Transfer of land being done	Procurement of land being done	Land is already available
22(4) 22(5)	Source level segregation Door to Door collection of segregated waste	30% door to door collection from households for dry waste and no wet waste from households. Haritha karma sena is to be in force 92% of dry and wet waste from establishment by engaging 12 service providers • MCF-54 • RRF-4 • Haritha Karma Sena –No reported for households	23.3% door to door collection of dry waste from households 19.7% door to door collection of dry waste from establishment • MCF-8 • RRF-3 • Haritha Karma Sena/collectors -145	66.4% door to door collection of dry wastes from households 69.3% door to door collection of dry waste from establishment • MCF-2 • RRF-Nil • Haritha Karma Sena/collectors - 602
22(6)	Ensure separate storage, collection and transportation of construction and demolition waste	Being initiated	Being initiated	Being initiated

No.	**Model cities**	**Thiruvananthapuram**	**Thrissur**	**Kozikode**
22(7)	Setting up of solid waste processing facilities by all local bodies	Tendering		Work awarded to Zonta Infratech Private Limited and site is being cleared
22(9)	Setting up common or standalone sanitary facilites	Land (25 acre) has been identified at site of FACT at Ambalamedu, Ernakulam for the sanitary landfill and action is being taken for take over		
22(10)	Bio-remediation or capping of old and abandoned dumpsites	Three dumpsites • Palayam(7000m^3)- remdediation work undertaken by Smart City • Erumakkuzhy(2388m^3) - Biomining in progress • Vilappilsala (to be initiated)	One dumpsite at Laloor (1,00,000m^3) Some area is reclaimed and construction of stadium is progressing and the remaining area is taken up for booming with Clean Kerala and KIEL	One dump site at Njaliyanpramba (29,000 TPA) Bioremediation and capping work is in progress by M/s Zonta Infratech Private Limited

Compliance of Rule 22 in Model Towns

	Model Town	Attingal	Punalur	Kunnamkulam
	Population (2011)	37,648	48,648	54,071
	No of houses	13,891	13,062	13,156
	No of establishments	974	1,232	3,028
	Quantity of waste generated (TPD)	17	20	23
	Quantity of waste treated (TPD)	17	20	15
	Gap (TPD)	0	0	8
	Available facilities	Windrow compost , biogas plant(HH level)-410, Community level Biogas plant-18	Biogas-250 , Pipe Compost- 5000, Compost pit - 6500, Aerobins -27	Biogas plant(HH level)-196 , Aerobins-3, Biocomposter -4835
Compliance of Rule 22				

	Model Town	Attingal	Punalur	Kunnamkulam
22(4) 22(5)	Source level segregation Door to Door collection of segregated waste	48.5% door to door collection from households for dry waste and no wet waste from households. 100 % of dry and wet waste from establishment • MCF-1 • RRF-1 • Haritha Karma Sena/ Collectors –43	99.2% door to door collection of dry waste from households 99.9% door to door collection of dry waste from establishment • MCF-200 mini • RRF-1 • Haritha Karma Sena/collectors - 127	100% door to door collection of dry wastes from households 100% door to door collection of dry waste from establishment • MCF-1 • RRF-1 • Haritha Karma Sena/collectors - 6
22(6)	Ensure separate storage, collection and transportation of construction and demolition waste	Being initiated	Being initiated	Being initiated
22(9)	Setting up common or standalone sanitary facilites	Land (25 acre) has been identified at site of FACT at Ambalamedu, Ernakulam for the sanitary landfill and action is being taken for take over Action has been initiated for providing secured landfill at Attingal.		
22(10)	Bio-remediation or capping of old and abandoned dumpsites	One dumpsites • Attingal(13000m3)- Project prepration ongoing.	One dumpsite at Punalur Site cleared	-

Status of waste management model villages

Sl. No.	District	Local body	Quantity of SW generated in TPD	MCF	RRF	HKS/collectors	Door-to-Door household in %	Door-toDoor establishments in %	Quantity of waste treated in TPD	Quantity of wet waste treated in TPD	Material recovered, recycled, coprocessed and scrap feeders	Gaps in generation and treatment
Model Panchayaths												
1	Thiruvananthapuram	Karakulam	15.73	1	0	48	100	42.29	13.38	8.81	4.58	2.34
2		Parassala	15.68	3	0	38	27.00	1.56	13.34	8.78	4.56	2.34
3		Poovachal	13.08	4	1	28	34.00	100	11.13	7.33	3.81	1.95
4	Kollam	Chavara	12.80	1	1	46	83.69	60	10.89	7.17	3.72	1.91
5		Kadakkal	9.22	0	0		-		7.84	5.16	2.68	1.37
6		Perinad	10.19	1		40	67.10	10.94	8.67	5.70	2.96	1.52
7	Pathanamthitta	Aranmula	8.61	1	1	28	100	100	7.33	4.82	2.51	1.28
8		Kulanada	7.10	22	0	34	100	100	6.04	3.97	2.07	1.06
9		Thumpamon	2.27	2(MCF & Mini MCF)	Nil	23	100	100	1.93	1.27	0.66	0.34

Sl. No.	District	Local body	Quantity of SW generated in TPD	MCF	RRF	HKS/collectors	Door-to-Door household in %	Door-toDoor establishments in %	Quantity of waste treated in TPD	Quantity of wet waste treated in TPD	Material recovered, recycled, coprocessed and scrap feeders	Gaps in generation and treatment
10	Alappuzha	Aaryad	9.68	1	1	36	100	100	8.24	5.42	2.82	1.44
11		Mararikkulam North	9.40	2	1	36	100	100	8.00	5.26	2.73	1.40
12		Thamarakula	8.11	2	1	33	58.97	58.06	6.90	4.54	2.36	1.21
13	Kottayam	Kadaplamato	3.91	1	0	13	100	100	3.33	2.19	1.14	0.58
14		Moonilavu	2.62	1	0	13	100	100	2.23	1.47	0.76	0.39
15		Poonjar	3.79	2	0	13	100	100	3.23	2.13	1.10	0.57
16	Idukki	Adimali	3.79	1	1	48	81.35	76.32	3.23	2.13	1.10	0.57
17		Kumali	10.77	2	1	42	78.48	70.18	9.17	6.03	3.14	1.61
18		Nedumkanda	12.59				56.44	100	10.72	7.05	3.66	1.88
19	Ernakulam	Chottanikara	6.80	1	0	28	94.54	87.50	5.78	3.81	1.98	1.01
20		Kalady	8.48			14	82.19	-	7.22	4.75	2.47	1.26
21		Pampakuda	13.21	1	0	36	70.99	92.65	11.24	7.40	3.84	1.97
22	Thrissur	Manalur	9.87	1	1	38	100	100	8.40	5.52	2.87	1.47
23		Parappukkara	8.90	2	0	10	89.99	30.74	7.57	4.98	2.59	1.33
24		Periganam	6.30	1	1	30+1	100	100	5.36	3.53	1.83	0.94
25	Palakkad	Muthuthala	7.46				100		6.35	4.18	2.17	1.11
26		Sreekrishnapuram	6.56	1	-	15	100	100	5.58	3.67	1.91	0.98
27		Vellinezhi	5.13	1	1	13	100	100	4.37	2.87	1.49	0.76
28	Malappuram	Chaliyar	6.25	1	0	13	100	100	5.32	3.50	1.82	0.93
29		Maranchery	10.50	1	0	38	100	0.00	8.94	5.88	3.06	1.56
30		Thuvur	12.09	1	0	15	100	100	10.29	6.77	3.52	1.80
31	Kozhikode	Meppayur	8.38	1	0	26	89.00	100	7.13	4.69	2.44	1.25
32		Kunnumel	5.41	mini	0	28	100	99.03	4.60	3.03	1.57	0.81
33		Kuttiadi	5.81	1	0	17	99.00	100	4.94	3.25	1.69	0.86
34	Wayanad	Meenagadi	10.04	1	0	26	100	0.00	8.54	5.62	2.92	1.50
35		Muttil	10.58	1	0	10	100	0.00	9.01	5.93	3.08	1.58
36		Vythri	5.49	1	0	18	100	100	4.67	3.08	1.60	0.82
37	Kannur	Padiyur	6.46	1	1	17	100	75.00	5.50	3.62	1.88	0.96
38		Pariyaram	9.86	1	1	20	98	53.47	8.39	5.52	2.87	1.47
39		Udayagiri	5.64	Under construction (95% completed)	0	15	98	100	4.80	3.16	1.64	0.84
40	Kasargod	Beddukka	8.36	MCF 1 No, Mini MCF 81 No., Bottle Box 8 Nos	1	37	100	100	7.11	4.68	2.43	1.25

Sl. No.	District	Local body	Quantity of SW generated in TPD	MCF	RRF	HKS/collectors	Door-to-Door household in %	Door-toDoor establishments in %	Quantity of waste treated in TPD	Quantity of wet waste treated in TPD	Material recovered, recycled, coprocessed and scrap feeders	Gaps in generation and treatment
41		Kinanoor-Karinthalam	9.96	1	1		44.19		8.48	5.58	2.90	1.48
42		Madikkai	6.62	1	0	30	100		5.63	3.70	1.92	0.99

Sl.No	District	Local body	Population as per 2011 Census	Projected population (2019)	Quantity of Waste generated based on population (TPD)	Percentage of D2D Collection(Dry waste)		No of collectors	As reported by localbodies		Quantity of waste processed (TPD)	Waste treatment technology used	Institutional level SWM Plants	Community Level SWM Plants	Household Level SWM Plants	Centralized	Non-Biodegradable Waste Management	Site identified for Sanitary land fill	Dump sites identified	Authorization Applied	Authorization granted	Annual report (Form IV)
						Household (%)	Non-residential premises (%)		Quantity of waste Collected (TPD)	Quantity of waste processed (TPD)												
1	Thiruvanthapuram	Thiruvanthapuram City	958000	996204	456	19.4	92.1	12 service providers	42.95	242.23	222	De centralized management facility	Biobin 109 of 15 TPD	Biogas Plant - 18 Nos of 18.4TPD Aerobin (Thumboormuzhi model) - 53 Nos having 12 TPD	Pipe compost-87000 Nos., (50,000 working) of 43.5TPD Kitchen Bin-19000Biocomposter-15833 Biogas plant-3982 Nos of 2.39TPD; other units-109	Land identified for the solid waste processing plant for setting up the plant at Vizhinjam. The approval of the Board of VISL is to be obtained by the Board for the transfer of 15 acres of land on lease to KSIDC. The Board approval is to be communicated to the Port Department to issue necessary orders. Tendering has been done for the WtE plant	Material Collection Facility in 54 locations Resource Recovery Unit - 4 numbers Plastic Shredding Units - 2 Nos Bailing Unit - 1 Number	Regional landfill site identified at Kochi	3 (Of which one dumpsite cleared)	Yes	Under processing	Yes

2	Kollam	Kollam City	397000	412832	183	59.9	48.9	124	10.5	10.5	147	De centralized management facility	Not reported	13 biogas plants of 5.6TPD; 13 aerobins of 3.9 TPD	Biogas plant-1273 Nos. (working) of 2.5 TPD; Pipe compost - 462 (working) of 1 TPD; 720 biocomposter, biopot of 1.5 TPD	Letter of Intent (LOI) issued to the consortium by M/s. Zonta Infratech Pvt Ltd.,the successful bidder of the project on 12-3-2020 and consortium accepted the LOI and the Consortium has taken steps to incorporate the SPV and reserved Venad Waste Management Private Limited as the name of the SPV with the Ministry of Corporation Affairs. Consortium requested for an extension of time for the incorporation of SPV due to current lock down announced as part of Covid 19 pandemic	Material collection facility (200 sq ft)-one Plastic shredding machine (150 sq ft) - one number	Regional landfill site identified at Kochi	1(Kureepuzha) • For biomining the site, the Corporation informed that draft agreement to be executed with M/s.Zonta Infratech Pvt Limited is vetted by the Corporation's Standing Counsel and the same will be placed in the next Council meeting for approval.	Yes	Yes	No

3	Ernakulam	Kochi City	677000	703999	352	90	60	1200	308	215	304	Centralized treatment - Windrow composting at Brahmapuram	Not reported	Nil	Biogas plant-60 Compost pits-1212	Biodegradable waste in dumping yard at Brahmapuram . Windrow composting. Retendering of waste to energy plant at Brahmapuram	MCF- 8, RRF-5	Regional landfill site identified at Kochi	1(Retendering of biomining of dumpsite at Brahmapuram)	Yes	Under processing	Yes
4	Thrissur	Thrissur City	317526	330189	153	23.3	19.7	145	103	103	114	Decentralised facility	Total quantity of biodegradable managed-6.71TPD Non biodegradable 0.7TPD	Organic Waste Converter-2 Nos of 4 and 8TPD Biogas plant-9	Biogas plant-632; Compost pit- 20118; 50 biocomposter, biobin and four other units	Thrissur Corporation identified land at Ollookkara village in Thrissur district. Vide GO (Rt) No 111/2020/LSGD dated 13/01/2020 State Government has accorded sanction to Thrissur Municipal Corporation to purchase the identified land at Ollookkara Village in Thrissur district and to hand over the same on lease basis to KSIDC for the development of the project.The matter is being placed before the Council for approval and further proceedings.	Material collection facility-8 Resource recovery facility-3	Regional landfill site identified at Kochi	1 (Laloor)	No	No	Yes

5	Kozhikode	Kozhikode	550000	571934	300	66.4	69.3	602	98	95	140	Centralized treatment - Windrow composting at Njaliyanprambu	Non-biodegradable-0.75TPD	Biogas plant at public utility place-4Nos Aerobins-28	Biogas-261 Pipe compost-10250	Windrow Composting. Work awarded to Zonta Infratech Private Limited for the construction of Waste to Energy Plant at Njaliyan parambu. A company namely M/s.Malabar Waste Management Limited was formed and they applied for registration in Kerala Single Window Clearance Portal (KSWIFT) and to individual departments for clearance. The company obtained NOC from State Environmental Impact Assessment Authority. Suchitwa Mission submitted the proposal to Ministry of Housing and Urban Affairs for approval of their share in the VGF for the project. Clarification on the points was called for by the Ministry and the same is being processed.	Material collection facility-2	Regional landfill site identified at Kochi	1(Njaliyanparambu) Biomining started	Yes	Yes	Yes

6	Kannur	Kannur	356000	370197	109	63.5	89.3	44	15	15	107	Land Filling	Not reported	Biomethanation of 0.25 TPD Trenching	Kitchen bin-102 Biogas - 40(working) Pipe Compost - 1682(working)	M/s Organic Recycling Systems Private Limited and M/s. Blue Planet Environment Solutions India Limited have completed the incorporation of SPVs in the name of Blue Planet Kannur Waste Solutions Private Limited to take up the development of the project. Consortium has selected agency for the preparation of DPR, waste quantification and characteristic study in Kannur district and the agency could not commence due to lock down announced in connection with Covid 19 pandemic. Govt vide GO(Rt) No. 714/2020/LSGD dated 27-3-2020 issued direction to Kannur Municipal Corporation to hand over the 9.75 acres of the land identified at Chelora on lease basis to KSIDC for the development of Waste to Energy project and to execute MoU with KSIDC for clearing the existing legacy waste at dump site in Chelora.	Material collection facility-2 Plastic shredding unit at Chelora-1	Regional landfill site identified at Kochi	1(Chelora)MoU with KSIDC for clearing the existing legacy waste at dump site in Chelora	Yes	Under processing	Yes

7	Thiruvanathapuram	Attingal	37648	39150	17	48.5	100	43	16	16	17	Centralised and decentralised systems	Biogas Plant(Dheenabandhu) 6 Nos with capacity of 1TPD Biogas plant (Portable) 5 Nos with capacity of 107.5 kg/day	Windrow composting plant of 13TPD, Biogas Plant 6 Nos - 3.25 TPD Vermi Compost 1 No wih capacity of 0.25 TPD	Biogas Plant 407 Nos - 0.85TPD	Windrow composting plant, vermic composting plant, and biogas plant	Resource Recovery Facility - SWM Plant, Chudukadu Plastic Shredding Machine - SWM Plant, Chudukadu	Yes	1	Yes	Under processing	Yes
8		Nedumangad	60161	62561	25	6.2	62.5	22	1.5	1.5	8	Decentralised treatment		Aerobins-37 Ring compost -15	Biogas plant-200 Kitchen bin-2617	Nil	MCF-1; RRF-1	At regional level	Nil	No	No	Yes
9		Neyyattinkara	70850	73676	30	48	18.3	88	3	3	10	Decentralised treatment	Boiogas plant-20	Aerobins 21 Biogas plant - 10	Biogas plant-104 Compost pit-14360	Nil	MCF- 1	At regional level	Nil	No	No	Yes

10		Varkala	40048	41646	17	69	88	18	4.8	4.8	9	Decentralised treatment		Compost (Thumboormuzhi Model) - 33 bins at 33 locations with capacity of 33 Cubicles Biogas Plant - 1 No - 100Kg	Biogas Plant - 200 Nos Pipe Compost - 2500	Nil	MCF-3; RRF-1	At regional level	Yes -one	Yes	Yes	Yes
11	Kollam	Karunagapally	47483	49377	21	29.4	20.6	35	7	1	6	Decentralised treatment	2.9TPD of biodegradable waste and 0.3TPD of biodegradable waste is managed.	Compost pit, Vermicomposting.	Biogas plant-21 Compost pit-8521	Nil	MCF-1; RRF-1	At regional level	Nil	Yes	Yes	Yes
12		Kottarakara	31256	32503	13	66.6	20.1	58	1.34	1	4	Decentralised treatment	Biogas Plant - 1 No - Taluk Hospital Biogas Plant (Portable) - 1 No - Boys HSS Total -16 biogas plants	Biogas Plant 1 No - Market, Chandamukkau Aerobic compost - 8	Biogas Plant - 106 Nos Ring compost-250 Pipe Compost - 28	Nil	MCF-29; RRF-1	At regional level	Nil	Yes	Yes	Yes
13		Paravur (South)	36798	38266	15	100	100	32	2	2	5	Decentralised treatment	10 biogas plant	8 biogas plant,Aerobins-4	Pipe compost-162 Biogas plant-121	Nil	MCF	At regional level	Nil	Yes	Under processing	Yes

14		Punalur	48648	50589	20	100	100	127	20	10.5	20	Decentralised treatment	Not reported	Aerobic compost -2 bins at 2 locations with capacity of 12 cubicles	Biogas-1250 Pipe Compost-5000 Compost pit - 6500	Nil	Material Collection Facility - 233sq ft - 233 locations - Small collection facilities)	At regional level	Nil	Yes	Yes	Yes
15		Adoor	29171	30335	12	0	3.5	4	1	0.8	4	Decentralised treatment	1.4TPD of biodegradable waste is managed	Aerobins- 6 bins 3 unit	Pipe compost-1010 s Ring compost - 250	Nil	MCF-1; RRF-0	At regional level	Nil	No	No	Yes
16		Pandalam	41604	43264	17	60	0		1.5	1.5	5	Decentralised treatment	0.89TPD of waste is managed		Compost bins - 2650	Nil	Not given	At regional level	Nil	No	No	Yes

17	Pathanamthitta	Pathanamthitta	38002	39518	16	28	8	17	1	1	5	Decentralised treatment	0.92TPD of biodegradable waste and 0.35TPD of non biodegradablewaste managed	Biogas Plant - 2 Nos Aerobin-5	Biogas plant - 400 Compost pits- 520	Nil	MCF-3; RRF-1	At regional level	Nil	Yes	Under processing	Yes
18		Thiruvalla	52883	54992	22	100	100	55		1.4	12	Decentralised treatment	4.79TPD of biodegradable waste and 1.5TPD of non biodegradable waste	Biogas Plant - 2 with capacity of 350 kg Biogas Plant - 1 with capacity of 750Kg	Biogas Plant - 170Nos Pipe Compost - 2360 Nos	Nil	MCF-1	At regional level	Nil	No	No	Yes
19		Alappuzha	174000	180953	72	94	82	76	58	25.15	21	Decentralised treatment	Not given	Aerobic Compost (Thumboormuzhi Model) - 29 units	Biogas Plant - 1964 Nos. Pipe compost- 1263 Nos. Biobin- 6000 Nos	Nil	MCF-23; RRF-3	At regional level	1 (Sarvodayapuram)	Yes	Under processing	Yes
20		Chengannur	23456	24393	10	13	60	25	0.5	0.85	3	Decentralised treatment	Not given	Aerobic Compost (Thumboormuzhi Model) - 12 bins at 1 location		Nil	MCF-1	At regional level	Nil	Yes	Under processing	Yes

21	Alappuzha	Cherthala	45827	47658	19	74	98	35	0.6	0.6	6	Decentralised treatment	Not given	Aerobic Compost (Thumboormuzhi Model) - 26 bins at 2 locations	Composting units-90 Biogas plant-350 Compost pits-850	Nil	MCF-1 RRF - 1	At regional level	Nil	yes	Under processing	Yes
22		Haripad	15588	16211	13	93	77	30	1	1	5	Decentralised treatment	2.02TPD is managed	Aerobic unit - 5	Composting units-783 Biogas plants-87 Compost pits-1579	Nil	Plastic Shredding Machine - 1 Number	At regional level	Nil	Yes	Under processing	Yes
23		Kayamkulam	71376	74228	30	31	40	9	2.72	2.5	10	Decentralised treatment	0.06 TPD is managed	Biogas Plant Aerobic compost (Thumboormuzhi Model 4 bin) Location with capacity of 24 kg/day	Composting unit-1431 Biogas plant-364 Compost pits-4450 Pipe Compost 1950	Nil	Material Collection Facility - 1 location Resource Recovery Facility - 1 location	At regional level	Nil	Yes	Under processing	Yes
24		Mavelikara	26421	27477	11	69	85	6	1.3		3	Decentralised treatment	Not given	Aerobic Compost (Thumboormuzhi Model) - 12 bins at 1 location with capacity of 10kg/day	Biogas plant-242 Pipe Compost 165	Nil	MCF-1 RRF - 1	At regional level	Nil	Yes	Under processing	Yes

25	Kottayam	Changanassery	127987	133102	54	21	0	Not given		3	20	Decentralised treatment	Not given	Aerobins -36 treating 2TPD	8800 Ring compost 1800 Biobin unit included in 2019-20 project and is under process	Nil	MCF-1 RRF - 1	At regional level	1	No	No	Yes
26		Erattupetta	29675	30861	13	78	2	62	3.5	3	7	Decentralised treatment	Not given	Aerobic composting (Thumboormuzhi mode) - 24 bins Biogas plant: 28 nos	750 biobin included in 2019-20 project and will supply from march 2020	Nil	MCF-1 RRF - 1	At regional level	1	No	No	Yes
27		Ettumanoor	26423	27479	11	10	57	56			4	Decentralised treatment	Not given	Biogas Plant at location with capacity of 500kg	Ring Compost - 450 Nos Bucket Compost- 150 Nos	Nil	MCF-1 RRF - 1	At regional level	Nil	No	No	No
28		Kottayam	136812	142279	57			104			18	Decentralised treatment	Not given	Aerobic Compost (Thumboormuzhi Model)- 62 Biogas Plant - 52	Biogas plant - 1400 Nos Pipe Compost- 2300 Nos	Nil	MCF-1 RRF - 1	At regional level	1 (Vadavathoor)	No	No	No

29		Pala	123000	127915	52	35	21	14	2	7	26	Decentralised treatment	Not given	Aerobic Compost (Thumboormuzhi Model) - 6 bins at 1 location with capacity of 30kg Biogas Plant - 1 location with capacity 100 Kg	Biobin - 43 Nos Vermi Compost - 26 Nos Biodigester Pot - 4 Nos Ring Compost - 59 Nos Bucket Compost - 170 Nos Pipe Compost - 5162 Nos	Nil	MCF-1	At regional level	Nil	No	No	Yes
30		Vaikom	23234	24162	10			64			3	Decentralised treatment	Aerobic composting (Thumboormuzhi mode) -4 bins at 2 locations Biogas Plant - 1 bin at 1 location	Aerobic composting (Thumboormuzhi mode) - 3 bins at 1 location	Biogas Plant - 135	Nil	MCF-1	At regional level	Nil	No	No	No
31	Idukki	Kattapana	42646	44350	18	77	98	82	3.24	3.24	11	Decentralised treatment	Not given	Not given	Composting unit-1505 Biogas plants-345 Compost pit-450	Nil	MCF- 1 Nos RRF- 1 No	At regional level	Nil	No	No	Yes

32		Thodupuzha	52045	54125	22	67	1	81	4	4	10	Decentralised treatment	Not given	Biogas Plant - 2 Nos 1 Tonne Vermi compost - 7 bin at 1 location	Biogas Plant - 928	Nil	MCF- 2 Nos Resource Recovery Facility (300s ft)- 1 No	At regional level	Nil	No	No	Yes
33		Aluva	24110	25073	10	43	23	Not given	7.84	Not given	3	Centralised treatment	Not given	Centralised plant at Brahmapuram	Kitchen bin - 10 Pipe compost - 43	Centralised plant at Brahmapuram	RRF - 1	At regional level	Nil	No	No	Yes
34		Angamaly	33465	34802	14	0	0	Not given	0.5	0	4	Decentralised treatment	Aerobins-2	Biogas plant - 1No	Biogas - 504 Nos Pipe compost - 979		RRF-2 Nos; MCF-1; Biodigester bins-300Nos SWAP shop-1 No.	At regional level	Nil	No	No	Yes
35		Eloor	31468	32726	14	36	91	81	0.87	0.87	5	Decentralised treatment	Biogas Plant - Hospitals, Hotels, TCC Canteen	Aerobic Compost (Thumboormuzhi Model) - 4 bins at 4 locations with capacity 1TPD	Biogas Plant - 310 Nos Biodigester Pot - 350 Nos	Nil	MCF-1	At regional level	Nil	No	No	Yes

36	Kalamassery	71038	73877	30	42	40	19	Not given	Not given	9	Centralised treatment	Not given	Centralised plant at Brahmapuram	Biogas plant-9 Compost pit-800	Centralised plant at Brahmapuram	MCF-1; MRF-1	At regional level	1	No	No	Yes
37	Koothattukulam	17942	18659	8	0	Not given	2	0.8	0	3	Decentralised treatment	Not given	Biogas Plant - 1 No with capacity 150kg	Biogas 16	Nil	Nil	At regional level	Nil	No	No	Yes
38	Kothamangalam	114574	119153	48	62	52	25	6	6	14	Decentralised treatment	Not given	Windrow compost plant	Biogas plant-202 Compost pit-2303 Kitchen bin 10000	Nil	MCF-1; MRF-1	At regional level	1	No	No	Yes
39	Maradu	44704	46490	19	12	7	66	0	0	6	Centralised treatment	Not given	Not given	Biogas Plant - 166 Nos Biodigester Pot - 215 Nos Bucket Compost - 2330 Nos Pipe Compost - 940 Nos	Centralised plant at Brahmapuram	MCF-4; RRF-1	At regional level	Nil	No	No	Yes

40	Ernakulam	Muvattupuzha	30397	31612	13	7	3	28			7	Decentralised treatment	Not given	Composting - 5 bins at 1 location (not working)	Kitchen bin 24	Nil	MCF-1	At regional level	1	No	No	No
41		North Paravur	31503	32762	14	100	89	185	2	2	7	Decentralised treatment	Aerobic compostin g (Thumboo rmuzhi model) -1 bin at 1 location with capacity 4 Cubic (Not Operating)	Biogas Plant - 1 bin with capacity 100kg (not working) Vermi Compost - 1 bin with capacity 1 TPD Windrow Compost - bin with 3 TPD Capacity	Biogas Plant - 25 Nos Pipe compost - 2500 Nos	Nil	MCF-1; RRF-1	At regional level	1	No	No	Yes
42		Perumbavoor	28110	29233	12	29	0	12	2.32	1	8	Decentralised treatment	0.75TPD of biodegradable waste is managed 0.75 TPD of non biodegradable waste is managed	Bio-gas, aerobic compost, MRF	Biogas Plant - 161 Nos Biodigester Pot - 1500 Nos Ring Compost - 1000 Nos Pot compost- 894	Nil	MCF-1; RRF-1	At regional level	Nil	No	No	Yes

43		Piravam	27229	28317	12	41	100	66	2.04	2.04	5	Decentralised treatment	Not given	Not given	Biogas -150 Pipe compost-874	Nil	MCF-1; RRF-1	At regional level	Nil	No	No	Yes
44		Thrikkakkara	77319	80409	33	80	100	124	7	7	10	Centralized treatment	Not given	Not given	Biogas 31	Centralised plant at Brahmapuram	Nil	At regional level	Nil	No	No	Yes
45		Thripunithura	92522	96219	39	87	86	46	Not given	Not given	14	Decentralised treatment	Aerobic composting (Thumboormuzhi model) - 2 bins at 2 locations with capacity 14 unit & 8 unit Biogas Plant - 1 No with 100 kg capacity	1.62TPD of biodegradable waste is managed 0.124 non biodegradable waste is managed. Thumburmuzhi model at Anapparambu -41 ward	Biogas Plant - 300 Nos Biodigester Pot - 125 Nos Bucket Compost - 2400 Nos Pipe Compost - 10000 Nos	Centralised plant at Brahmapuram	Material Collection Facility - 1 No (Non Operation) Plastic Shredding Machine - 1 No Baling Machine - 1 No	At regional level	Nil	No	No	No

46		Chalakkudy	49525	51504	21	100	60.5	54	5	5	10	Decentralised treatment	5 SWM Plants(50kg capacity)	Thumburmuzhi model at Anapparambu (41 ward) Vermicomposting Biogas - 3(33kg/day)	83 SWM Plants(207.5 kg capacity)	Windrow composting (2tpd)	MRF-1; RRF-1	At regional level	Nil	Yes	Under processing	Yes
47		Chavakkad	39098	40660	17	42	100	31	4	Not given	14	Decentralised treatment	Not given	Vermi composting 1.5TPD	Biogas Plant - 614 Nos Pot Compost - 548 Nos	Nil	MCF-1; RRF-1	At regional level	1	No	No	Yes
48		Guruvayur	70012	72810	29	32	96	58	4	4	15	Decentralised treatment	Biogas Plant(3.5tpd)	Bio organic management	Biogas Plant-400 Composting units-2545 Compost pits-1899 Kitchen Gardening	Windrow Compost (2TPD),	MCF-1; RRF-1	At regional level	Nil	No	No	Yes

49	Thrissur	Irinjalakuda	62532	65031	26	47	86	130	5.51	1.5	12	Decentralised treatment	SWM plt-2 (600KG)	SWM-2(600kg)	Biogas Plant - 382 Nos Composting units-2577 Compost pits-5702	Nil	MCF-2; RRF-1	At regional level	1	No	No	Yes
50		Kodungallur	94883	98675	40	70	80	84	10	9	22	Decentralised treatment	Aerobic Compost (Thumboormuzhi Model)-6 bins at 3 locations with capacity of 10 kg/day	Aerobic composting	Biogas Plant - 650 Nos Pipe Compost - 2600 Nos Compost pits-4840 Composting units-455	Windrow Compost -1No-with capacity of 4TPD	Non bio degradable waste segragated at source level and collected and handed over to Clean Kerala Company and other private agencies for	At regional level	Nil	No	No	Yes
51		Kunnamkulam	54071	56232	23	100	100	6	3	3	10	Decentralised treatment	Aerobic compost (Thumboor Mozhi model)	Windrow composting plant 1.889 TPD Biodegradable waste managed, 0.81 TPD Non biodegradable waste managed	Bio bin -1628 Nos Biogas-73, Compost pits-2906, Compost unit-508	Windrow Composting Plant-4.5 TPD; 5 Acres of land is available with the llocal bodies for waste processing.	MCF-1; RRF-1	At regional level	Nil	No	No	Yes

52		Vadakkanchery	15674	16300	23	34	100	40	1.6	Nil	9	Decentralised treatment	1.93TPD waste managed(Bio&Nonbiodegradable)		Compost units-1918, Biogas-100,Compost pits-4471	Nil	MCF-2; RRF-1	At regional level	1	No	No	Yes
53		Cherupl assery	30730	31958	13	58	89	22	0.2	1.2	4	Decentralised treatment	0.482 TPD biodegradable waste managed, 0.427 TPD Non biodegradable waste managed.	1.43 TPD Nonbiodegradable waste managed.	Pipe Compost - 1000 Nos Biogas Plant - 200 Nos Composting units-1050	Nil	MCF-1; RRF-1	At regional level	Nil	Yes	Under processing	Yes
54		Chitttur-Thattamangalam	33000	34319	14	100	100	56 Nos	2		7	Decentralised treatment	Biogas Plant - 5 bins at 5 locations	Aerobic bin (Thumboormuzhi) - 8 bins at location with capacity 50kg/day/bin	Biogas Plant - 55 Nos Bucket Compost - 1168 Nos Ring Compost - 239 Nos Composting units-1407	Aerobic Windrow Composting Plant -1 bin with capacity 3 Tons/day	MCF-7; RRF-1	At regional level	Nil	Yes	Under processing	Yes
55		Mannarkadu	39463	41040	17	Not given	84	58	0	0	6	Decentralised treatment	Not given	Not given	Pipe compost-40; biogas plant -20; Biocomposter-315	Nil	MCF-1	At regional level	Nil	No	No	Yes

56	Palakkad	Ottapalam	53792	55942	23	81	89	56	1.4		8	Decentralised treatment	Not given	Not given	Biogas plant-58 Pipe compost 182	Windrow compost	MCF-1; RRF-1	At regional level	1	No	No	Yes
57		Palakkad	131000	136235	55	40	11	156	0.2	1	29	Decentralised treatment	Not given	Biogas plant 1	Pipe compost-2500; Ring compost-60	Windrow composting is in operation. 15 Acres of land is available at Kanjikode for setting up solid waste processing plant. Tendering process is going on. Asper annual report 2.1 Hectre of land is available.	MCF-7; RRF-1	At regional level	1(BPL Koottupatha)	Yes	Under processing	Yes
58		Pattambi	28632	29776	12	0	0	20	1		3	Decentralised treatment	Not given	Open composting in trench	Biogas plant-69		MCF-1; RRF-1	At regional level	Nil	Yes	Under processing	Yes
59		Shornur	43533	45273	19	100	82	65	4.5	2.8	6	Decentralised treatment	Not given	Biobin	Biogas 276	Nil	MCF-1; RRF-1	At regional level	Nil	No	No	Yes
60		Kondotty	28794	29945	12	80	12	160	0.12	0.12	4	Decentralised treatment	Not given	Not given	Pipe compost-420; Biogas plant-18(45kg/day); Ring compost-123	Nil	MCF-1	At regional level	Nil	No	No	No

61	Kottakkal	44382	46156	18	13	26	15	1.2	1.2	5	Decentralised treatment	Biogas Plant - 1 number with capacity of 250kg/day (not working) Aerobic bin compost-10 bins	Aerobic compost - 12 bins	Not given	Incinerator. MRF,MCF,SWAP SHOP, BIOBIN, Ring compost under construction)	Material Recovery Fcaility - 3 number Plastic Shredding Machine - 1 number Baling Machine - 1 number, Reuse (Swap shop, Repair shop, Recycling industries) -1 unit	At regional level	Nil	No	No	Yes
62	Malappuram	101000	105036	43	80	27	24	2.2	2.2	13	Decentralised treatment	Not given	Composting	Biogas plant-31; Composting units-1061	1 Hectre land is available for waste processing	MCF3; RRF-1	At regional level	Nil	Yes	Under processing	Yes

63		Manjeri	97104	100984	41	0	44	16	3	1	15	Decentralised treatment	Biogas-1 (1000kg)	Aerobic Compost (Thumboormuzhi model)-8 bins at ward 33 Biogas Plant at ward 14 Vermi Compost-Trenching Ground-500kg	Pipe Compost - 2844 Nos	Windrow Compost-1 TPD Trenching Ground-1 ton	MCF-3	At regional level	1	Yes	Under processing	Yes
64	Malappuram	Nilambur	46366	48219	20	37	Not given	29	0.3	0.3	8	Decentralised treatment	Not given	Not given	Biogas Plant - 71 Nos. Pipe compost-135; Biocomposter-75	Nil	Temporary	At regional level	Nil	No	No	Yes
65		Parappanangadi	35243	36651	15	100	53	90	1	1	4	Decentralised treatment	Not given	Not given	Biogas Plant - 200 Nos Biodigester Pot - 300 Nos	Nil	MCF-1; RRF-1	At regional level	Nil	Yes	No	Yes

66	Perinthalmanna	49723	51710	21	38	34	52	6	6	12	Decentralised treatment	Not given	Windrow Compost - 1 No	Bio bin - 1000 Nos Biogas Plant - 480 Nos Biodigester Pot - 1189 Nos Pipe Compost - 700 Nos	Nil	Material Recovery Facility - 1 No Plastic Shredding Machne - 1 No Baling Machne - 1 No	At regional level	Nil	Yes	Under processing	No
67	Ponnani	90491	94107	38	80	70	49	4	4	15	Decentralised treatment	Not given	Aerobin -1	Pipe compost-364; Biogas plant-22; Biocomposter-686; Bucket compost-235	One (Private parties property used for landfilling)	MCF-8; RRF-1	At regional level	Nil	No	No	Yes
68	Thanoor	44973	46770	19	29	79	0	0.3	0.3	6	Decentralised treatment	Biogas Plant in 4 locations	Not given	Pipe Compost - 200 Nos ODF Latrine - 400 Nos Ring compost-67	Nil	MCF-1; RRF-1	At regional level	Nil	No	No	Yes
69	Thiroorangadi	56632	58895	24	45	25	28	1.4	1.4	10	Decentralised treatment	Not given	Not given	Pipe Compost - 1850 Nos	86 Cents of land is available	MCF-1	At regional level	Nil	No	No	Yes
70	Tirur	56058	58298	24	100	100	38	1.7	1.1	8	Decentralised treatment	Not given	Aerobin	Pipe compost-230(0.21TPD); Kitchen bin-1480(1.2TPD); Biogas plant-462(0.58TPD)	Nil	MCF-1; RRF-1	At regional level	1	No	No	Yes

71		Valanchery	35795	37225	15	100	30	13	0.04	0.04	5	Decentralised treatment	Biogas plant -14	Not given	Biogas plant-28; Composting-230	Nil	MCF - 1	At regional level	Nil	No	No	Yes
72	Kozhikode	Faroke	32122	33406	14	48	5	18	2	2	6	Decentralised treatment	Not given	Aerobin-1 (50 kg/day)	Pipe compost 1550; Biogas plant-50;	Nil	MCF-1	At regional level	Nil	No	No	Yes
73		Koduvally	48678	50623	21	100	100	72 (Harithа Karma Sena	0.6	0.6	7	Decentralised treatment	Not given	Not given	Not given	Nil	MCF-1	At regional level	Nil	Yes	Under processing	Yes
74		Koyilandy	71873	74745	30	60	8	100	10	2.5	11	Decentralised treatment	Not given	1. Thumboor muzhi model composting - 11 unit 2. biogas plant - 500 kg per day	1. Portable biogas 250 nos 2. pipe, ring and vermi compost - 1933 nos	Nil	1. Material Collection Facility - 2 2. MRF - 1 3. plastic shredding mechine - 2 4. Bailing Mechine - 1	At regional level	Nil	No	No	Yes
75		Mukkam	40670	42295	17	90	91	38	0.525	0.525	5	Decentralised treatment	Not given	Not given	Kitchen bin 301	Nil	MCF-1	At regional level	Nil	No	No	Yes

76		Payyoli	23576	24518	10	100		Not given	0.25	0.25	3	Decentralised treatment	Not given	Not given	Pipe compost 100 Kitchen bin 300	Nil	Not given	At regional level	Nil	No	No	Yes
77		Ramanattukara	35937	37373	15	100	100	Nil	0.01	0.2	4	Decentralised treatment	Not given	Not given	Ring Compost - 320 Nos	Nil	Not given	At regional level	Nil	No	No	Yes
78		Vadakkara	75295	78304	32	89	100	63	7	10	18	Decentralised treatment	Compost-20, Thumboormuzhi-1, Ring compost-1	Not given	Pipe Compost - 520 Nos, Ring compost-615, Biogas- 100, Bucket compost-450,Biobin-150		MCF-13, RRF-2	At regional level	1	No	No	Yes
79	Wayanad	Kalpetta	31580	32842	14	60	81	32	6	6	4	Decentralised treatment	0.508 TPD Biodegradable waste managed,0.561 TPD Non biodegradable waste managed.	1.3 TPD Biodegradable waste managed, 0.869 TPD Nonbiodegradable waste managed.	0.4 TPD Biodegradable waste managed, 0.11 TPD Nonbiodegradable waste managed	8 Acres of land is available in Vellaram kunnu Kalpetta.	MCF-1; RRF-1	At regional level	1	Yes	Under processing	Yes
80		Mananthavady	34663	36048	15	40	47	26	0.2	0.2	4	Decentralised treatment	1.7401 TPD Biodegradable waste Managed.		Vermi composting 317 Biogas 217 Pipe compost 4100		MCF-1	At regional level	Nil	No	N0	Yes

81		Sulthanbathery	23333	24265	10	0	0	23	0.5	9.1	14	Decentralised treatment		Not given	Biogas plant - 192	0.5 Acres of land is available in Sulthan bathery construction of the plant is going on.	MCF-1	At regional level	1	No	No	Yes
82		Anthoor	36290	37740	16	100	98	28	1	1	5	Decentralised treatment	Aerobic Compost (Thumboormuzhi Model) - 6 units at 3 locations with capacity of 2000 kg/bin; Biogas Plant - 1 unit with capacity 40kg/day	Not given	Biogas Plant - 179 Nos Ring Compost - 3033 Nos	Nil	Material Collection Facility - (40m2) - 1 No; Plastic Shredding Machine - 1 No; Baling Machine - 1 No; Reuse strategy(SWAP Shop, Repair shop etc.)-Swap shop -10	At regional level	Nil	No	No	Yes
83		Iritty	40369	41982	17	98	65	39	2.5	2.25	7	Decentralised treatment		Windrow Compost - 1 bin with capacity of 5TPD (Not working)	Biogas plant 5 Pipe compost 110 Ring compost 341	Nil	MCF-1	At regional level	Nil	Yes	Under processing	Yes

84	Kannur	Koothuparambu	29619	30803	13	100	90	64	2	0.5	13	Decentralised treatment	Aerobic Compost (Thumboormuzhi Model) - 5 Bins	Vermi composting and trenching Aerobic Compost (Thumboormuzhi Model) - 21 Bins	Pipe compost 2752 Nos	Nil	Material Collection Facility - 310 sqft Material Recovery Facility - 4000 sqft	At regional level	1	No	No	Yes
85		Mattanur	47078	48959	20	96	69	52	13	13	7	Decentralised treatment	Not given	Biogas Plant - 1 bin with capacity 250kg/day Vermi Compost - 1 bin with capaciy 5TPD	Ring compost - 2500 Nos. Pipe Compost - 1500 Nos.	Nil	MCF-1; RRF-1; Plastic Shredding Machine - 1 number	At regional level	Nil	No	No	Yes
86		Panoor	17438	18135	8	60	26	40	2.5	0	2	Decentralised treatment	Not given	Not given	Kitchen bin and ring compost - 1200	Nil	Nil	At regional level	Nil	No	No	Yes
87		Payyanur	72111	74993	30	100	71	44	6	6	15	Decentralised treatment	Not given	Windrow composting	Pipe compost-1750; Kitchen bin-645;other units-1440	Nil	MCF-1;RRF-1; Plastic shredding	At regional level	1	Yes	Under processing	Yes

88		Sreekantapuram	17630	18335	8	100	88	30	0.5		3	Decentralised treatment	Not given	Vermi Compost - bin with capacity -1 TPD (Not working since 2007)	Ring Compost - 125 Nos	Nil	Road side locked bins for collecting non biodegradable waste - 20 locations	At regional level	Nil	No	No	Yes
89		Thalassery	92558	96257	39	51	1	97	5	5	20	Decentralised treatment	Not given	Biogas Plant - 3 bins at 3 locations with capacity of 1 Ton	Biogas Plant - 1021 Nos Pipe Compost - 5200 Nos	Nil	MCF-1	At regional level	1	Yes	Under processing	Yes
90		Thaliparambu	72465	75361	31	87	19	34	1.5	1.5	11	Decentralised treatment	Not given	Windrow Composting	Composting units-4800	Nil	MCF-1; RRF-1	At regional level	Nil	No	No	Yes
91	Kasaragod	Kanhangad	73536	76475	31	100	28	43	8	20	11	Decentralised treatment	Aerobic Compost (Thumboormuzhi Model) - 9 bins at 2 locations with capacity of 1000 kg/bin	Aerobic Compost (Thumboormuzhi Model) - 20 bins at 3 locations with capacity of 1000 kg/bin	Biogas-2220 Ring compost-2500, Kitchen Bin-17400, Pipe compost-3222.	0.5 Hectre land is avaiilable.	Material Collection Facility - (1000sqft)- 1 No Resource Recovery Facility - 1000sqft - 1 No Plastic Shredding Machine - 1 No. Baling Machine - 1 No. Reuse	At regional level	1	Yes	Yes	Yes

92		Kasaragod	131000	136235	55	86	32	17	3	3	20	Decentralised treatment	Not given	Not given	Pipe compost-800, Biogas-13, Ring compost-8244	Nil	MCF-4; RRF-1	At regional level	1	Yes	Under processing	No
93		Nileshwaram	40802	42433	17	100	100	30	1	8	8	Decentralised treatment	Biogas-44, Thumboor muzhi (4 unit having 2 bins), (1 unit having 4	Aerobic compost (21bin 1 unit, 4bin 1unit, 3bin 2 unit)	Biogas-2840 Pipe Compost - 2840 Nos, Ring compost-1998, Biobin-3350	80 Cents land is available.	MCF-1; RRF-1	At regional level	Nil	Yes	Yes	Yes
					3521				**880**	**932**	**1837**										

Annexure III

KERALA STATE POLLUTION CONTROL BOARD
CENTRAL LABORATORY, GANDHI NAGAR, KOCHI- 682020
കേരള സംസ്ഥാന മലിനീകരണ നിയന്ത്രണ ബോർഡ്
കേന്ദ്ര പരീക്ഷണശാല, ഗാന്ധി നഗർ, കൊച്ചി - 682020
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Email: - kspcbcl@asianetindia.com Website :www.keralapcb.nic.in
(An NABL accredited laboratory as per ISO 17025-2005)

Ref PCB/CL/AR/2009 Date: 18/03/2019

From

Chief Environmental Scientist (I/C)

To,

The Environmental Engineer,
KSPCB, DO, Perumbavoor

Sub: Analysis Report of Water Samples

Sir,

I am enclosing here with the analysis report of the samples received from that office. The bill for the analysis charge is also enclosed herewith. The details are given below

Sl	AR NO	That Office Reference	Source Name	No of Samples
1	866/18-19	PCB/PBR/LAB/1/2013 dated 16.01.2019	Bhrahmapuram solid waste treatment facility of Kochi Corporation	2

AE/AS 21/3/19

927 19/3/19

Kerala State Pollution Control Board
Dist. Office (Ernakulam - II)
19 MAR 2019
M. C. Road
Perumbavoor-683542

Yours faithfully

CHIEF ENVIRONMENTAL SCIENTIST (I/C)

Annexure III

KERALA STATE POLLUTION CONTROL BOARD
CENTRAL LABORATORY, GANDHI NAGAR, KOCHI- 682020
കേരള സംസ്ഥാന മലിനീകരണ നിയന്ത്രണ ബോർഡ്
കേന്ദ്ര പരീക്ഷണശാല, ഗാന്ധി നഗർ, കൊച്ചി - 682020
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(An NABL accredited laboratory as per ISO 17025:2005)

ANALYSIS REPORT

Analysis Report No.	PCB/CL/866/18-19	Date	18 Mar 2019	Doc.No: PCB/CL/CH/F-7
Ref.No.	PCB/PBR/LAB/1/2013 dated 16.01.2019	Date Of Collection		14 Jan 2019
Received From	D O Perumbavoor	Date Of Receipt		16 Jan 2019
No. Of Sample	2	Period Of Analysis		16 Jan 2019 - 18 Mar 2019
Source	Bhrahmapuram solid waste treatment facility of Kochi Corporation	Scientist-in-charge		JOSEMIN
Sample Condition	Fit for analysis	Sample Type		Waste Water
Sample collected by	EE, D O Perumbavoor	Sample volume & container type		2L plastic can
Sample preservation	As per APHA/ IS :3025(Part-1)	Type of test		CHEMICAL

Sample ID : PVR 32

Sl.No	Parameters	Unit	Value	Test Method	Detection Limit
1	pH	-	7.5	APHA, 4500-H+B, 22nd Ed., 2012	0.1
2	Suspended Solids	mg/l	2883.0	APHA,2540-D	10 mg/l
3	Total Dissolved Solids	mg/l	21733.0	APHA, 2540-C 22nd Ed 2012	10mg/l
4	Chloride	mg/l	4999.0	APHA, 4500-Cl/B ,22nd Ed., 2012	1.0mg/l
5	Fluoride	mg/l	0.16	APHA, 4500-F C,22nd Ed., 2012	0.01 mg/l
6	Ammonia as Nitrogen	mg/l	5588.0	APHA, 4500-NH3 F,22nd Ed.,2012	0.02mg/l
7	Biochemical Oxygen Demand (BOD)	mg/l	10752.0	IS 3025 part 44 1993	1mg/l
8	Chemical Oxygen Demand (COD)	mg/l	12480.0	APHA, 5220-B, 22nd Ed., 2012	3.2 mg/l
9	Total Kjeldahl Nitrogen	mg/l	6256.0	APHA, 4500-N-Org B,22nd Ed,2012	0.2mg/l
10	Phenolic compounds	mg/l	7.3	APHA 5530-C,22nd Edition	0.001mg/l
11	Cadmium	mg/l	BDL	APHA, 3111-B, 22nd Ed., 2012	0.02 mg/l
12	Chromium Total	mg/l	0.07	APHA, 3111-B, 22nd Ed., 2012	0.03mg/l
13	Copper	mg/l	0.19	APHA, 3111-B,22nd Ed., 2012	0.02mg/l
14	Nickel	mg/l	0.16	APHA, 3111-B, 22nd Ed., 2012	0.05mg/l
15	Lead	mg/l	BDL	APHA, 3111-B, 22nd Ed., 2012	0.05mg/l

Annexure III

16	Zinc	mg/l	0.43	APHA, 3111-B, 22nd Ed., 2012	0.02mg/l
17	Arsenic	mg/l	BDL	APHA, 3114-B,22nd Ed.,2012	0.01mg/l
18	Mercury	mg/l	0.14	APHA, 3112-B, 22nd Ed., 2012	0.01mg/l

Sample ID : PCB 344

Sl.No	Parameters	Unit	Value	Test Method	Detection Limit
1	pH	-	7.6	APHA, 4500-H+B, 22nd Ed., 2012	0.1
2	Suspended Solids	mg/l	823.0	APHA,2540-D	10 mg/l
3	Total Dissolved Solids	mg/l	20251.0	APHA, 2540-C 22nd Ed 2012	10mg/l
4	Chloride	mg/l	4299.0	APHA, 4500-Cl/B ,22nd Ed., 2012	1.0mg/l
5	Fluoride	mg/l	0.20	APHA, 4500-F C,22nd Ed., 2012	0.01 mg/l
6	Ammonia as Nitrogen	mg/l	4736.0	APHA, 4500-NH3 F,22nd Ed.,2012	0.02mg/l
7	Biochemical Oxygen Demand (BOD)	mg/l	9600.0	IS 3025 part 44 1993	1mg/l
8	Chemical Oxygen Demand (COD)	mg/l	11680.0	APHA, 5220-B, 22nd Ed., 2012	3.2 mg/l
9	Total Kjeldahl Nitrogen	mg/l	5079.0	APHA, 4500-N-Org B,22nd Ed,2012	0.2mg/l
10	Phenolic compounds	mg/l	BDL	APHA 5530-C,22nd Edition	0.001mg/l
11	Cadmium	mg/l	BDL	APHA, 3111-B, 22nd Ed., 2012	0.02 mg/l
12	Chromium Total	mg/l	0.07	APHA, 3111-B, 22nd Ed., 2012	0.03mg/l
13	Copper	mg/l	0.19	APHA, 3111-B,22nd Ed., 2012	0.02mg/l
14	Nickel	mg/l	0.17	APHA, 3111-B, 22nd Ed., 2012	0.05mg/l
15	Lead	mg/l	BDL	APHA, 3111-B, 22nd Ed., 2012	0.05mg/l
16	Zinc	mg/l	0.71	APHA, 3111-B, 22nd Ed., 2012	0.02mg/l
17	Arsenic	mg/l	BDL	APHA, 3114-B,22nd Ed.,2012	0.01mg/l
18	Mercury	mg/l	0.07	APHA, 3112-B, 22nd Ed., 2012	0.01mg/l

-- End of Report --

Checked by

Dr. JOSEMIN
Assistant Environmental Scientist

Authorised by

Note: The test results relate only to the sample submitted for analysis and it shouldn't be reproduced except in full without the written permission of the authorised signatory of the lab.

V.T. SAJIMON
Chief Environmental Scientist (I/C)

Annexure III

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KERALA STATE POLLUTION CONTROL BOARD

CENTRAL LABORATORY, GANDHI NAGAR, KOCHI- 682 020

കേരള സംസ്ഥാന മലിനീകരണ നിയന്ത്രണ ബോർഡ്

സെൻട്രൽ ലാബോറട്ടറി, ഗാന്ധി നഗർ, കൊച്ചി- 682 020

www.keralapcb.nic.in

ANALYSIS REPORT

Analysis Report No.	PCB/CL/866/18-19	**Date** 18.03.2019	
Ref. No.	PCB/PBR/LAB/1/2013 dated 16.01.2019	**Date of Collection**	14.01.2019
Received From	D O Perumbavoor	**Date of Receipt**	16.01.2019
No. of Sample	2	**Period of Analysis**	16.01.2019 – 18.03.2019
Source	Bhrahmapuram Solid waste Treatmen facility of Kochi Corporation	**Scientist-in-charge**	Dr. Josemin
Sample Condition	Fit for analysis	**Sample Type**	Waste Water
Sample collected by	EE, D O Perumbavoor	**Sample volume & container type**	2 L Plastic Can
Sample preservation	As per APHA/IS:3025 (Part-1)	**Type of test**	CHEMICAL

Sample ID: PVR 32

Sl. No.	Parameters	Unit	Value	Test Method	Detection Limit
1	Cyanide	mg/L	9.45	APHA, 3111-B	0.01

Sample ID: PCB 344

Sl. No.	Parameters	Unit	Value	Test Method	Detection Limit
1	Cyanide	mg/L	11.4	APHA, 3111-B	0.01

--End of Report--

Checked By

Dr. JOSEMIN
Assistant Environmental Scientist

Authorised By

V.T. SAJIMON
Chief Environmental Scientist (I/C)

Annexure III

KERALA STATE POLLUTION CONTROL BOARD
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ANALYSIS REPORT OF AMBIENT WATER

Report No. KROR3626/1 to 4 **Date:** 23/11/2019

Date of Sample Collection	30/10/2019	Date of receipt of the sample	01/11/2019
Time	Hours: NOT GIVEN	Time	Hours: 10:00
Sampled by:	AE 1,DO,KKD	Sample ID	NJPW1,NJPW2,NJPW3 & NJPW4
Sampling Method		Sample Lab Code	KROS 3626/1-4
Sample container	PC 2.5 L	Ref.letter No.	PCB/KKD/DO/910/2009; Dated:15.11.2019
Source:	WELL WATER	Received from:	EE,DO,KKD
		Period of analysis:	01.11.2019-20.11.2019
Specific sampling location:	NJELIYANPARAMBA	No. of samples	4
		Analysed by:	RCN/VNM/RCV/JS
Sample preservation:	Ice box	Method:Standard Methods for the examination of Water and Wastewater, APHA AWWA WEF (22nd Ed.)	

sl no	Parameters	unit	LDL	Method No.	SAMPLE ID			
					NJP 1	NJP 2	NJP 3	NJP 4
1	pH	-	0.1	APHA 4500-H+,B	6.63	6.75	6.81	6.77
2	COLOUR	CU	5	APHA 2120C	BDL	BDL	BDL	BDL
3	CONDUCTIVITY	µmhos/cm	0.6	APHA 2510B	625	992	726	366
4	TURBIDITY	NTU	0.4	APHA 2130B	BDL	BDL	BDL	BDL
5	TOTAL ALKALINITY, as CaCO3	mg/L	2	APHA 2320B	20	38	34	16
6	HARDNESS	mg/L	2	APHA 2340C	116	150	138	74
7	CALCIUM as Ca	mg/L	0.6	APHA 3500-Ca,B	33.6	41.6	38.4	21.6
8	MAGNESIUM	mg/L	0.4	APHA 3500-Mg,B	7.776	11.178	10.206	4.86
9	SULPHATE	mg/L	4	APHA 4500-SO4,E	BDL	8.79	7.68	BDL
10	TDS	mg/L	14	APHA4500PE	406	644	471	237
11	PHENOL	mg/L	0.003	APHA5530C	BDL	BDL	BDL	BDL
12	NITRATE-N	mg/L	0.02	APHA 4500-NO3.E	52.7	59.9	35	62
13	FLUORIDE	mg/L	0.03	APHA 4500-F,C	0.1	0.11	0.09	0.11
14	CHLORIDES	mg/L	2	APHA 4500-Cl,B	88	118	94	56
15	IRON	mg/L	0.02	3111B	BDL	BDL	BDL	BDL
17	AMMONIA-N	mg/L	0.02	APHA 4500-N,F	11.9	31.87	19.77	4.18
18	BOD	mg/L	0.5	IS3025 (Part 44)	1.7	4.73	5	2.8
19	COD	mg/L	5	APHA 5220 B	12	21	13	19
20	TOTAL COLIFORM,	CFU/100ml	1	APHA 9222B	4200	9800	5600	6200
21	FECAL COLIFORM	CFU/100ml	1	APHA 9222D	3600	5900	3700	5800

Test method variation: None

Remarks: LDL-Lower Detection Limit BDL-Below Detection Limit

NJPW1-K.Aminas Residence, House No:220, NJPW2-Well water-Sainabi.T, House no:217, NJPW3-P.Moideens Residence, House No:441 & NJPW4-Well water of V.V.Amina.

Scientist in charge

Vineetha M
Asst. Scientist

Annexure III

KERALA STATE POLLUTION CONTROL BOARD

REGIONAL LABORATORY, KOZHIKODE

17.1.2020

ANALYSIS REPORT OF AMBIENT WATER

Report No. KROR3685/1 to 3 **Date:** 17/01/2020

Date of Sample Collection	16/12/2019	Date of receipt of the sample	16/12/2019
Time	Hours: NOT GIVEN	Time	Hours: 16:00
Sampled by:	AE 1,DO,KKD	Sample ID	NJP1,NJP2 & NJP3
Sampling Method	APHA10608,a	Sample Lab Code	KROR 3685/1-3
Sample container	PC 2.5 L	Ref.letter No.	PCB/KKD/DO/910/09, Dated:25.12.2019
Source:	WELL WATER	Received from:	EE,DO,KKD
		Period of analysis:	16.12.2019-15.01.2020
Specific sampling location:	NJELIYANPARAMBA	No. of samples	3
		Analysed by:	VHM/AC/RCV/JS
Sample preservation:	Ice box	Method:Standard Methods for the examination of Water and Wastewater, APHA AWWA WEF (22nd Ed.)	

sl no	Parameters	unit	LDL	Method No.	SAMPLE ID		
					NJP 1	NJP 2	NJP 3
1	pH	-	0.1	APHA 4500-H+,B	6.05	6.1	6.5
2	COLOUR	CU	5	APHA 2120C	NIL	NIL	NIL
3	CONDUCTIVITY	µmhos/cm	0.6	APHA 2510B	1294	858	1155
4	TURBIDITY	NTU	0.4	APHA 2130B	BDL	BDL	BDL
5	TOTAL ALKALINITY, as CaCO3	mg/L	2	APHA 2320B	160	221	258
6	HARDNESS	mg/L	2	APHA 2340C	162	231	234
7	CALCIUM as Ca	mg/L	0.6	APHA 3500-Ca,B	48	70	77.2
8	MAGNESIUM	mg/L	0.4	APHA 3500-Mg,B	10.206	39.123	176.3
9	SULPHATE	mg/L	4	APHA 4500-SO4,E	67.65	177.5	102.2
10	TDS	mg/L	14	APHA4500PE	712	471.9	635.2
11	PHENOL	mg/L	0.003	APHA5530C	BDL	BDL	BDL
12	NITRATE-N	mg/L	0.02	APHA 4500-NO3,E	5.1271	4.1186	4.1105
13	FLUORIDE	mg/L	0.03	APHA 4500-F,C	0.04	0.05	0.09
14	CHLORIDES	mg/L	2	APHA 4500-Cl,B	200	140	160
15	IRON	mg/L	0.02	3111B	BDL	BDL	BDL
17	AMMONIA-N	mg/L	0.02	APHA 4500-N,F	11.13	30.33	20.17
18	BOD	mg/L	0.5	IS3025 (Part 44)	4	6.6	4
19	COD	mg/L	5	APHA 5220 B	12	15	10
20	TOTAL COLIFORM,	CFU/100ml	1	APHA 9222B	900	5600	6300
21	FECAL COLIFORM	CFU/100ml	1	APHA 9222D	600	4700	2800

Test method variation: None

Remarks: LDL-Lower Detection Limit BDL-Below Detection Limit

NJP1-WELL WATER- SAINABHI, NJP2-WELL WATER-V.MOIDEEN, & NJP3-WELL WATER- AMINA.K

Scientist in charge 17/1/2020

Vineetha M
Asst. Scientist

Annexure III

KERALA STATE POLLUTION CONTROL BOARD
REGIONAL LABORATORY, KOZHIKODE

13.2.2020.

ANALYSIS REPORT OF AMBIENT WATER

Report No.	**KROR 3723 / 1 to 3**	**Date:**	**12/02/2020**
Date of Sample Collection	21/01/2020	Date of receipt of the sample	22/01/2020
Time	Hours: NOT GIVEN	Time	Hours: 10:50
Sampled by:	AE 1 DO,KKD	Sample ID	NJP1,NJP2 & NJP3
Sampling Method	APHA1060B,a	Sample Lab Code	KROS 3723/1-3
Sample container	PC 2 5 L	Ref.letter No.	PCB/KKD/DO/910/09; Dated 22.01.2020
Source:	WELL WATER	Received from:	EE,DO,KKD
		Period of analysis:	22.01.2020-11.02.2020
Specific sampling location:	NJELIYANPARAMBA	No. of samples	3
		Analysed by:	VNM/AC/RCV/JS
Sample preservation:	Ice box	Method:Standard Methods for the examination of Water and Wastewater, APHA AWWA WEF (22nd Ed.)	

sl no	Parameters	unit	LDL	Method No.	SAMPLE ID		
					NJP 1	NJP 2	NJP 3
1	pH	-	0.1	APHA 4500-H+,B	6.3	6.5	6.7
2	COLOUR	CU	5	APHA 2120C	NIL	NIL	NIL
3	CONDUCTIVITY	µmhos /cm	0.6	APHA 2510B	815.1	1241	1179
4	TURBIDITY	NTU	0.4	APHA 2130B	BDL	BDL	BDL
5	TOTAL ALKALINITY, as CaCO3	mg/L	2	APHA 2320B	178	241	24.4
6	HARDNESS	mg/L	2	APHA 2340C	160	216	180
7	CALCIUM as Ca	mg/L	0.6	APHA 3500-Ca,B	41.6	52.8	52.8
8	MAGNESIUM	mg/L	0.4	APHA 3500-Mg,B	13.608	20.412	11.664
9	SULPHATE	mg/L	4	APHA 4500-SO4,E	116.4	178.7	112.18
10	TDS	mg/L	14	APHA4500PE	448	690	652
11	PHENOL	mg/L	0.003	APHA5530C	BDL	BDL	BDL
12	NITRATE-N	mg/L	0.02	APHA 4500-NO3,E	26.73	32.86	34.45
13	FLUORIDE	mg/L	0.03	APHA 4500-F,C	0.05	0.05	0.08
14	CHLORIDES	mg/L	2	APHA 4500-Cl,B	110	150	130
15	IRON	mg/L	0.02	3111B	BDL	BDL	BDL
17	AMMONIA-N	mg/L	0.02	APHA 4500-N,F	17.84	37.92	29.75
18	BOD	mg/L	0.5	IS3025 (Part 44)	8.4	8.2	2.4
19	COD	mg/L	5	APHA 5220 B	15	22	18
20	TOTAL COLIFORM,	CFU/100ml	1	APHA 9222B	3800	4700	6000
21	FECAL COLIFORM	CFU/100ml	1	APHA 9222D	2900	2500	4500

Test method variation: None

Remarks: LDL-Lower Detection Limit BDL-Below Detection Limit

NJP1-WELL WATER- SAINABHI, NJP2-WELL WATER-V.MOIDEEN, & NJP3-WELL WATER- AMINA.K

Scientist in charge
12/2/2020
Vineetha.M
Asst. Scientist

Annexure III

KERALA STATE POLLUTION CONTROL BOARD
കേരള സംസ്ഥാന മലിനീകരണ നിയന്ത്രണ ബോർഡ്
കോഴിക്കോട് റീജ്യണൽ ലബോറട്ടറി
REGIONAL LABORATORY, KOZHIKODE
3rd FLOOR, ZAMORIN'S SQUARE, LINK ROAD, KOZHIKODE – 673 002
Telefax: 2300748, 48, 47
www.keralapcb.org

ANALYSIS REPORT OF AMBIENT WATER

Report No.	KROR3758/1to3	**Date:**	19/03/2020
Date of Sample Collection	20/02/2020	Date of receipt of the sample	20/02/2020
Time	Hours: NOT GIVEN	Time	Hours: 15:00
Sampled by:	AE 1,DO,KKD	Sample ID	NJP1,NJP2 & NJP3
Sampling Method	APHA1060B,a	Sample Lab Code	KROS 3758 /1-3
Sample container	PC 2.5 L	Ref.letter No.	PCB/KKD/DO/910/09; Dated:20.02.2020
Source:	WELL WATER	Received from:	EE,DO,KKD
		Period of analysis:	20.02.2020-18.03.2020
Specific sampling location:	NJELIYANPARAMBA	No. of samples	3
		Analysed by:	VNM/AC/RCV/JS
Sample preservation:	Ice box	Method:Standard Methods for the examination of Water and Wastewater, APHA AWWA WEF (22nd Ed.)	

sl no	Parameters	unit	LDL	Method No.	SAMPLE ID		
					NJP 1	NJP 2	NJP 3
1	pH	-	0.1	APHA 4500-H+ B	6.8	6.6	6.7
2	COLOUR	CU	5	APHA 2120C	NIL	NIL	NIL
3	CONDUCTIVITY	µmhos /cm	0.6	APHA 2510B	945.4	1301	1138
4	TURBIDITY	NTU	0.4	APHA 2130B	BDL	BDL	BDL
5	TOTAL ALKALINITY, as CaCO3	mg/L	2	APHA 2320B	56	270	254
6	HARDNESS	mg/L	2	APHA 2340C	164	184	110
7	CALCIUM as Ca	mg/L	0.6	APHA 3500-Ca,B	36	28.8	26.4
8	MAGNESIUM	mg/L	0.4	APHA 3500-Mg,B	17.98	27.22	10.7
9	SULPHATE	mg/L	4	APHA 4500-SO4,E	53.93	68	67.87
10	TDS	mg/L	14	APHA4500PE	614	845	739
11	PHENOL	mg/L	0.003	APHA5530C	BDL	BDL	BDL
12	NITRATE-N	mg/L	0.02	APHA 4500-NO3,E	101.4	59.96	35.65
13	FLUORIDE	mg/L	0.03	APHA 4500-F,C	0.04	0.08	0.05
14	CHLORIDES	mg/L	2	APHA 4500-Cl,B	150	200	190
15	IRON	mg/L	0.02	3111B	BDL	BDL	BDL
17	AMMONIA-N	mg/L	0.02	APHA 4500-N,F	28.3	49.6	33.8
18	BOD	mg/L	0.5	IS3025 (Part 44)	1.4	0.6	4.6
19	COD	mg/L	5	APHA 5220 B	8	8	20
20	TOTAL COLIFORM,	CFU/100ml	1	APHA 9222B	8000	5500	7600
21	FECAL COLIFORM	CFU/100ml	1	APHA 9222D	6800	3600	3400

Test method variation: None

Remarks: LDL-Lower Detection Limit BDL-Below Detection Limit

NJP1-WELL WATER- SAINABHI, NJP2-WELL WATER-V MOIDEEN & NJP3-WELL WATER-