

Draft Form-1, TOR
Compliance &
Environmental
Impact Assessment
Report

For

“Common Bio-Medical Waste
Treatment facility”

At

Survey No: 133/1A2 & 154/11
Noothulapuram Village,
Taluk-Nilakottai, District- Dindigul,
State- Tamilnadu

TOR letter No:
Lr.No.F.No..9628/SEAC/TOR-1338/2023

SEIAA-TN/ Dated: 10.02.2023

Project Area-.0.7165 Ha

Cost of Project - 4.45 Crores

Category - B

Activity -7(da)

Production Capacity :6935 TPA

Baseline Season:

July 2022-September 2022

Laboratory Assigned: M/s Perfact
Researchers Pvt. Ltd.

UID: PE2022056-B-04

Project Proponent

M/S Dindigul Waste Management
Pvt. Ltd.

Address - No. 16, saththiram East
Street, Near PM, Modi Pharmacy,
Nilakottai, Dindigul.

Email-

p_shan_mugam@yahoo.com

ContactNo.- 9962717327

Environmental Consultant

Perfact Enviro Solutions Pvt. Ltd.
(PESPL)

NABET Registered List of Accredited
Consultant

Organisations/NABET/EIA/192/ SA
0143

Registered Address:- 5th Floor, Sector
3, Rohini, New Delhi- 110085

Email- info@perfactgroup.in

Website- www.perfactgroup.com


Phone- +91-11-49281360

**Enclosure 1 - Authority letter for
Engaging Consultant**



Undertaking by Head of EIA Consultant Organisation

I, Rachna Bhargava, Director & CEO of M/s Perfact Enviro Solutions Pvt. Ltd., 5th floor, NN Mall, Sector 3, Rohini, New Delhi, 110085 authorise Mrs.Akta Chugh (EIA Coordinator- 7(d)(a)) for conducting the Environment Impact Assessment & Preparation of EIA report for the project “**Proposed Common Bio-Medical Waste Treatment Facility**” at Survey No: 133/1A2, 154/11 Noothulapuram Village, Taluk - Nilakottai, District- Dindigul, State- Tamil Nadu

Name of EIA Coordinator	Mrs.Akta Chugh
	7(d) (a)-, Category B
Signature & Date	



Rachna Bhargava, Director & CEO


M/s Perfact Enviro Solutions Pvt. Ltd.

5th floor, NN Mall, Mangalam Palace,
Sector – 3, Rohini, New Delhi – 110085




Declaration by EIA Coordinator(s) & Experts Contributing to the EIA “**Proposed Common Bio-Medical Waste Treatment Facility**” at Survey No: 133/1A2, 154/11 Noothulapuram Village, Taluk - Nilakottai, District- Dindigul, State- Tamil Nadu.

I hereby declare that I was involved in the following Draft EIA Report submitted to DEE-TNPCB, Dindigul towards conducting Public Hearing, as the EIA Coordinator. I further certify that the data given in this report is true and correct to the best of my knowledge.



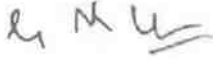
Name of EIA Coordinator	Mrs.Akta Chugh
	7(d) (a)
Signature & Date	
Task & Period Of Involvement	I had visited the site along with the FAEs to understand the project site and the study area. Coordinated with the experts and prepared the impact assessment methodology. Identification and Prediction of the impact assessment, Formulation of the Environment Management Plan, Technical Review. Period of Involvement: July to till date
Office Address	Perfact Enviro Solutions Pvt. Ltd. 5th floor, NN Mall, Mangalam Palace, Sector – 3, Rohini, New Delhi – 110085

Name of Assistant to EIA Coordinator	Mrs.Shweta Rajput
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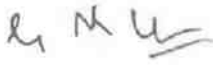
Signature & Date	
Task & Period Of Involvement	I had understood the project. Coordinated with the experts and prepared the impact assessment methodology. Identification and Prediction of the impact assessment, Formulation of the Environment Management Plan, Technical Review. Period of Involvement: July to till date
Office Address	Perfact Enviro Solutions Pvt. Ltd. 5th floor, NN Mall, Mangalam Palace, Sector – 3, Rohini, New Delhi – 110085


List of FAEs Involved (Cat B)

S. No	Functional Areas	Name of Expert(s)	Involvement (Period & Task)	Signature & Date
1.	LU	Rajneesh Maurya	I was involved in preparing a Land Use map using Satellite Imagery, Google maps and Toposheet after primary survey. Period of Involvement: July 2022 to till date	
2.	AQ	Nipun Bhargava	I had visited the site to assess the site conditions in the surrounding area. After assessing the Air Quality of the area, I have prepared the Impact Mitigation measures Period of Involvement: July 2022 to till date	
3.	AP	GMK	I had visited the site to assess the site conditions in the surrounding area. After assessing the Air pollution sources, I have prepared the Impact Mitigation measures	





			Period of Involvement: July 2022 to till date	
4.	WP	GMK	I had visited the site to assess the water sources and its water quality in the study area. After studying the Water pollution sources, I have prepared the Impact report and suggested Mitigation measures Period of Involvement: July 2022 to till date	
5.	EB	Dr.Seema shrivastav	I had visited the site to assess the various forest areas, Ecological and Biodiversity sources in the study area. After studying the various floral and faunal species, have prepared the Impact report and suggested Mitigation measures Period of Involvement: July 2022 to till date	
6.	SE	Manoj Pant	I had visited the site to collect the baseline status of socio-economic conditions up to 3 km radius. Studied Villages in study area using Topographical map and extracted Secondary data from Census of India. Then was involved in preparing a socio economic study report using the primary survey and secondary data which includes impact and mitigation measures. Period of Involvement: July 2022 to till date	
7.	NV	GMK	I had visited the site to assess the site conditions in the surrounding area. After assessing the Noise pollution sources have prepared the Impact Mitigation measures.	

			Period of Involvement: July 2022 to till date	
8.	HG	Rajneesh Maurya	I had visited the site to assess the physical observation of the study area including Ground water sources and its water quality. After studying the Water pollution sources have prepared the Impact report and suggested Mitigation measures Period of Involvement: July 2022 to till date	
9.	Geo	Rajneesh Maurya	I had visited the site to assess the physical observation of the study area including Ground water sources and its water quality. After studying the Water pollution sources have prepared the Impact report and suggested Mitigation measures Period of Involvement: July 2022 to till date	
10.	SC	Rachna Dogra	I had visited the site to assess the site conditions in the surrounding area. After assessing the type of soil and need of Soil Conservation, Prepared the Impact Mitigation measures accordingly. Period of Involvement: July 2022 to till date	
11.	RH	GMK	I had visited the site to assess the site conditions in the surrounding area and identified hazards. After assessing the risk and hazard, I have prepared the Impact Mitigation measures Period of Involvement: July 2022 to till date	

12.	SHW	Rachna Dogra	I had visited the site to assess the site conditions in the surrounding area. After assessing the sources and existing solid waste management suggested impact and mitigation have been prepared. Period of Involvement: July 2022 to till date	
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List of Team Member Involved

S. No	Functional Areas	Name of Expert(s)	Involvement (Period & Task)	Signature & Date
1	EB	Deepika Arora	Reviewed the secondary data. Studied impact assessment in ecology / biodiversity. Suggested mitigation measures for the impact identified. Period of Involvement: July 2022 to till date	
2	BHW	Rachna Dogra	I had visited the site to assess the site conditions in the surrounding area. After assessing the sources and existing solid waste management suggested impact and mitigation have been prepared. Period of Involvement: July 2022 to till date	



Undertaking By EIA Coordinator

I, Akta Chugh, EIA Coordinator from Environmental consultant organisation M/s Perfact Enviro Solutions Pvt. Ltd., 5th floor, NN Mall, Sector 3, Rohini, New Delhi, 110085 for project **“Proposed Common Bio-Medical Waste Treatment Facility”** at **Survey No: 133/1A2, 154/11 Nothulapuram Village, Taluk - Nilakottai, District- Dindigul, State- Tamil Nadu.** hereby undertake that the report is prepared in accordance with a robust quality management system adopted by EIA consulting organisation for the EIA process and the prescribed TOR have been complied with and that the data submitted is factually correct.

Name	Mrs Akta Chugh
	7(d)(a)
Signature & Date	
Office Address	Perfact Enviro Solutions Pvt. Ltd. 5th floor, NN Mall, Mangalam Palace, Sector – 3, Rohini, New Delhi – 110085



Plagiarism/ QMS Certificate

Title of EIA Report:	“Proposed Common Bio-Medical Waste Treatment Facility” at Survey No: 133/1A2, 154/11 Nothulapuram Village, Taluk - Nilakottai, District- Dindigul, State-Tamil Nadu.
Name of Accredited Organization:	M/s Perfact Enviro Solutions Pvt Ltd
Name of EIA Coordinator (EC):	Mrs.Akta Chugh
Name of the Software:	Duplichecker
Date of Check:	17.03.23
Time of Check:	14:24 PM

I hereby certify that this EIA Report has been evaluated using online/In-house software Duplichecker viz The report produced has been analyzed by the system and based on it, I certify that the EIA report produced in accordance with good scientific practice.

Date and Sign of EIA Coordinator:

Signature and Date:

Name: Mrs.Akta Chugh

Date and Sign of Head of Accredited Organization: Mrs. **Rachna Bhargava**

Name of the EIA consultant organisation: M/s Perfact Enviro Solutions Pvt Ltd

NABET Certificate No. & Issue Date: QCI/NABET/ENV/ACO/21/2141 dated 22/11/21

Abbreviations And Nomenclature

AAQ	Ambient air Quality
ANQ	Ambient Noise Quality
APCM	Air Pollution Control Measures
APCS	Air Pollution Control System
APHA	American Public Health Association
ASP	Activated Sludge Process
BDL	Below detectable limit
BGL	Below ground level
BOD	Biological Oxygen Demand
CER	Corporate Environmental Responsibility
CGWB	Central Ground Water Board
COD	Chemical Oxygen Demand
CPCB	Central Pollution Control Board
CSR	Corporate Social Responsibility
CTE	Consent to Establish
CTO	Consent to Operate
DG	Diesel Generator
EAC	Expert Appraisal Committee
EHS	Environmental, Health and Safety
EIA	Environmental Impact Assessment
EMC	Environment Management Cell
EMP	Environmental Monitoring Plan
EMS	Environmental Management System
ENVIS	Environmental Information System
EPA	Environmental Protection Agency



ERP	Emergency Response Plan
ESZ	Environment Sensitive Zone
GLC	Ground Level Concentrations
GWQ	Ground Water Quality
HSD	High Speed Diesel
IMD	India Meteorological Department
IUCN	International Union for Conservation of Nature
LOC	Level of Concern
MBBR	Moving bed biofilm reactor
MoEF&CC	Ministry of Environment, Forests and Climate Change
MSL	Mean sea level
SW	Solid Waste
NAAQS	National Ambient Air Quality Standards
NABL	National Accreditation Board for Testing and Calibration
PESPL	Perfact Enviro Solutions Pvt Ltd
PPE	Personal Protective Equipment
QA	Quality Assurance
QC	Quality Control
R&D	Research and Development
RA	Risk Assessment
EAC	Environment Appraisal committee
SPCB	State Pollution Control Board
SQ	Soil Quality
TDS	Total Dissolved solids
ToR	Terms of Reference
TPA	Tons per Annum
TPH	Tons per Hour



PERFACT ENVIROSOLUTIONS PVT LTD

TSDf	Treatment, Storage and Disposal Facility
TWA	Total weighted Average
VOC	Volatile Organic Compound

Enclosure 2- Accreditation Consultant



DINDIGUL WASTE MANAGEMENT PVT LTD

Date:

To Whom It May Concern

We authorize M/s Perfect Enviro Solutions Pvt. Ltd. add. 505, 5th Floor, NN Mall, Mangalam Palace, Sector-3, Rohini, New Delhi – 100085, one of the approved consultants of the Ministry of Environment, Forest & Climate Change, Govt. of India listed on MoEF&CC website for getting Environmental Clearance for the Project- "Proposed Common Bio-Medical Waste Treatment Facility by M/s Dindigul waste Management Pvt. Ltd. Survey No: 133/1A2, 154/11 Nuthulapuram Village, Taluk - Nilakottai, District- Dindigul, State- Tamil Nadu"

For Dindigul Waste Management (P) Ltd.
P. Viji
Authorised Signatory

(Authorized Signatory)



Regd Office: No. 16, Sathiram East Street, Nilakottai Taluk, Dindigul – 624208
Unit: S.No 133/1A2,154/11, Noothulapuram Village, Nilakottai Taluk, Dindigul District, Tamil Nadu
Email: dwmpl.bmw@gmail.com Contact: 9962717327

Section A - Form 1

“Common Bio-Medical Waste Treatment Facility " at SF Nos. 131/1A2 & 154/11, Noothalapuram village ,
Nilakottai Taluk, Dindigul By M/s Dindigul Waste Management Private Limited .

FORM-I

"Common Bio-Medical Waste Treatment Facility " at SF Nos. 131/1A2 & 154/11, Noothalapuram village ,
Nilakottai Taluk, Dindigul By M/s Dindigul Waste Management Private Limited .

FORM – 1

(I) Basic Information

S.No.	Item	Details
1.	Name of the Project/s	Common BioMedical Waste Treatment Facility by M/s Dindigul waste Management Pvt. Ltd.
2.	S. No. in the schedule	Activity 7(da) Category B
3.	Proposed Capacity/area/ Length/tonnage to be handled/ command area/ lease area/ number of wells to be drilled.	(Incineration - 11 TPD, Autoclave - 6 TPD, Other BMW wastes-2 TPD) Total - 19 TPD (6935 TPA)
4.	New/Expansion/Modernization	New
5.	Existing Capacity/Area etc.	0.7165ha.
6.	Category of project i.e. 'A' or 'B'	'B'
7.	Does it attract general conditions? If yes, Please Specify.	No
8.	Does it attract the specific condition? If yes, please specify.	Yes, The project is located outside the industrial area so Public hearing is applicable.
9.	Location	Survey No: 133/1A2, 154/11 Nothulapuram Village, Taluk - Nilakottai, District- Dindigul, State- Tamil Nadu
	Plot/survey/Khasra No.	Survey No: 133/1A2, 154/11
	Village	Nothulapuram
	Tehsil	Nilakottai
	District	Dindigul
	State	Tamil Nadu
10.	Nearest Railway station/ airport along with distance in kms.	Kodairoad Railway Station - 10.68 Km Madurai AirPort- 50.54 Km
11.	Nearest Town, city, district Headquarters along with distance in kms.	Nearest Town- Sevugampatti (1.41 Km)
12.	Village panchayats, Zilla parishad, Municipal corporation, Local body (complete postal addresses with telephone nos. to be given)	
13.	Name of the applicant	Shanmuga Sundaram Pandey

"Common Bio-Medical Waste Treatment Facility " at SF Nos. 131/1A2 & 154/11, Noothalapuram village ,
Nilakottai Taluk, Dindigul By M/s Dindigul Waste Management Private Limited .

14.	Registered Address	No. 16, saththiram East Street, Near PM, Modi Pharmacy, Nilakottai, Dindigul
15.	Address for correspondence	
a	Name	Shanmuga Sundaram Pandey
b	Designation(Owner/Partner/CEO)	Director
c	Address	No. 16, saththiram East Street, Near PM, Modi Pharmacy, Nilakottai, Dindigul
d	Pin code	624208
e	E-mail	p shan mugam@yahoo.com
f	Telephone No.	9962717327
g	Fax. No.	-
16.	Details of alternative Sites examined, if any. Location of these sites should be shown on a Topo sheet.	yes, Gap analysis has been conducted
17.	Interlinked Projects	No
18.	Whether separate application of interlinked project has been submitted?	Not Applicable
19.	If Yes, date of submission	Not Applicable
20.	If No, reason	Not Applicable
21.	Whether the proposal involves approval/clearance under: if Yes, details of the same and their status to be given. (a) The forest (conservation) Act, 1980? (b) The wildlife (Protection) Act, 1972? (c) The C.R.Z. notification, 1991?	<ul style="list-style-type: none"> ● Not Applicable ● Not Applicable ● Not Applicable
22.	Whether there is any Government Order/Policy relevant/ relating to the site?	Not Applicable
23.	Forest land involved(hectares)	Not Applicable
24.	Whether there is any litigation pending against the project and/or land in which the project is proposed to be set up. (a) Name of the court (b) Case No. (c) Orders/ directions of the Court, if any and its relevance with the proposed project.	None

(II) Activity

1. Construction, operation or decommissioning of the Project involving actions, which will cause physical changes in the locality (topography, land use, changes in water bodies, etc.)

S. No.	Information/Checklist confirmation	Yes /No	Details thereof (with approximate quantities /rates, wherever possible) with source of information data
1.1	Permanent or temporary change in land use, land cover or topography including increase in intensity of land use (with respect to local land use plan)	Yes	The current land is barren land
1.2	Clearance of existing land, vegetation and buildings?	No	Not applicable,
1.3	Creation of new land uses?	Yes	Not Applicable
1.4	Pre-construction investigations e.g. boreholes, soil testing?	Yes	The study has been conducted in which
1.5	Construction works?	Yes	yes
1.6	Demolition works?	No	None
1.7	Temporary sites used for construction works or housing of construction workers?	No	None
1.8	Above ground buildings, structures or earthworks including linear structures, cut and fill or excavations	Yes	During the construction phase excavation will take place
1.9	Underground works including mining or tunneling?	No	Not Applicable
1.10	Reclamation works?	Yes	Green Belt will be developed within the project site total 0.1309 ha (18 %) of the total plot area.470 Nos. of trees will be developed within the project site
1.11	Dredging?	No	Not Applicable
1.12	Offshore structures?	No	Not Applicable
1.13	Production and manufacturing processes?	Yes	The proposed project is an Bio medical waste treatment facility with total capacity of 19 TPD
1.14	Facilities for storage of goods or materials?	NO	Not applicable

"Common Bio-Medical Waste Treatment Facility " at SF Nos. 131/1A2 & 154/11, Noothalapuram village ,
Nilakottai Taluk, Dindigul By M/s Dindigul Waste Management Private Limited .

1.15	Facilities for treatment or disposal of solid waste or liquid effluents?	Yes	Solid waste will be send to authorized TSDF
1.16	Facilities for long term housing of operational workers?	No	Labors will be hired from nearby villages, hence no housing will be provided.
1.17	New road, rail or sea traffic during construction or operation?	No	No new rail road is required.
1.18	New road, rail, air waterborne or other transport infrastructure including new or altered routes and stations, ports, airports etc?	No	No new rail road is required.
1.19	Closure or diversion of existing transport routes or infrastructure leading to changes in traffic movements?	No	No closure or diversion in existing transportation.
1.20	New or diverted transmission lines or pipelines?	No	No transmission line or pipeline will be made.
1.21	Impoundment, damming, culverting, realignment or other changes to the hydrology of watercourses or aquifers?	No	Not Applicable
1.22	Stream crossings?	No	Not Applicable
1.23	Abstraction or transfers of water form ground or surface waters?	No	No abstraction of water is required. Water requirements will be met from their own cement plant.
1.24	Changes in water bodies or the land surface affecting drainage or run-off?	No	No
1.25	Transport of personnel or materials for construction, operation or decommissioning?	Yes	Biomedical waste will be transported through trucks/tippers to the Company's own plant.
1.26	Long-term dismantling or decommissioning or restoration works?	Yes	The Plot area is mostly barren with few. Proposed Plantation work will help restoration of the area.
1.27	Ongoing activity during decommissioning which could have an impact on the Environment?	No	Not Applicable
1.28	Influx of people to an area in either temporarily or permanently?	Yes	Maximum workers will be hired from local area excepting statutory and managerial staff. During construction phase - 50

"Common Bio-Medical Waste Treatment Facility " at SF Nos. 131/1A2 & 154/11, Noothalapuram village ,
Nilakottai Taluk, Dindigul By M/s Dindigul Waste Management Private Limited .

			During Operational phase - 40
1.29	Introduction of alien species?	No	Only locally thriving species will be planted during plantation.
1.30	Loss of native species or genetic diversity?	No	Not applicable
1.31	Any other actions?	No	Not applicable

2. Use of Natural resources for construction or operation of the Project (such as land, water, materials or energy, especially any resources which are nonrenewable or in short supply):

S.No.	Information/checklist confirmation	Yes/ No	Details thereof (with approximate quantities / rates, wherever possible) with source of information data										
2.1	Land especially undeveloped or agricultural land (ha)	Yes	Total land is 0.7165 ha which is barren										
2.2	Water (expected source & competing users) unit: KLD	Yes	<p>During the installation phase, waste water generated from the site will be disposed of to soak pit via septic tank. No ground water will be used for construction purposes. Water required for construction work will be tanker through nearby STP treated water.</p> <p>During the operation phase, The total water requirement will be 20.25 KLD out of which fresh water requirement is 9.25 KLD which will be sourced through the local body. The water will be required mainly for Domestic, floor washing & vehicular container washing & chemical disinfection, Boiler & Gardening as per details below. The amount of waste water generated out of the proposed CBMWTF is 13 KLD which shall be treated in 20 KLD ETP. It will be a Zero liquid discharge facility.</p>										
2.3	Minerals (MT)	No	No mineral will be consumed.										
2.4	Construction material – stone, aggregates, sand / soil (expected source – MT)	Yes	<table border="1"> <thead> <tr> <th>Constru ction material</th> <th>Quanti ty in MT</th> <th>Source</th> <th>Mode of transport</th> <th>Dista nce from sourc</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	Constru ction material	Quanti ty in MT	Source	Mode of transport	Dista nce from sourc					
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"Common Bio-Medical Waste Treatment Facility " at SF Nos. 131/1A2 & 154/11, Noothalapuram village ,
Nilakottai Taluk, Dindigul By M/s Dindigul Waste Management Private Limited .

					e in Km		
			Stone	60	Nilakottai	Road	8
			Aggregates	50	Nilakottai	Road	8
			Sand	100	Nilakottai	Road	8
			Soil	120	Nilakottai	Road	8
			Cement	20	Nilakottai	Road	8
			Steel	60	Nilakottai	Road	8
			Brick	60	Nilakottai	Road	8
2.5	Forests and timber (source – MT)	No	Not Applicable				
2.6	Energy including electricity and fuels (source, competing users) Unit: fuel (MT), energy (MW)	Yes	Total power - 0.1 MW Low sulfur fuel for DG - 0.012 MT HSD for Incinerator - 0.024 MT				
2.7	Any other natural resources (use appropriate standard units)	No	Not Applicable				

3. Use, storage, transport, handling or production of substances or materials, which could be harmful to human health or the environment or raise concerns about actual or perceived risks to human health.

S.No.	Information/Checklist confirmation	Yes/ No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data			
3.1	Use of substances or materials, which are hazardous (as per MSIHC rules) to human health or the environment (flora, fauna, and water supplies)	yes	Name of the substance or material	HS Code	Quantity (use appropriate standard units) TPA	Toxicity LD50 (mg/kg)

"Common Bio-Medical Waste Treatment Facility " at SF Nos. 131/1A2 & 154/11, Noothalapuram village ,
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			Biomedical Waste(incinerable / Sterilising)	99943300	6205	NA
			Other BMW wastes- not incinerated or autoclaved but will be recorded in a proper register and will be sold to authorized recyclers or will be sent to secured landfilling in TSDf site	25202090	730	NA
			Plastic Color coded containers	39231020	675	NA
			Plastic Color coded Bags	39232100	547.5	NA
			Chemicals- Lime,Alum,Causic, Polyelectrolyte	25210010	35.04	NA
3.2	Changes in occurrence of disease or affect disease vectors (e.g. insect or water borne diseases)	No	No toxic mineral/ material is associated therefore no waterborne disease is expected			
3.3	Affect the welfare of people e.g. by changing living conditions?	Yes	It is expected that due to this activity the benefits will be more than the losses. The direct and indirect employment will enhance the income level hence it will improve living conditions.			
3.4	Vulnerable groups of people who could be affected by the	No	None			

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	project e.g. hospital patients, children, the elderly etc.,		
3.5	Any other causes	No	Not Applicable

4. Production of solid wastes during construction or operation or decommissioning (MT/month)

S.No.	Information/Checklist confirmation	Yes/ No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
4.1	Soil, overburden or mine wastes	Yes	<ul style="list-style-type: none"> ● Quantity of cutting material in Cu.m: 2100 ● Proposed utilization / dispose of cutting material:315 cu.m will be used to preserve as top soil for the green belt development, 1785 cu.m will be used in backfilling and road making within the campus ● Quantity of filling material in Cu.m : 1785 ● Source of filling material: the excavated soil will be used in green belt development
4.2	Municipal waste (domestic and or commercial wastes)	Yes	<p>During Operation Phase- Approx. 6 kg/day of solid waste will be generated from the proposed project.</p> <p>All the biodegradable waste (4 kg/day) will be sent to Solid Waste site and non-biodegradable waste (2 kg/day) will be sent to approved recycler.</p>
4.3	Hazardous wastes (as per Hazardous Waste Management Rules)	Yes	<p>Used oil from engines will be carefully stored in leak proof HDPE drums in isolated and covered facility. The used oil will be sold to vendors authorized by the Central Pollution Control Board for the treatment of the same.</p> <p>Suitable care will be taken so that spills / leaks of used oil from storage will be avoided.</p>
4.4	Other industrial process wastes	No	None
4.5	Surplus product	No	None
4.6	Sewage sludge or other sludge from effluent treatment	No	Not Applicable
4.7	Construction or demolition wastes	No	Not Applicable

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Nilakottai Taluk, Dindigul By M/s Dindigul Waste Management Private Limited .

4.8	Redundant machinery or equipment	Yes	Redundant machinery/equipment will be handed over to authorized vendors.
4.9	Contaminated soils or other materials	No	No contamination of soil and other solid waste is envisaged
4.10	Agricultural wastes	No	Not Applicable
4.11	Other solid wastes	No	Not Applicable

5. Release of pollutants or any hazardous, toxic or noxious substances to air (Kg/hr)

S. No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
5.1	Emissions from combustion of fossil fuels from stationary or mobile sources	Yes	The emission from combustion of fossil fuel will be from use of diesel operated machinery.
5.2	Emissions from production processes	Yes	Dust is likely to be generated from excavation, Loading and transportation processes for which sprinkling of water shall be done so that the impact on the environment will be minimal.
5.3	Emissions from materials handling including storage or transport	Yes	Dust and emissions will be generated from material handling and transportation.
5.4	Emissions from construction activities including plant and equipment	No	Not Applicable
5.5	Dust or odors from handling of materials including construction materials, sewage and waste	Yes	<p>Odor control</p> <ul style="list-style-type: none"> ● Daily washing of waste collecting containers, vehicle compartment and floor of store room. ● Closed cabin vehicles shall be used for the collection and transportation of bio-medical wastes. ● Masks shall be provided to workers to avoid health issues due to odor. ● Hygienic conditions shall be maintained.

"Common Bio-Medical Waste Treatment Facility " at SF Nos. 131/1A2 & 154/11, Noothalapuram village ,
Nilakottai Taluk, Dindigul By M/s Dindigul Waste Management Private Limited .

			<ul style="list-style-type: none"> Green Belt/Plantation shall be maintained across the project site to check odor within the premises.
5.6	Emissions from incineration of waste	Yes	<ul style="list-style-type: none"> Incinerator: To control emissions from incinerators of 500 (2*250 kg/hr), Ceramic Filter Bag House shall be Provided. Combined Chimney of 30 m height with a common wet scrubber will be provided DG Set: For mitigation of impacts of air pollution from D.G. sets, stack height of 6 m above roof level shall be provided for proposed D.G. set of capacity 1x 125 kVA.
5.7	Emissions from burning of waste in open air (e.g. slash materials, construction debris)	No	Not Applicable
5.8	Emissions from any other sources	No	Not Applicable

6. Generation of Noise and Vibration, and Emissions of Light and Heat:

S.No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
6.1	From operation of equipment e.g. engines, ventilation plant, crushers	NO	Not Applicable
6.2	From industrial or similar processes	No	Not Applicable. The waste will be properly treated and will be sent to approved vendors
6.3	From construction or demolition	No	Not Applicable
6.4	From blasting or piling	No	Not Applicable .
6.5	From construction or operational traffic	Yes	Noise will be produced from DG set & Incinerator.
6.6	From lighting or cooling systems	No	None
6.7	From any other sources	No	None

7. Risks of contamination of land or water from releases of pollutants into the ground or into sewers, surface waters, groundwater, coastal waters or the sea:

S.No.	Information/Checklist confirmation	Yes/ No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
7.1	From handling, storage, use or spillage of hazardous materials	Yes	Spillage of oil from equipment. All prescribed precautions will be followed. Storage of used/waste oil on impervious surface will be provided. The used oil will be sold to vendors authorized by CPCB.
7.2	From discharge of sewage or other effluents to water or the land (expected mode and place of discharge)	Yes	1 KLD of Domestic sewage will be generated and discharged to the septic tank followed by a soak pit.
7.3	By deposition of pollutants emitted to air into the land or into water	No	Not Applicable
7.4	From any other sources	No	Not Applicable
7.5	Is there a risk of long term build up of pollutants in the environment from these sources?	No	Not Applicable

8. Risk of accidents during construction or operation of the Project, which could affect human health or the environment.

S.No.	Information/Checklist confirmation	Yes/ No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
8.1	From explosions, spillages, fires etc from storage, handling, use or production of hazardous substances	No	No, the facility will adopt secured container based transport handling in safe area and Bio medical waste will be treated within the facility hence there will be no change in occurrence of Diseases
8.2	From any other causes	No	Not Applicable
8.3	Could the project be affected by natural disasters causing environmental damage (e.g: floods, Earthquakes, landslides, cloudburst etc).	No	The area is surrounded by many drains hence there is no possibility of flash floods

9. Factors which should be considered (such as consequential development) which could lead to environmental effects or the potential for cumulative impacts with other existing or planned activities in the locality.

S. No.	Information/Checklist confirmation	Yes/ No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
9.1	Lead to development of supporting facilities, ancillary development or development stimulated by the project which could have impact on the environment e.g.: <ul style="list-style-type: none"> • Supporting infrastructure (roads, power supply, waste or waste water treatment, etc.) • housing development • extractive industries • supply industries • other 	Yes	Social benefits will accrue from this Common BioMedical Waste project to the surrounding villages i.e. Besides employment, indirect employment like repair shops, transport agencies, which may lead to environmental impact. Overall living standards of nearby people have a positive impact.
9.2	Lead to after-use of the site, which could have an impact on the environment	No	Not Applicable
9.3	Set a precedent for later developments	Yes	Development of good landscape
9.4	Have cumulative effects due to proximity to other existing or planned projects with similar effects	No	Not Applicable as if now.

(III) Environmental Sensitivity

S. No.	Areas	Name/ Identity	Aerial distance (within 15 km.) from Proposed project location boundary
1	Areas protected under international conventions, national or local legislation for their ecological, landscape, cultural or other related value	None with in 15 Km	None with in 15 Km

2	<p>Areas which are important or sensitive for ecological reasons - Wetlands, watercourses or other water bodies, coastal zone, biospheres, mountains, forests</p>	<p>Forests</p> <p>Senkattanpatti Reserved Forest</p> <p>Kadavakurichi Reserved Forest</p> <p>Mankaradu Block Reserved Forest</p> <p>Jambuduraikkottai Reserved Forest</p> <p>Water Bodies</p> <ul style="list-style-type: none"> ● Drain near Lease Area ● Drain near Chinnamanayakkankotti ● Drain near Appinayakkanpatti ● Pond near Perumpatti ● Pond near Kovilpatti ● Maruda Nadi ● Nilakottai Lake ● Canal near Devarappanpatti ● Pond near Puduppatti ● Marutha Nadi ● Pond near Chittayankottai ● Sempatty Lake ● Manjalar River ● Periya Odai ● Canal near Adusappatti ● Kodavanar River (Kudagan River) ● Gopinath Pond ● Vannamparai Odai ● Kamrajar Sagar Dam ● Kaladi Lake ● Veerakudumban Lake 	<p>2.26 Km</p> <p>5.63 Km</p> <p>6.31 Km</p> <p>9.00 Km</p> <p>0.24 Km NW</p> <p>1.5 Km SE</p> <p>2.43 Km SE</p> <p>2.46 Km SSE</p> <p>3.19 Km SSE</p> <p>4.65 Km SW</p> <p>6.09 Km SE</p> <p>6.65Km WNW</p> <p>6.80 Km N</p> <p>6.92Km WNW</p> <p>7.87 Km NE</p> <p>8.06 Km NE</p> <p>8.15 Km SW</p> <p>8.38 Km NW</p> <p>8.40 Km SW</p> <p>8.85 Km N</p> <p>8.99 Km NE</p> <p>9.04 Km NW</p> <p>9.17 Km N</p> <p>9.25 Km SW</p> <p>9.62 Km SW</p>
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“Common Bio-Medical Waste Treatment Facility ” at SF Nos. 131/1A2 & 154/11, Noothalapuram village ,
Nilakottai Taluk, Dindigul By M/s Dindigul Waste Management Private Limited .

		<ul style="list-style-type: none"> ● Batlagundu Dam ● Thalpathiveeran ● Sundaralingam Lake ● Canal near Betal (Plantain garden) ● Periyar main Canal ● Canal near C Puaur ● Vaigai River ● Lake Kullichettipatti ● Canal near Avarampatti ● Kombai Dam ● Marudha Nadhi Dam ● Nehru Pond 	<p>9.89 Km SW</p> <p>9.89 Km SW</p> <p>10.10 Km SW</p> <p>10.12 Km SSW</p> <p>10.48 Km SSW</p> <p>10.53 Km SSW</p> <p>10.93 Km S</p> <p>12.98 Km SE</p> <p>14.45 Km N</p> <p>14.65 Km WNW</p> <p>14.82 Km NE</p>
3	Areas used by protected, important or sensitive species of flora or fauna for breeding, nesting, foraging, resting, overwintering, migration	None within 15 Km	None within 15 Km
4	Inland, coastal, marine or underground waters.	No	None
5	State, National boundaries	Nil	Nil
6	Routes or facilities used by the public for access to recreation or other tourist, pilgrim areas	<p>Roads</p> <p>N H - 45</p> <p>Railway Station</p> <p>Kodairoad Railway Station</p> <p>Airport</p> <p>Madurai Air Port</p>	<p>1.19 Km NW</p> <p>10.68 Km SE</p> <p>50.54 Km SW</p>
7	Defense installations	No	None with in 15 km
8	Densely populated or built-up area	Sevugampatti	1.41 Km SW
9	Areas occupied by sensitive man-made land uses (<i>hospitals, schools, places of worship, community facilities</i>)	<p>Hospitals</p> <ul style="list-style-type: none"> ● Jai sri Hospital, Nilakkottai, Dindigul, SH-155, Ammaiyanackanur, Vathalagundu Road, Dindigul , Tamil Nadu 	6.38 Km SE

		<ul style="list-style-type: none"> ● Leonard Hospital, SH-155, Arunachalapuram, Batlagundu, Tamil Nadu ● SVS Hospital, 10B, 17-13-10B, Gandhi Nagar Road, Batlagundu, Tamil Nadu <p>Post Office</p> <ul style="list-style-type: none"> ● Post Office, 5VW3+C48, nagamanayakanPatti Road, Kottur, Tamil Nadu ● Post Office , 6Q66+CX5, Saavadi, Pattiveeran patti, Tamil nadu ● India Post, 5V73+W9Q, Ammaiyaanaickanur,Vathala gundi Road, Dindigul, Tamil Nadu <p>Places of Worship</p> <ul style="list-style-type: none"> ● Sri Karuppana Samy Temple , Ottupatti, 6R74+HW5, Ottupatti, Tamil Nadu ● Sri Gopal Samy Temple, 6R63+WQQ, Ottupatti, Tamil Nadu ● Karuppasamy Temple, 6R83+GXJ, Ottupatti ,Tamil Nadu ● School <p>Bank</p> <ul style="list-style-type: none"> ● Bank of India ATM, 6R64+589, Nathulapurum , Tamil Nadu ● Tamilnad Mercantile Bank Ltd. ,171 , Madurai Road , Opp. To Batlagundi CSI Church, Anna Nagar, Sevugampatti, Tamil Nadu ● State Bank ATM, 5QVV+7PQ , Dindigul , Tamil Nadu 	<p>7.65 Km SW</p> <p>8.05 Km SW</p> <p>4.09 Km SE</p> <p>5.96 Km WNW</p> <p>6.12 Km SE</p> <p>1.20 Km NW</p> <p>1.44 Km WNW</p> <p>1.59 Km NW</p> <p>1.23 Km NW</p> <p>1.62 Km SSW</p> <p>2.89 Km WSW</p>
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10	<p>Areas containing important, high quality or scarce resources (<i>Ground water resources, surface resources, forestry, agriculture, fisheries, tourism, minerals</i>)</p>	<p>Water Bodies</p> <ul style="list-style-type: none"> ● Drain near Lease Area ● Drain near Chinnamanayakkankotti ● Drain near Appinayakkanpatti ● Pond near Perumpatti ● Pond near Kovilpatti ● Maruda Nadi ● Nilakottai Lake ● Canal near Devarappanpatti ● Pond near Puduppatti ● Marutha Nadi ● Pond near Chittayankottai ● Sempatty Lake ● Manjalar River ● Periya Odai ● Canal near Adusappatti ● Kodavanar River (Kudagan River) ● Gopinath Pond ● Vannamparai Odai ● Kamrajar Sagar Dam ● Kaladi Lake ● Veerakudumban Lake ● Batlagundu Dam ● Thalapathiveeran Sundaralingam Lake ● Canal near Betal (Plantain garden) ● Periyar main Canal 	<ul style="list-style-type: none"> 0.24 Km NW 1.5 Km SE 2.43 Km SE 2.46 Km SSE 3.19 Km SSE 4.65 Km SW 6.09 Km SE 6.65Km WNW 6.80 Km N 6.92Km WNW 7.87 Km NE 8.06 Km NE 8.15 Km SW 8.38 Km NW 8.40 Km SW 8.85 Km N 8.99 Km NE 9.04 Km NW 9.17 Km N 9.25 Km SW 9.62 Km SW 9.89 Km SW 9.89 Km SW 10.10 Km SW 10.12 Km SSW 10.48 Km SSW
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“Common Bio-Medical Waste Treatment Facility ” at SF Nos. 131/1A2 & 154/11, Noothalapuram village ,
Nilakottai Taluk, Dindigul By M/s Dindigul Waste Management Private Limited .

		<ul style="list-style-type: none"> ● Canal near C Puaur ● Vaigai River ● Lake Kullichettpatti ● Canal near Avarampatti ● Kombai Dam ● Marudha Nadhi Dam ● Nehru Pond 	<p>10.53 Km SSW</p> <p>10.93 Km S</p> <p>12.98 Km SE</p> <p>14.45 Km N</p> <p>14.65 Km WNW</p> <p>14.82 Km NE</p>
11	Areas already subjected to pollution or environmental damage. <i>(Those where existing legal environmental standards are exceeded)</i>	None with 15th Km Radius	None with 15th Km Radius
12	Areas susceptible to natural hazard which could cause the project to present environmental problems <i>(Earthquakes, subsidence, landslides, erosion, flooding or extreme or adverse climatic conditions)</i>	<p>project falls in Seismic Zone - III</p> <p>Earthquake: The earthquake hit the Oddanchatram area of the Dindigul district, which is about 464 km from Chennai. Oddanchatram felt the first tremor at 4.33 AM (of 1.2 magnitudes), which was followed by more tremors at 6.04 AM and 7.07 AM, respectively. They both were of 1.5 magnitudes and depth of 10km, NCFS data showed</p> <p>Update: 25-Mar-2022</p> <p>Source: https://www.google.com/search?q=Leatest+earthquake+dindigul+Tamil+Nadu&oq=Leatest+earthquake+dindigul+Tamil+Nadu&aqs=chrome..69i57j33i10i16014.41049j0j7&sourceid=chrome&ie=UTF-8 </p>	<p>Area falls under Seismic Zone -III</p> <p>Flood : Cyclone Asani affected Chennai on May 10,2022</p> <p>UPDATED: May 10, 2022 15:46 IST</p> <p>Source: https://www.indiatoday.in/cities/chennai/story/cyclone-asani-chennai-heavy-rainfall-several-areas-inundated-tamil-nadu-1947696-2022-05-10 </p>

Section B - Executive summary

EXECUTIVE SUMMARY
For
“Common Bio Medical waste ”
At
Village- Noothalapuram , Taluk Nilakottai
Dindigul- Tamil Nadu

ToR letter no: SEIAA-TN/F.No.9628/SEAC/TOR-1338/20 23 Dated 10.02.2023 Land Area- 0.7165 ha. Cost of Project - Rs 4.45 Crore Item & Category - 7(da), B Production Capacity of Bio Medical waste: 19 TPD	Environmental Consultant Perfact Enviro Solutions Pvt. Ltd. (PESPL) NABET Registered List of Accredited Consultant Organisations/ NABET/EIA/1922/SA 0143 Registered Address:- 5th Floor, Sector 3, Rohini, New Delhi- 110085 Email- info@perfactgroup.in Website- www.perfactgroup.com Phone- +91-11-49281360
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“Common Bio-Medical Waste Treatment Facility ” at SF Nos. 131/1A2 & 154/11, Noothalapuram village , Nilakottai Taluk, Dindigul By M/s Dindigul Waste Management Private Limited .

INTRODUCTION

M/s. **Dindigul WM/s. DWMPL** proposes a new CBWTF with 19 TPD (6935 TPA) capacity in Dindigul District.

aste Management Private Limited is proposing “**Common Bio-Medical Waste Treatment Facility**” located at SF Nos. 133/1A2, 154/11, Noothalapuram village , Nilakottai Taluk, Dindigul, State- Tamil Nadu

PROJECT DESCRIPTION

Nature of the project

As the project is proposing setting up of a Common Bio-Medical Treatment Facility and since the project is located outside the Industrial Estate, the project falls under **Activity 7(da) Category B** of the EIA Notification 2006 and its subsequent amendments, thus the project is required to be appraised by TN-SEIAA.

Production Capacity

S. No	Product	Production Capacity
1	Incinerable bio medical waste	11 TPD
2	Autoclavable waste	6 TPD
3	Other BMW wastes- not incinerated or autoclaved but will be sent for secured landfill after proper recording at CBWTF	2 TPD
Total		19 TPD

About the Project

As per the amendment in EIA notification, 2006 vide S.O. 1142 (E) dated 17th April, 2015, the Biomedical Waste Treatment Facility projects fall under Category B as activity 7(da). The proponent proposed a “Common Bio-Medical Waste Treatment Facility” at Survey No: 133/1A2, 154/11 Nothulapuram Village, Taluk - Nilakottai, District- Dindigul, State- Tamil Nadu. The proposed facility will involve a range of activities, such as collection, transportation, operation or treatment or processing of the biomedical waste and disposal of wastes

The proposal was applied on the online portal vide letter number **SIA/TN/INFRA2/406688/2022** and was granted with the standard TOR by the SEIAA-TN vide letter **SEIAA-TN/F.NO. 9628/SEAC/TOR/1338/2023 Dated 10.02.2023** As per the Standard TOR issued,an EIA study was undertaken during the period July-September 2022 and the report is compiled and is being submitted to TNPCB towards conducting Public Hearing.

Environmental sensitivity

Name	Distance	Direction
Water Body		
Nala near Lease Area	0.24 Km	NW
Nala near Chinnamanayakkankotti	1.5 Km	SE

"Common Bio-Medical Waste Treatment Facility " at SF Nos. 131/1A2 & 154/11, Noothalapuram village , Nilakottai Taluk, Dindigul By M/s Dindigul Waste Management Private Limited .

Name	Distance	Direction
Nala near Appinayakkanpatti	2.43 Km	SE
Pond near Perumpatti	2.46 Km	SSE
Pond near Kovilpatti	3.19 Km	SSE
Maruda Nadi	4.65 Km	SW
Nilakottai Lake	6.09 Km	SE
Canal near Devarappanpatti	6.65 Km	WNW
Pond near Puduppatti	6.80 Km	N
Marutha Nadi	6.92 Km	WNW
Pond near Chittayankottai	7.87 Km	NE
Sempatty Lake	8.06 Km	NE
Manjalar River	8.15 Km	SW
Periya Odai	8.38 Km	NW
Canal near Adusappatti	8.40 Km	SW
Kodavanar River (Kudagan River)	8.85 Km	N
Gopinath Pond	8.99 Km	NE
Vannamparai Odai	9.04 Km	NW
Kamrajar Sagar Dam	9.17 Km	N
Kaladi Lake	9.25 Km	SW
Veerakudumban Lake	9.62 Km	SW
Batlagundu Dam	9.8 Km	SW
Thalapathiveeran Sundaralingam Lake	9.89 Km	SW
Canal near Betal (Plantain garden)	10.10 Km	SW
Periyar main Canal	10.12 Km	SSW
Canal near C Puaur	10.48 Km	SSW
Vaigai River	10.53 Km	SSW
Lake Kullichettupatti	10.93 Km	S
Canal near Avarampatti	12.98 Km	SE
Forest		
Senkattanpatti Reserved Forest	2.26 Km	NE
Kadavakurichi Reserved Forest	5.63 Km	SSW
Mankaradu Block Reserved Forest	6.31 Km	WSW
Jambuduraikkottai Reserved Forest	9.00 Km	NE

PROJECT COST

Total cost of the project is 4.45 Crore.

PROJECT DESCRIPTION

Resource Requirements for the proposed common Bio-Medical Treatment Facility

- **Land:** Adequate land is available for the proposed project, The total plot area is 7165 m²,
- **Power Requirement:** The total power requirement of the unit will be 65 KW which will be met by Tamil Nadu Generation Distribution Corporation Limited.
- **Manpower:** Approx. 90 No. of staff will be employed in the proposed project.
- **DG Sets :**One DG set of 125 kVA will be used.
- **Fuel:** For DG set diesel will be used Diesel: 12 L/h.
- **Operational Activities:** following wastes will be accepted at site for treatments:
 - Incinerable bio medical waste : 11 TPD
 - Autoclave waste: 6 TPD
 - Other BMW wastes- not incinerated or autoclaved but will be sent for secured landfill after proper recording at CBWTF: 2 TPD.
- **Water Requirement:** The total water requirement will be 20.25 KLD will be sourced through the local body.
- **Source of fresh water:** Local Body
- **Wastewater Generation :** The unit will be Zero Liquid Discharge (ZLD) unit.
- **Air Emissions:** it will be from Incinerator, DG set and from utility processes. To control emissions from the utilities unit, 2 stacks are provided with a common stack height of 30 m. High speed diesel will be used for DG sets to prevent emissions and appropriate stack height in accordance with CPCB norms will be provided.
- **Noise Generation:** The main sources from the unit will be DG sets, Incinerator Operation machineries, etc. Adequate engineering control will be taken to minimize the noise level from operation of compressors, boilers, turbines etc.
- **Solid Waste generation:-**Approx. 6 kg/day will be generated from the plant. Out of which, 4 kg/day of organic waste will be given to authorized Municipal solid waste handling sites for disposal and 2 kg/day of non-biodegradable waste will be given to the authorized recycler.
- **Hazardous Waste generation:** 0.094 TPA of residue from ETP sludge t will be stored in leak proof PVC containers in isolated areas on pakka floor within the premises as per HWM Rules and handed over to authorized treatment and disposal facility of Tamil Nadu Pollution Control Board. ,Incinerator Ash 40.15 TPA & Used oil 0.094 TPA Used oil from D.G. Set will be stored temporarily in HDPE drums and will be sold to authorized vendors for the treatment of the same
- **Description of Environment**

Baseline study was carried out from July2022 - September2022 in a 10 km radius of the project site. Eight samples each for AAQM, groundwater, noise and nine samples of Soil & surface water were collected from the study area. Results are summarized as under:

■ **Land Use:**

Buffer zone comprises of

- 8.23% of Built up land
- 73.27 of Agricultural land
- 6.06% of forest land
- 9.63% of barren land
- 2.81% of water bodies

- **Natural Hazard:** The area under study falls in Zone-V, according to the Indian Standard Seismic Zoning Map.

- **Geology:** Sedimentary rocks of marine and non marine origin formed under different environmental conditions during middle Jurassic to Recent period occur in the district besides volcanic and intrusive rocks (Deccan Trap) of middle Cretaceous to lower Eocene., the formations forming hydrogeological units can be grouped as:

- a) Mesozoic formations
- b) Deccan trap (Hard rock)
- c) Tertiary formations
- d) Quaternary sediments

- **Hydrology:** As per CGWB report, during pre- monsoon the water level is found within a range of 2m to 5m below ground level and during post-monsoon, it is less than 20 m below ground level.
- **Ambient Air Quality:** In the core zone, the mean value of PM₁₀ ranges from 53.2 µg/m³ to 54.8 µg/m³, PM_{2.5} from 25.2 µg/m³ to 26.005 µg/m³, SO₂ from 8.5 µg/m³ to 8.8 µg/m³ and NO₂ from 28.8 µg/m³ to 29.7 µg/m³ respectively. All values are well within the prescribed NAAQ standards, 2009.

In the buffer zone, the mean value of PM₁₀ ranges from 59.93 µg/m³ to 77.85 µg/m³, PM_{2.5} from 28.42 µg/m³ to 29.2 µg/m³, SO₂ from 9.6 µg/m³ to 10.19 µg/m³ and NO₂ from 32.33 µg/m³ to 33.22 µg/m³ respectively. All values are well within the prescribed NAAQ standards, 2009.

The VOCs Value at the core zone is 0.1 mg/m³, and at the buffer zone it varies between 0.1 mg/m³ and 0.117 mg/m³. As per the Air Quality Index by CPCB the air quality of the both core and buffer zones are found to be Satisfactory in the winter season.

- **Ambient Noise levels:** In the core zone, The ambient noise level during day time ranges from 55.7 dB(A) to 55.9 dB (A), and during night time it ranges from 45.8 dB(A) to 45.9 dB (A) which is well below the limit specified for industrial area.

In the buffer zone, the Ambient noise study was conducted in areas that include residential and commercial areas. During the day the noise level in residential area varies from 56.2 dB (A) to 58.2 dB (A), and during the night it ranges from 47.1 dB (A) to 48.3 dB (A) all are within the limit. Even though the noise level in this area is higher compared to noise level in the core zone, it falls within standard noise level prescribed for residential area. The noise level in commercial area is highest among

all three areas and also falls outside prescribed noise level standard. .

- **Surface Water Quality:** The surface water quality of the collected sampling does not fall under CPCB Surface water quality Criteria.
- **Ground Water Quality: For the Core zone** all the values are found within the drinking water standards (IS:10500). **For buffer Zone,** The concentration of Chloride ranges between 43 mg/l- 223.9mg/l.The total hardness of sites ranges between 116 mg/l – 368 mg/l.Calcium in ranges between 22.4 mg/l- 76.8 mg/l,Magnesium in ranges between 14.6 mg/l- 42.8 mg/l;Alkalinity ranges between 70.6 mg/l- 212.5mg/l
- **Soil Quality:** In the project location, the pH value is 7.9, wherein amount of primary nutrients like Organic matter is between 0.41%, the Available Nitrogen 119 mg/kg is higher compared to other sampling stations, the Available Phosphorus is 10.6 mg/kg, Available Potassium 9.8 mg/kg is lower than most of the sampling locations. The nutrient profile shows that soil fertility is low.
In the buffer zone , the pH of soil ranges from 7.1 to 8.11. The. amount of primary nutrients like Organic matter ranges from 0.33% to 2.96%, 54.6 mg/kg to 85.6 mg/kg for Available Nitrogen, the Available Phosphorus from 8.4 to 14.6 mg/kg, Available Potassium from 9.8 mg/kg to 26.4 mg/kg. Primary nutrient profile shows that soil fertility is low in both zones due to the availability of low amount of nitrogen and available potassium.
- **Socio-economic Environment:** No rehabilitation and resettlement are required. Employment opportunities will be generated for the local population during the construction/installation phase. Approx. 40 laborers shall be given employment which will lead to a rise in income and improve standard of living. The setting up of a common biomedical waste treatment plant would also generate jobs for the laborers during the construction phase as well as during the operation phase. It will provide direct and indirect employment to local youth.

Anticipated Environmental Impacts & Mitigation Measures

Air environment

Environmental Impacts:

- Dust emissions from movement of vehicles.

Mitigation Measure:

- Dust suppression systems (water spray) will be used.
- Construction materials shall be fully covered during transportation to the project site by road.

During the operational phase,

Environmental Impacts:

- Emission of PM, SO₂ and NO_x from D.G & Boiler
- Emission of HC & CO from vehicular transportation during operational phase
- Spillage of Raw Material during transportation
- Emission of HCl and Cl₂

Mitigation Measure:

- Regular water sprinkling will be done and Dust mask will be provided
- Maintaining the speed limit of vehicle transporting materials.
- Use of only PUC certified vehicles
- ESP will be provided to the Boiler stack to control PM emission and scrubber will be provided to control SO₂ emissions. Adequate stack height will be provided to the DG set. DG set will be used only during emergencies
- All vents from the plant are connected to the common vent scrubber, vent gasses are absorbed in water & unscrubbed gasses vented to the atmosphere by vent blower.

Water Environment

Impacts on Water quality & Environment:

- Sewage generation during construction phase.
- Wastewater Generation from process
- Generation of wastewater from Floor & vehicle washing
- Generation of wastewater during equipment washing
- Sewage generation during operational phase
- Contamination of surface water, soil and biodiversity during storm water runoff
- Consumption of fresh water

Mitigation Measures:

- The wastewater generated from domestic use 1 KLD will be sent to soak pit
- The treated ETP water of KLD will be reused in gardening.
- Waste water of 13 KLD which will be treated in ETP of capacity 20 KLD followed by 2 stage RO plant and MEE of 1 KLD. Treated effluent 11 KLD will be reused in the venturi scrubber, floor vehicle and washing And autoclave steam Thus, it will be a ZLD unit.
- Effluent will be treated in the proposed ETP and sent to RO. No waste water will be discharge outside the premises
- The Unit is Zero Liquid Discharge (ZLD) and will maintain ZLD after expansions.
- Storage areas should be secure and covered, preventing exposure to rain and unauthorized access.
- Recycling of water & RWH practice to reduce the need of fresh water.

Noise Environment

"Common Bio-Medical Waste Treatment Facility " at SF Nos. 131/1A2 & 154/11, Noothalapuram village , Nilakottai Taluk, Dindigul By M/s Dindigul Waste Management Private Limited .

Environmental Impacts:

- Disturbance to Habitat due to Noise generation.
- Noise generation from D.G Set & Incinerator
- Reduction in dispersion of Air and noise pollution due to development of Greenbelt

Mitigation Measures:

- Use of properly certified, tested and calibrated equipment.
- Acoustic enclosures would be provided. DG set will be used only during emergencies
- Green Belt Development at 18 % of Area

Land Environment

Environment Impacts:

- Removal of top soil during site clearance
- Spillage and Leakage of Raw Material/ Product during manufacturing process
- Spillage of Raw Material during transportation
- Contamination of surface water, soil and biodiversity during stormwater runoff.

Mitigation Measures:

- Top soil will be stacked separately and will be used for greenbelt development and filling low lying area
- The area will be paved to avoid the mixing of spillage or leakage into soil
- Transportation will be carried out in closed trucks and drivers will be trained for handling accidental situations.
- Separate storm water drains will be provided to avoid mixing rainwater with the process area.

Solid and Hazardous Waste

- During the construction/installation, whatever quantity of construction waste will be generated shall be stacked and disposed off at the designated disposal site and care shall be taken to ensure that temporary stacking and transportation shall not cause any disturbance to the surrounding environment. Approx. 6 kg/day of solid waste will be generated from the proposed project.
- During Operation Phase, All the biodegradable waste (4 kg/day) will be sent to Solid Waste site and non-biodegradable waste (2 kg/day) will be sent to approved recycler.

Environment Impacts:

- Generation of debris from excavation activities
- Spillage and Leakage of Raw Material/ Product during manufacturing process
- Generation of distillation residues/Organic residue, Incinerator Ash, Spent Catalyst,

Spent Carbon or Filter Medium, Wastes or Residues Containing Residues and Process Residue

- Generation of used oil and lubricants from equipment maintenance activities during operational phase
- Generation of scraps and used spares etc. from equipment maintenance activities during operational phase
- Generation of Discarded drums/bags
- Generation of ETP sludge and MEE Salts.

Mitigation measures:

- Debris will be reused in filling low lying area
- Manufacturing process will be carried out in closed system
- Used oil from D.G. Set will be stored temporarily in HDPE drums and will be sold to authorized vendors for the treatment of the same.
- Incinerator ash will be Send to TSDF site
- ETP Sludge will be stored in leak proof PVC containers in isolated areas on pakka floor within the premises as per HWM Rules and handed over to authorized treatment and disposal facility of Tamil Nadu Pollution Control Board.
- E-waste whenever generated is being properly disposed off to approved recyclers as per E-Waste (Management) Rules, 2016.
- Battery waste whenever generated is being properly disposed off to approved recyclers as per Batteries (Management and Handling) Rules, 2001.
- Waste Drums/Barrels/bags and containers will be handed over to authorized decontamination facility

Ecology & Biodiversity Environment

Environmental Impacts:

- Removal of thorny bushes during site clearance.
- Disturbance to Habitat due to Noise generation.

Mitigation Measures

- Minimum 18 % 1309 m² area will be provided as greenbelt within the premises. Tree plantation will be carried out in surrounding areas along with local forest officials.
- 470 Nos of trees will be planted along most of the periphery of the project area as well as along roads. Trees of 13 different species will be grown and maintained.
- It will ensure that no fauna or flora species are disturbed. Activities will be carried out during day time only.

Socio-Economic Environment

- The proposed project will have positive impact on the Socio-Economic of the country &

region

- Approximately 40 people will be employed by the proponent and opportunities will be given to local people first.
- The upcoming project will also lead to ancillary development around the project site like small shops, tea stalls, vehicle repairers etc. which will create a positive impact on the environment.
- Project will generate revenue for the country.

- **Analysis of Alternatives (Technology & Site)**

Environmental Monitoring Program

The following monitoring programs are to be carried out at project in order to meet the above objectives:

- Ambient air and noise, water, soil quality
- Emission and discharge from the plant
- Greenbelt development and maintenance
- Social parameters
- HSE Audits
- Inspection of Prevention and Control Measures

ADDITIONAL STUDIES PUBLIC CONSULTATION

This section will be updated after receiving Public Hearing Minutes.

RISK ASSESSMENT

Risk Assessment is carried out in order to ensure effective management of any emergency situations that may arise from the failure of isolated storages and leakages of the underground tanks of flammable liquids & gasses with respect to the proposed project. As it is a synthetic organic chemical manufacturing unit all the precaution measures while their handling and storage will be taken.

General safety measures

- Occupational health surveillance programmes will be done six monthly & and their records will be well maintained.
- At the project site an emergency First Aid facility will be provided. A room will be provided separately with provision of bed and an experienced doctor.
- Prior to working with Bio Medical waste, workers will be trained on its proper handling & storage
- Label Precautions and First Aid facility will be provided.

Waste Handling:

The project will involve the following activities:

Collection

The Collection of Bio Medical Waste shall be carried out in a manner so as to avoid any possible hazard to human health and environment. Following steps shall be followed for collection of the waste from biomedical units:



- ◆ Segregated waste shall be collected from the endpoint of healthcare units on a daily basis by the Biotic staff. The waste collected shall be barcoded by the generator which shall be recorded during collection and treatment
- ◆ The waste shall be collected from the color coded bags in health care units to color coded containers (non chlorinated bags) in dedicated vehicles. Sharps shall be collected in puncture proof containers.
- ◆ A Record Book shall be maintained by the Healthcare unit in acknowledgement of waste collected.
- ◆ Non-segregated waste shall not be accepted and such incidents shall be reported to the prescribed authority.
- ◆ All the collection staff shall be equipped with protective gears for handling common Biomedical Waste.
- ◆ Each and every care shall be taken to ensure that the segregated common biomedical waste, handed over by the Health care unit, to reach Bio Medical Waste Treatment Facility without any damage, spillage and unauthorized access by public or animals etc.

Transportation

Waste shall be transported in fully covered designated Vehicles designed as per following CPCB norms:

- ◆ Separate cabins for driver/staff and the bio medical waste.
- ◆ The base of the waste cabin shall be leak proof and will be easy to wash and disinfect.
- ◆ The inner surface of the waste cabin shall be made of smooth surface to minimize water retention.
- ◆ The vehicles shall be properly labeled with the symbol of Biohazard as per schedule III of the Rules and will display the name, address and telephone number of the Company.
- ◆ The waste cabin shall have provision for sufficient opening from the rear side so that common Biomedical Waste can be easily loaded and unloaded.
- ◆ The vehicles shall be provided with the first aid kit to handle emergency situations.
- ◆ Vehicles shall be equipped with communication equipment and safety gadgets & GPS systems.

Storage

Waste Storage Area

The characteristics of the waste storage room will be as follows:

- The Size of the room shall be adequate to store all wastes.
- The front portion of the room shall be utilised for unloading the wastes from the vehicle and back or side portion shall be utilised for shifting the wastes to the respective treatment equipment.
- The area in front of the room shall be made impermeable so that any liquid spilled during unloading does not percolate into the ground. However, the liquid waste generated (if any) during handling of waste and washing, shall be diverted to the inlet of ETP.
- The waste shall be stacked with clear distinction as per the colour coding.
- The waste storage room shall be well ventilated, easy to wash floors and walls and shall have smooth and fine surfaces.

Treated Waste Storage Room

- A separate room shall be provided for the storage of treated waste.
- The waste shall be stored in separate groups as per the disposal options.
- This room shall also be provided with smooth and fine flooring and tiles on walls.
- The room shall be well ventilated.

Treatment

The hospital waste consists of 60-65% of incinerable waste and 35% - 40% autoclavable waste. 3 types of treatment units shall be provided in common biomedical waste management facilities - **Incineration, Autoclaving & Shredder.**

Treatment Equipment Room

- ◆ A separate housing shall be provided for each treatment equipment at the Bio Medical Waste Treatment Facility.
- ◆ Each room shall have a well designed roof and walls and it shall be properly ventilated and easy to wash. The floor and interior finishing of the room shall be such that chances of sticking/harboring microorganisms is minimized. Smooth and fine flooring and tile walls shall be provided to a height of 2 m from the floor.
- ◆ A separate cabin shall be provided to supervise the operation of the equipment and to record the waste handling and equipment operation data.
- ◆ Attached to each equipment room there shall be two waste storage rooms, one for the storage of untreated waste and another for treated waste.
- ◆ Following separate treatment rooms will be provided:
 - I. Incinerator Room
 - II. Autoclave Room
 - III. Shredder Room

Final Disposal

The treated common biomedical waste shall be disposed off as given below:

- ◆ Plastic waste after disinfection and shredding shall be given to the recycler.
- ◆ Disinfected sharps shall be encapsulated on site.

“Common Bio-Medical Waste Treatment Facility " at SF Nos. 131/1A2 & 154/11, Noothalapuram village , Nilakottai Taluk, Dindigul By M/s Dindigul Waste Management Private Limited .

- ◆ A non-leachate and covered ash pit shall be provided inside the Bio Medical Waste Treatment Facility for storage of Incineration ash. Ash generated from the incinerator shall be handed over to authorised treatment and disposal facilities.
- ◆ Treated water will be used for washing & APCS.

Project Benefits

- The unit will spend INR **16 Lakhs** as Social welfare activities in the area will
- After expansion additional employment opportunities will lead to a rise in income and improve standard of living. The expansion of existing industry would also generate jobs for the laborers during the construction phase as well as during the operation phase. It will provide direct and indirect employment to local youth.
- In the operation phase, the proposed plant would require a significant workforce of nontechnical and technical persons. About 50 people will be deployed temporarily during construction of the project and about 40 people will be employed during the operational stage of the project (direct or in direct).

ENVIRONMENTAL MANAGEMENT PLAN

- Review of Compliance of EMP and statutory conditions in the management meeting
- Preparation and timely submission of required statutory reports
- Proper hazardous waste inventory management by HSE department
- Monitoring for reduction in air emissions generation of hazardous waste quantity by concerned department heads as per sustainable development plan developed by **M/s Dindigul Waste Management Pvt. Ltd.**
- Reviewing annual performance of EHS in board meeting

An Environmental Management Cell will monitor the execution and compliance of HSE management viz. statutory compliances, pollution prevention, environmental monitoring, etc.

Cost Summary for Environment Management

CAPITAL EXPENDITURE IN INR LAKHS		
1	Air management	25.00
2	Solid Waste management	2.00
3	Wastewater management	25.00
4	Landscaping / Green Belt	3.00
5	HWM Storage	1.50
6	Social Activities *	16.00
	Total	72.50

RECURRING EXPENDITURE IN INR LAKHS PER ANNUM		
1	Air management	14.50
2	Solid Waste management	1.00
3	Wastewater management	7.50
4	Landscaping / Green Belt	1.50
5	HWM Storage	0.75
6	Social Activities *	-
7	Health & sanitation	4.00
	Total	29.25

Cost & EMP Implementation Budget

Total Project Cost :4.45 Crore

Total EMP Implementation Budget :

The proponent will spend **INR 72.50 Lakhs** as capital cost **INR 29.25 Lakhs** as recurring cost for Environmental Management plan.

CONCLUSION

- Baseline environmental monitoring in the proposed project was done from July 2022 - september 2022
- There will be negligible pollution potential on air, water and noise environments, due to provision of adequate control measures , alarm systems at strategic locations and operation of plant with well trained and experienced manpower and effectively management of Environment and Safety management and handling of disaster management plan..
- It will generate direct and indirect employment. Social development activities will be effectively implemented and monitored.
- Common bio medical waste treatment plant will help to maintain hazardous hospital waste and will provide a better environment.
- Looking at the overall project justification, process, less pollution potential and pollution prevention measures technologies proposed for the expansion, the proposed project would be environmentally acceptable, in compliance with environmental legislation and standards.

Section C - EIA

SECTION - D

ENVIRONMENT IMPACT ASSESSMENT REPORT

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1. INTRODUCTION

Biomedical Waste as defined in the Biomedical Waste (Management and Handling) Rules, 1998 , and amendment 2016 is any waste, which is generated during the diagnosis, treatment or immunisation of human beings or animals or in research activities pertaining thereto or in the production or testing of biological, and including categories mentioned in Schedule I of the Biomedical Waste (Management and Handling) Rules, 1998. Common Bio-medical waste treatment facilities are attracted under Biomedical Waste (Management and Handling) Rules, 1998, amended in 2016, 2018 and 2019. The rules are applicable to all persons who generate, collect, receive, store, transport, treat, dispose, or handle bio medical waste in any form. As per these rules Bio-medical waste shall be treated and disposed of in accordance with the Categories of waste & every occupier, where required, shall set up requisite bio-medical waste treatment facilities like Incinerators, autoclave, microwave system for the treatment of waste, or, ensure requisite treatment of waste at a common waste treatment facility. Further it guides that:

- Bio-medical waste shall not be mixed with other wastes.’
- Bio-medical waste shall be segregated into labelled containers/bags at the point of generation prior to its storage, transportation, treatment and disposal.
- Untreated biomedical waste shall be transported only in such vehicles as may be authorised for the purpose by the competent authority as specified by the government.
- No untreated bio-medical waste shall be kept stored beyond a period of 48 hours.
- Every occupier shall make an application to the prescribed authority for grant of Authorization.
- Records shall be maintained related to generation, collection, reception, storage, transportation, treatment and disposal of biomedical waste
- The source of biomedical waste is categorised into two forms:

Major Sources

- Hospitals/Nursing Homes/ Dispensaries
- Primary health centres
- Medical colleges and research centres / paramedic services
- Veterinary colleges and animal research centres
- Veterinary Hospitals
- Blood banks/mortuaries/autopsy centres
- Animal houses/slaughterhouses
- Biotechnology institutions
- Occupational health centres in Production units
- Isolation Wards, Isolation Centres for COVID 19 like pandemics
- Hospitals (temporary) during COVID 19 like pandemics
- Quarantine centres/homes, hotels, etc. during COVID 19 like pandemics

Minor Sources

- Physicians/ dental clinics
- Blood donation camps
- Vaccination centres

Common Bio-medical Waste Treatment Facility (CBMWTF)

Common Bio-Medical Waste Treatment Facility plays an important role to curb the infectious diseases that spread from the hospital waste without proper treatment. The concern about disposal of infectious wastes generated by the hospitals is increasing rapidly due to the fear of the spread of viruses such as Acquired Immune Deficiency Syndrome (AIDS) and Hepatitis B. These wastes (bio-medical wastes generated from health care establishments) present a high risk of causing potential damage to human health and the environment by way of spreading. To prevent the spread of such infectious wastes that finds its genesis in bio-medical wastes (from hospitals, clinics, laboratories, dispensaries etc.) a scientific approach is required. It is essential that professionally trained personnel should handle the wastes and that the wastes should be disposed off scientifically.

Common Bio-Medical Waste Treatment Facility (CBWTF) is providing services to Health Care Units for collection of bio-medical wastes for its final disposal to their site. Bio-Medical Waste Management Rules 2016, stipulates that the occupier of every organisation generating bio-medical waste (as defined in the rules) must manage bio-medical waste as prescribed in the rules such that it does not cause any harm to the environment.

As per the rules, a colour coding for containers/ bag for disposal of Biomedical Waste is defined which is given below:

Table 1. Colour coding for containers as per biomedical waste management rules,2019

Option	Waste Category	Treatment & Disposal
Category No. 1	Human Anatomical Waste (human tissues, organs, body parts)	Incineration / deep burial
Category No. 2	Animal Waste (animal tissues, organs, body parts, carcasses, bleeding parts, fluid, blood and experimental animals used in research, waste generated by veterinary hospitals, colleges, discharge from hospitals, animal houses)	Incineration/ deep burial
Category No. 3	Microbiology & Biotechnology Waste (Wastes from laboratory cultures, stocks or micro-organisms live or vaccines, human and animal cell culture used in research and infectious agents from research and industrial laboratories, wastes from production of biology, toxins, dishes and devices used for transfer of cultures)	Local autoclaving/ microwaving/ incineration
Category No. 4	Waste Sharps (needles, syringes, scalpels, blades, glass, etc. that may cause puncture and cuts. This includes both used and unused sharps)	Disinfection (chemical treatment)/ autoclaving / microwaving and mutilation/ shredding
Category No. 5	Discarded Medicines and Cytotoxic drugs (Waste comprising of outdated, contaminated and discarded medicines)	Incineration/ destruction and drugs disposal in secured landfills
Category No. 6	Soiled Waste	Incineration/ autoclaving/ microwaving

	(items contaminated with blood, and body fluids including cotton, dressings, soiled plaster casts, lines, bedding, other material contaminated with blood)	
Category No. 7	Solid Waste (Waste generated from disposal items other than the sharps such tubings, catheters, intravenous sets etc.)	Disinfection by chemical treatment/ autoclaving/ microwaving and mutilation/shredding
Category No. 8	Liquid Waste (Waste generated from laboratory and washing, cleaning, housekeeping and disinfecting activities)	Disinfection by chemical treatment and discharge into drains
Category No. 9	Incineration Ash (Ash from incineration of any bio-medical waste)	Disposal in municipal landfill
Category No. 10	Chemical Waste (Chemicals used in production of biology, chemicals used in production of biology, chemicals used in disinfection, as insecticides, etc.)	Chemical treatment and discharge into drains for liquids and secured landfill for solids

Colour Coding & Type Of Container For Disposal Of Biomedical Waste

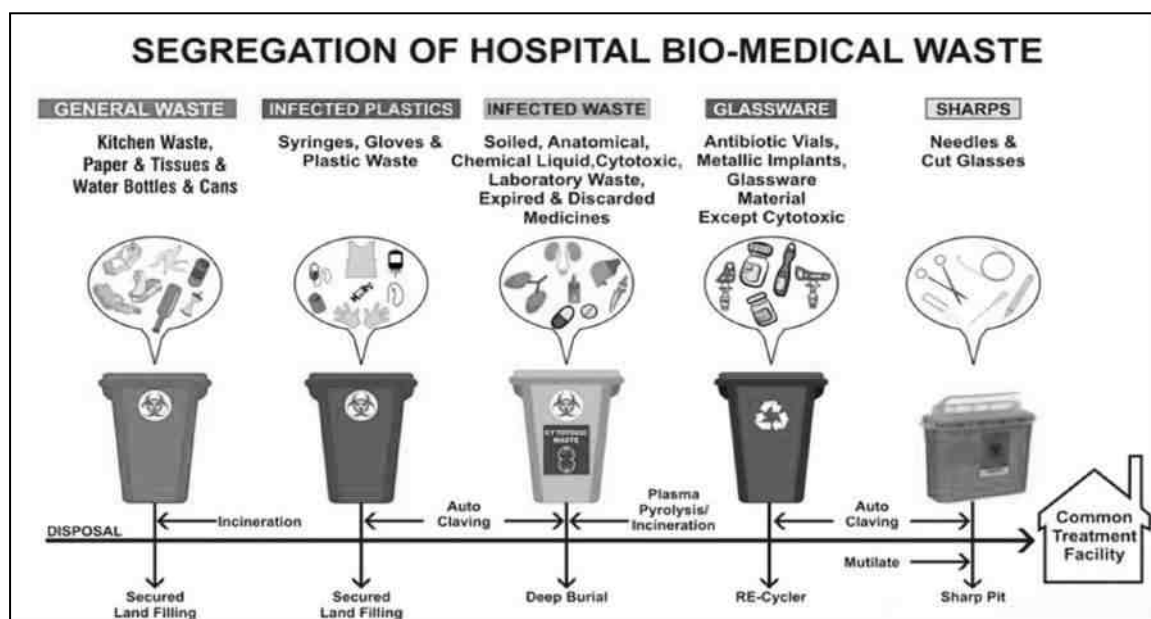


Figure 1. Colour coding & type of container for disposal of Biomedical Waste

1.1. PURPOSE OF REPORT

The management of bio-medical waste is of serious concern since biological, chemical and radioactive pollutants present in the biomedical waste causes environmental problems, unpleasant smell, growth and multiplication of vectors like insects, rodents and worms which may ultimately lead to the transmission of diseases like typhoid, cholera, hepatitis, etc. while it could lead to AIDS and other similar diseases through injuries from contaminated syringes and needles. Emissions from

“Common Bio-Medical Waste Treatment Facility ” at SF Nos. 131/1A2 & 154/11, Noothalapuram village , Nilakottai Taluk, Dindigul By M/s Dindigul Waste Management Private Limited .

Incinerators and open burning also lead to exposure to harmful gases which can cause cancer and respiratory diseases. Hence it becomes the primary responsibility of Health administrators to manage hospital waste in the most safe and eco-friendly manner.

With an amendment made vide Gazette No. S.O. 1142(E) dated 17th April, 2015 to EIA Notification 2006, Common Bio Medical Waste treatment facilities are brought under the provisions of EIA Notification- activity under Schedule 7 d(a), and category “B” as per. The EIA report prepared based on the Terms of Reference issued by SEIAA towards securing Environmental Clearance for the proposed Common Bio-Medical Wastes treatment at Survey No: 133/1A2, 154/11 Nothulapuram Village, Taluk - Nilakottai, District- Dindigul, State- Tamil Nadu by M/s Dindigul Waste Management Pvt. Ltd over the total land area of 7165 m² (1.776 acre). A compliance statement to the TOR issued vide letter no. **SEIAA-TN/F.No.9628/SEAC/TOR-1338/2023** Dated **10.02.2023** is given in Section B.

1.2. IDENTIFICATION OF THE PROJECT AND PROJECT PROPONENT

1.2.1 IDENTIFICATION OF PROJECT

Table 2. Identification of the project

Project or activity	Capacity TPD	Category	Condition if any GC/SC	Applicability of Public hearing
The project is attracted under Activity 7d(a) i.e. Biomedical Waste Management Treatment Facility, falling under Category “B” as per EIA Notification dated 14.09.2006 amended on 17.04.2015, and subsequent amendments.	19	Category “B”	Not applicable	PH Applicable as the project is located outside notified Industrial area/ estate as per clause 7(i)(iii) stage 3(i)(b)

1.2.2 IDENTIFICATION OF PROJECT PROPONENT

- A group of professionals with the vision of entering into socially relevant and environmentally conscious areas joined hands to promote **M/s.Dindigul Waste Management Pvt.Ltd** in order to set-up a Common Bio Medical Waste Treatment Facility (CBWTF) under the BMW Rules.
- M/s. Dindigul Waste Management Company has made a survey of the area, conducted gap analysis on the bio-medical waste generation and treatment services required considering growth in healthcare units in the area and proposed a CBWTF in Nilakottai Taluk of Dindigul District that will provide services to more than 10000 healthcare units in and around Dindigul, Theni , parts of Madurai and Karur districts

“Common Bio-Medical Waste Treatment Facility ” at SF Nos. 131/1A2 & 154/11, Noothalapuram village , Nilakottai Taluk, Dindigul By M/s Dindigul Waste Management Private Limited .

- Dindigul Waste Management Company will be providing its clients with a complete bio medical waste treatment solution using the best adopted technology and methods including incineration, Autoclaving and shredding, and collection & disposal of other bio-medical wastes through TSDF as well..

List of directors with experience & Strength is provided in **Table 3:**

Table 3. List of Directors

S. no	Name of the Director	Experience/ Strength/ Field
1	Mr. P.Shanmuga Sundaram	More than 15 years in different Industries
2	Mrs. Vijayalakshmi	More than 15 years in different Industries

1.3 BRIEF DESCRIPTION OF THE NATURE, LOCATION OF THE PROJECT AND ITS IMPORTANT TO THE COUNTRY

1.3.1 BRIEF DESCRIPTION OF THE PROJECT

Brief description of the project is mentioned with Nature, Size, Project Location, Project Coordinates & Proposed Project Cost in Table 4.

Table 4. Brief description of project

S. No	Details	Description
1	Project	The proposed project is “Common Bio-Medical Waste Treatment Facility” by M/s Dindigul waste Management Pvt. Ltd.
2	Size (Area/Size)	7165 m ² (1.776 acre).
	Size (Production capacity)	19 TPD (6935 TPA) (Incinerable Wastes: 11 TPD , Wastes to be treated in Autoclave: 6TPD , Other BMW wastes- not incinerated or autoclaved but will be sent for secured landfill after proper recording at CBWTF- 2 TPD)
3	Project Location	Survey No: 133/1A2, 154/11 Nothulapuram Village, Taluk - Nilakottai, District- Dindigul, State- Tamil Nadu

S. No	Details	Description			
4	Project Coordinates	Coordinates	Latitude	Longitude	Elevation
		A	10°12'30.27"N	77°49'1.12"E	266
		B	10°12'29.78"N	77°49'2.54"E	267
		C	10°12'27.11"N	77°49'1.75"E	266
		D	10°12'26.86"N	77°49'2.57"E	266
		E	10°12'24.91"N	77°49'1.91"E	264
		F	10°12'25.36"N	77°49'0.38"E	264
		G	10°12'27.28"N	77°49'0.98"E	266
		H	10°12'27.49"N	77°49'0.26"E	266
5	Project Cost	Total project cost is INR 4.45 Crores			

1.3.2 IMPORTANCE TO THE REGION AND THE COUNTRY

Hospital and health care units' Waste Management is a part of hygiene and maintenance activities. This involves managing a range of engineering activities, such as systematic and safe mode of collection, trackable transportation using enclosed trucks, operation or treatment of processing systems, and disposal of wastes. The Centralised system of waste management is the best method in terms of cost reduction and minimises legal and ethical hassles of health care staff & authority. Through a centralised system, the hospitals and Healthcare units would feel less burden of waste management and might devote more time on development of quality patient care.

With rapid growth of hospitals and health care units in developing India, the Government of India is taking many steps to address the environmental and health concerns by systematically imposing scientific sustainable environmental solutions. To ensure environmentally sound management of Bio Medical Waste, the central government has included CBWTF in the environmental impact assessment studies/ environmental clearance as per EIA notification 2006, and subsequently issued Bio-Medical Waste Management Rules, 2016.

The management of bio-medical waste is of serious concern since biological, chemical and radioactive pollutants present in the common biomedical waste causes environmental problems, Unpleasant smell, growth and multiplication of vectors like insects, rodents and worms which may ultimately lead to the transmission of diseases like typhoid, cholera, hepatitis, etc. and AIDS through injuries from contaminated syringes and needles. Emissions from incinerators and open burning also lead to exposure to harmful gases which can cause cancer and respiratory diseases. Hence it becomes the primary responsibility of Health administrators to manage biomedical wastes in the most safe and eco- friendly manner.

1.4 SCOPE OF THE STUDY - DETAILS OF REGULATORY SCOPING CARRIED OUT

Scoping is done as per standard TOR and other permission describe below:

1.4.1 SCOPE OF STUDY

TOR:

Under the provision of the EIA Notification 2006 as amended till date, SEIAA-TN has assessed the project and issued specific ToR for the purpose of preparing environment impact assessment report and environment management plan for obtaining prior Environmental Clearance.

- **Existing Environmental Clearance:** *Not applicable as Proposed is a new project.*
- **Certified compliance report (CCR) for EC::** *Not applicable*
- **Coastal Regulation Zone (CRZ):** *The project does not fall in any CRZ*
- **Wildlife Clearance:** *The project does not fall within any Wildlife sanctuary /Eco Sensitive Zone ias applicable , hence, wildlife clearance is not Applicable.*

Other Permissions:

Consent To Establish(CTE): *Will secure once EC Granted*

Consent To Operate(CTO) : *Will secure once construction and installation are completed as per granted EC & CTE*

- Applicable Statutory

The list of identified statutes applicable to the project is given in Table 5.

Table 5. Identified Applicable Summary

S.No.	Legal Instruments
1	Environmental Impact Assessment Notification, 1986 as amended till date
2	Environmental Impact Assessment Notification, 2006 as amended till date
3	The Water (Prevention and Control of Pollution) Act 1974
4	The Air (Prevention and Control of Pollution) Act, 1981
5	Solid Wastes Management Rules, 2016 as amended to date
6	E-waste (Management) Rules 2022, as amended to date
7	Hazardous and Other Waste (Management & Transboundary Movement) Rules, 2016 as amended to date
8	Batteries (Management and Handling) Rules, 2022
9	The Noise Pollution (Regulation and Control) Rules, 2000 as amended to date
10	Public Liability Insurance Act, 1991 as amended to date
11	The Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989. as amended to date
12	Explosive Act, 1984 as amended to date
13	The gas Cylinder Rules, 2004 as amended to date
14	The Static and Mobile Pressure Vessels (Unfired) Rules, 1981 as amended to date

15	Central Motor Vehicle Act 1988 and Central Motor Vehicles Rules, 1989 as amended to date
16	Electricity Rule, 2005 as amended to date
17	Environmental Impact Assessment Notification, 2006 as amended till date
18	The Chemical Accidents (Emergency Planning, Preparedness, and Response) Rules, 1996, as amended to date
19	Plastics Waste Management Rules, 2016, as amended to date
20	Fly Ash Notification, 2021, as amended to date

1.4.2 TOR COMPLIANCE

TOR Compliance is provided in Table 6.

Table 6. TOR Compliance

S.No.	Terms Of Reference Points	TOR Compliance
ADDITIONAL TOR POINTS		
1	Details of alternate Site shall be provided in the EIA Report and the pp ,shall select the site in terms of the Bio Medical Waste Management Rule, 2016.	Complied in section 2.2 of chapter 2 of EIA
2	The implication on Flora & fauna ,shall be included in the EIA report.	Complied in section 3.14 of chapter 3 of EIA
3	Commitment letter obtained from local body for fresh water supply.	Complied in section 2.5 chapter 2 & attached in annexure 5
4	Enumerate the structure, located within 100,200 & 300m from the project site shall be included in the EIA report.	Noted complied in chapter 2 of EIA
5	Detailed design specification of an incinerator shall be included.	Complied in section 2.14.1 chapter 2 of EIA
6	Soil testing should be carried out at various depths in the proposed site as the PP stated that the same site was used before for deep burial of bio-medical waste.	Complied in section 3.11 chapter 3 of EIA
7	Details of various state of art of technology available for this field and justification for selection of a particular technology.	Complied in section 2.2 chapter 2 of EIA
8	Details of permanent structures available within 2km from the project site shall be provided in the EIA.	Noted complied in chapter 2 of EIA
9	Commitment letter from competent authority for the supply of fresh water.	Complied in section 2.5 chapter 2 & attached in annexure 5
10	Land requirement for the facility including its break up for various purposes, its availability and optimization.	Complied in section 2.8.2 chapter 2 of EIA

“Common Bio-Medical Waste Treatment Facility ” at SF Nos. 131/1A2 & 154/11, Noothalapuram village , Nilakottai Taluk, Dindigul By M/s Dindigul Waste Management Private Limited .

11	Details of proposed layout clearly demarcating various activities such as Security, Waste storage Room, Waste Treatment Equipment Room/Areas & Treated Waste Storage Room. Pollution Control Devices, like APCS and ETP. ash storage/disposal area, vehicle washing area, and other such as admin areas worker's room, healthcentres, greenbelt, etc	Complied in section 2.3.1 chapter 2 of EIA
12	Detail on collection and transportation of Bio Medical Waste from health care establishments. No. of vehicle, and feature of vehicles- etc	Complied in section 2.13.2 chapter 2 of EIA
13	Details of waste storage facilities/rooms	Complied in section 2.8 chapter 2 of EIA
14	Details of the treatment equipments capacity	Complied in section 2.4.1 chapter 2 of EIA
15	Details of the incineration system - a statement on the compliance to CPCB guidelines for common bio medical waste incinerators in respect of waste feed cut-offs, operating parameters of combustion chambers. flue gas cleaning, ash handling. etc.	Complied in section 5.1 chapter 5 of EIA
16	Details on fuel requirement for incineration.	Complied in section 2.5.3 chapter 2 of EIA
17	Details on flue gas emissions discharge through stack and proposed Pollution control technologies	Complied in section 2.7.3 chapter 2 of EIA
18	Details on residue/ash generation and management.	Complied in section 9.2.4.3 chapter 2 of EIA
19	Details of waste heat utilization, if any.	Complied in section 5.1 chapter 5 of EIA
20	Details on wastewater management.	Complied in section 2.7.4 chapter 2 of EIA
21	Details of the proposed overall safety and health Protection measure	Complied in section 7
22	Details on source of water and power to the facility	Complied in section 2.5.2 in chapter 2 of EIA
23	Details of the existing access road /walkways to the designed operation in the site and its layout.	Complied in section 2.8.2 chapter 2 of EIA
24	Location of the incineration facility and nearest habitat with distances from the facility to be demarcated on a toposheet (1: 50000 scale).	Noted complied in chapter 2 of EIA
25	Land use map based on satellite imagery including location specific sensitive such as national park / wildlife sanctuary, villages , industries etc'	Complied in section 3.13 in chapter 3 of EIA
26	Topography details	Complied in section 2.3 of chapter 2 in EIA

“Common Bio-Medical Waste Treatment Facility ” at SF Nos. 131/1A2 & 154/11, Noothalapuram village , Nilakottai Taluk, Dindigul By M/s Dindigul Waste Management Private Limited .

27	Surface water quality of nearby water bodies	Complied in section 3.10.5 of Chapter 3 of EIA
28	Details on Proposed groundwater monitoring well locations, frequency of monitorings , Parameters, etc	Complied in section 3.10.4 of Chapter 3 of EIA
29	Action plan for the greenbelt development in accordance to CPCB guidelines	Complied in section 10.2.7 of Chapter 10 of EIA
30	Details on pollution control technologies and online monitoring equipments	Complied in section 4.2.2 of Chapter 4 of EIA
31	Details on monitoring of pollutant at source -performance of the incinerators including operating hours, fuel consumption , operating Parameters, Combustion chamber - temperature, Pressure, Stack temperature, total particulate matter, HCl, NOx at per Bio Medical Waste Handling Rule 1998	Complied in section 4.2.2 of Chapter 4 of EIA
32	Stack and fugitive emission may be monitored for SPM, HCL & NO2 as per Bio Medical Waste (Management & Handling) Rules 2016.	Complied in section 2.7.3 of Chapter 2 of EIA
33	Specific programme to monitor safety and health protection of workers	Complied in section 4.1 of Chapter 4 of EIA
34	Details of administrative and technical organisational structure.	Complied in section 10.5 chapter 10 of EIA
35	Details of the emergency preparedness plan and on-site & off.site disaster management plan. Submit details of a comprehensive Disaster Management Plan including emergency evacuation during natural and man-made disaster	Compiled in chapter 7 of EIA
36	The EIA/EMP shall conform to the Revised Guidelines for Common Biomedical Waste Treatment and Disposal Facilities issued by the Central pollution Control Board	Complied in section 5.1 chapter 5 of EIA
37	PP shall retrieve to generate a minimum of 25% of energy consumption by way of solar energy	Complied in section 5.3 of Chapter 5 of EIA
38	As part of CER, PP Shall examine the possibility of providing electric crematoriums Ramanathapuram and paramakudi municipalities	As we have proposed to create infrastructure including improvement of rain water harvesting and maintaining ponds in the Nillakotai of Dindigul district . Details given in section 8.1 of chapter 8 in EIA
39	Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the project will be given.	Nil as on date
40	The cost of the project (capital cost and recurring cost) as well as the cost towards implementation of EMP will be clearly Spent out.	Noted

Specific TOR

1	As per the MoEF & CC office memorandum F.No.22-6512017.IA.III dated : 30.09.2020 and 20.10.2020 the proponent shall address the concerns raised during the public consultation and all the activities proposed shall be part of the management Plan.	Noted
2	The Environmental Impact Assessment shall study in detail the carbon emission and also suggest the measures to mitigate carbon emission including development of carbon sinks and temperature reduction including control of other emission and climate mitigation activities.	Noted
3	The Environmental Impact Assessment should study the biodiversity, the natural ecosystem, the soil micro flora, fauna and soil seed banks and suggest measures to maintain the natural Ecosystem.	Noted
4	The Terms of Reference should specifically study impact on soil health, soil erosion. the soil physical, chemical components and microbial components.	Complied in section 3.11 of chapter 3 of EIA
5	The Environmental Impact Assessment should study impact on standing trees and the trees should be numbered.	Noted
6	The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and hydrological cycles.	Noted
7	The Environmental Impact Assessment should study impact on climate change, GHG emissions, temperature rise, pollution and above soil & below soil carbon stock.	Noted
8	The Environmental Impact Assessment shall include study of impact of the proposed activity on protected areas, Reserve Forests, National parks, Corridors and Wildlife pathways.	Noted
9	The project proponent shall furnish the details of trees in the project site with all trees numbered and protected.	Complied in section 10.2.7 of Chapter 10 of EIA
10	The project proponent shall furnish a detailed study on the impact of proposed activity,with mitigation measures on the nearby environmental fragile areas	Complied we have undertaken the study and compile the report and submit during EIA submission
11	The project proponent shall furnish the detailed study on health with regard to respiratory distress due to allergens on workers and nearby villagers.	Complied. we have undertaken the study and compile the report and submit during EIA submission
12	The project proponents shall furnish the impact on dust pollution on the nearby habitation and livelihoods.	Complied in chapter 4 of EIA
13	The project proponent shall furnish the Risk assessment plan, EMP and Disaster management plan which should be prepared after thorough study.	Complied in chapter 7 of EIA
14	The GPS coordinates for the boundaries at the green belt proposed & proposed project site shall be furnished separately.	Complied given in chapter 10 of EIA

15	Air quality modelling study shall be conducted for the CPCB primary air pollutants specified by considering the impact on the proposed plant to the nearby villages.	Complied. we have undertaken the study and compile the report and submit during EIA submission
16	The details of the quantity of steam to be generated, fuel and equipment to be used shall be furnished.	Steam required for autoclave will be generated within the plant. The TOR point is Complied and given in chapter 2 of EIA
17	The proponent shall ensure that the activities do not cause any damage to water environment, air quality and are carbon neutral.	Complied with 1) ETP for waste water treatment and ZLD will be maintained 2) Chimney with common wet scrubber for the incinerators to control emissions within CPCB limits 3) The plant proposes 18% (0.1309 ha)green belt with 470 Nos of trees to attain carbon neutrality
18	The proponent shall ensure that the activities undertaken do not result in carbon emission and temperature rise in the area.	Noted & complied
19	The activities shall not in any no way cause emissions and build-up of Greenhouse Gases. Action plans shall be furnished for eco-friendly actions that support sustainable management of the natural resources within and outside the plant premises.	Noted & Complied in chapter 4 & chapter 6 of EIA
20	Details regarding the implementation of 4R (Recycle/reduce/reuse/recover) principle in the plant shall be furnished.	Complied in section 2.7.2 chapter 2 of EIA
21	The proponent shall furnish the baseline data for the environmental and ecological parameters with regard to surface water / ground water quality / air quality soil quality & flora /fauna.	Noted & complied in chapter 2 of EIA
22	Measures proposed for prevention of odour emanating from solid waste processing plants and STP.	Complied in chapter 4
23	The Environmental Impact Assessment shall include Study on the energy conservation measures conforming to energy conservation norms prescribed by the Bureau of Energy Efficiency.	Complied in chapter 4 of EIA
24	Impact of the proposed activity on soil, water and air envisaged shall be studied and mitigation measures proposed shall be detailed.	Complied in chapter 4 of EIA

STANDARD TERMS OF REFERENCE (TOR) FOR EIA/EMP REPORT FOR PROJECTS/ACTIVITIES REQUIRING ENVIRONMENTAL CLEARANCE

7(d): STANDARD TERMS OF REFERENCE FOR CONDUCTING ENVIRONMENT IMPACT ASSESSMENT STUDY

“Common Bio-Medical Waste Treatment Facility ” at SF Nos. 131/1A2 & 154/11, Noothalapuram village , Nilakottai Taluk, Dindigul By M/s Dindigul Waste Management Private Limited .

1	Reasons for selecting the site with details of alternate sites examined / rejected /selected or merit with comparative statement and reason /basis for selection . The examination should justify site suitability in terms of environmental damages, resources sustainability associated with selected site as compared to rejected sites. The analysis should include parameters considered along with weightage criteria for short listing selected site.	Complied in section 2.3.3 of chapter 2 of EIA
2	Submit the details of the road / rail connectivity along with the likely impacts and mitigative measures.	Complied in chapter 4
3	Submit the present land use and permission required for any conversion such as forest, agriculture etc.	Complied as annexure 5
4	Examine the details of transportation of Hazardous wastes, and its safety in handling.	Complied in chapter 2
5	Examine and submit the details of on line pollutant monitoring.	Complied in chapter 6 &8
6	Examine the details of monitoring of Dioxin and Furon.	Complied in chapter 2, 6 & 8
7	MoU for disposal of ash through the TSDF.	Complied and will be obtain after obtaining EC
8	MoU for disposal of scrubbing waste water through CETP.	NA as the plant is ZLD
9	Examine and submit details of monitoring of water quality around the landfill site.	We are not engaged in landfill however the waste to be disposed to TSDF will be done with the authorization of TNPCB and we shall continue to secure the water analysis that particular TSDF
10	Examine and submit details of the odour control measures.	Complied. Details given in in chapter 2, will be monitored as per EMP given in chapter 4
11	Examine and submit details of impact on water body and mitigative measures during rainy season	Complied in chapter 4
12	Environmental Management Plan should be accompanied with an Environmental Monitoring plan and environmental cost and benefit assessment. Regular monitoring shall be carried out for odour control	Environmental Management Plan given in chapter 9 Environmental Monitoring plan and environmental cost and benefit assessment given in chapter Noted & Complied Regular monitoring shall be carried out for odour control
13	Water quality around the landfill site shall be monitored regularly to examine the impact on the ground water.	We are not engaged in landfill however the waste to be disposed to TSDF will be done with the authorization of TNPCB and we shall continue to secure the water analysis that particular TSDF

14	The storage and handling of hazardous wastes shall be as per the Hazardous waste Management Rules.	Complied in chapter 2
15	Submit details of a comprehensive Disaster Management plan including emergency evacuation during natural and manmade disasters.	Complied in chapter 7
16	Public hearing to be conducted for the project in accordance with provisions of Environmental Impact Assessment Notification, 2006 and the issues raised by the public should be addressed in the Environmental Management Plan. The Public Hearing should be conducted based on the ToR Letter issued by the Ministry and not on the basis of Minutes of the Meeting available on the web-site.	Noted, now this report is being submitted for public hearing purpose
17	A detailed draft EIA/EMP report should be prepared in accordance with the above additional TOR and should be submitted to the Ministry in accordance with the Notification.	Noted will be submitted after PH
18	Details of litigation pending against the project, if any, with direction /order passed by any Court of law against the project should be given.	Nil as on date
19	The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out.	Complied in section
20	Any further clarification on carrying out the above studies including anticipated impacts due to the project and mitigative measure, project proponent can refer to the model ToR available on ministry website" http://rmoef.nic.in/I4annual/[ncincinator "	Noted
The Executive summary of the EIA/EMP report in about 8-10 pages should be oreDared incorporating the information on following points:		
1	Project name and location (Village, District, state, and industrial Estate (If applicable).	Complied in section 1.2.2 in Chapter 2 of EIA
2	Products and capacities. If expansion proposal then existing products with capacities and reference to earlier EC.	The proposed project is Common Bio medical waste treatment facility with cap
3	Requirement of land, raw material, water. power, fuel, with source of supply(Quantitative)	Complied in chapter 2
4	Process description in brief specifically indicating the gaseous emission. liquid effluent and solid and hazardous wastes.	Complied in Chapter 2 of EIA
5	Measures for mitigating the impact on the environment and mode of discharge or disposal.	Complied in chapter 2
6	Capital cost of the project, estimated time of completion.	Complied in chapter 2

7	Site selected for the project-Nature of land-Agricultural(Single/double crop), barren, Gov/Private land, status of its acquisition, nearby (in 2-3 km), water body, population, within 10km other industries, forest. eco-sensitive zones, accessibility,(note-I case of industrial estate this information may not be necessary)	Complied in section 2.3.3 of chapter 2 of EIA
8	Baseline environmental data-air quality, surface and ground water quality, soil characteristic, flora and fauna, socio-economic condition of the nearby population.	Compiled in Chapter 3 of EIA
9	Identification of hazards in handling, processing and storage of hazardous material and safety systems provided to mitigate the risk.	Complied in chapter 7
10	Likely impact of the project, on air, water, land, flora-fauna and nearby population	Complied in chapter 4
11	Emergency preparedness plan in case of natural or in plant emergencies.	Complied in section 7.2 in chapter 7 of EIA
12	Issues raised during public hearing (if applicable) and response given	Noted we are submitting the public hearing and we will submit the reply after conducting the public hearing
13	CSR plan with proposed expenditure	Compiled in chapter 8
14	Occupational Health Measures.	Complied in section 7 in chapter 7 of EIA
15	Post Project monitoring Plan.	Complied in chapter 4
Beside the above,the below mentioned general should also be followed.		
1	The EIA document shall be printed on both sides, as far as possible.	Noted
2	All documents should be properly indexed, page numbered.	Noted
3	Period/date of data collection should be clearly indicated.	Complied in chapter 3 of EIA
4	Authenticated English translation of all material provided in Regional languages.	Noted
5	The letter/application for EC should quote the MoEF & CC File No. and also attach a copy of the letter prescribing the ToR.	Noted
6	The copy of the letter received from the Ministry on the ToR prescribed for the project should be attached as an annexure to the final EIA-EMP Report.	Noted & attached as annexure

7	The final EIA-EMP report submitted to the Ministry must incorporate the issues mentioned in ToR. The index of the final EIA-EMP report, must indicate the specific chapter and page no. of the EIA-EMP Report where the specific ToR prescribed by the Ministry have been incorporated. Questionnaires related to the project (posted on MoEF&cC website) with all sections duly filled in shall also be submitted at the time of applying for EC.	Noted
8	Grant of ToR does not mean grant of EC.	Noted
9	The status of accreditation of the EIA consultant with NABET/QCI shall be specifically mentioned The consultant shall certify that his accreditation is for the sector for which this EIA is prepared.	Noted & attached as annexure
10	On the front page of EIA/EMP reports, the name of the consultant/consultancy firm along with their complete details including their accreditation, if any shall be indicated. The consultant while submitting the EIA/EMP report shall give an undertaking to the effect that the prescribed ToRs (ToR proposed by the project proponent and additional ToR given by the MoEF & CC) have been complied with and the data submitted is factually correct (Refer MoEF & CC Office memorandum dated 4th August, 2009).	Noted & attached as annexure
11	While submitting the EIA/EMP reports, the name of the experts associated with/involved in the preparation of these reports and the laboratories through which the samples have been got analysed should be stated in the report. It shall clearly be indicated whether these laboratories are approved under the Environment (protection) Act, 1986 and the rules made there under (Please refer MoEF & CC) office Memorandum dated 4th August, 2009). The project leader of the EIA study shall also be mentioned	Complied in section 11.1 of chapter 11 in EIA
	All the ToR points as presented before the state Expert Appraisal committee (SEAC) shall be covered.	Noted & Complied
13	The project proponent shall submit the details final EIA/EMP prepared as per ToR to the Ministry lor considering the proposal for environmental clearance within 3 years as per the MoEF & CC O.M. No.J-II013/4112006-14._1 I(I) (p) dated 08.10.2014.	Noted

14	The consultants involved in preparation of EIA./EMp report after accreditation with equality council of India'/National Accreditation Board of Education and training (dyNABET) would need to include a certificate in this regard in the EIA/EMP reports prepared by them and data provided by other Organization(s)/ Laboratories including their status of approvals etc. vide Notification of the MoEF & CC dated 19.07.2013.	Complied and attached as annexure 6
15	The prescribed ToR would be valid for a period of three years for submission of the EIA/EMP Reports.	Noted
16	A note confirming compliance of the ToR, with cross referencing of the relevant section/ pages of the EIA report should be provided.	Complied in section 1.4.2 chapter 1 of EIA
17	All documents may be properly referenced with index, page numbers and continuous page numbering.	Noted
18	Copy of permission related to Port facility, Desalination plant, wind mill/solar power plant from competent Authority.	Complied and attached as annexure
19	Where data are presented in the report especially in tables, the period in which the data were collected and the sources should be indicated.	Noted
20	While preparing the EIA report, the instructions for the proponents and instructions for the consultants issued by MoEF & CC vide o.M. J-1 1013/4112006-IA.II(1) dated 4th August 2009, which are available on the website of the ministry should also be followed.	Noted
21	The consultants involved in the preparation of EIA'/EMP report after Accreditations with quality Council of India (QCI)National Accreditation Board of Education and Training (NABET) would need to include a certificate in this regard in the EIA/EMP reports prepared by them and data provided by other organisation/Laboratories including heir status of approvals etc. In this regard circular no' F'No' JJI 1013/7712004-IA-II(1) dated 2nd December,2009, 18th March 2010,28t May 2010' 28rh June 2010' 31't December 2010 & 30th September 2011 posted on the Ministry's website http://www.moef.nic.in/ maybe_referred	Complied and attached as annexure
22	After preparing the EIA (As per the generic structure prescribed in Appendix-iii of the EIA Notification, 2006) covering the above mentioned points. The proponent will take further necessary action for obtaining environmental clearance in accordance with the procedure prescribed under the EIA Notification' 2006.The final EIA report shall be submitted to the SEIAA' Tamil Nadu for obtaining	Complied

	Environmental Clearance.	
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2. PROJECT DESCRIPTION

2.1. TYPE OF PROJECT

As per the amendment in EIA notification, 2006 vide S.O. 1142 (E) dated 17th April, 2015, the Biomedical Waste Treatment Facility projects fall under Category B as activity 7(da). The proponent proposed a “Common Bio-Medical Waste Treatment Facility” at Survey No: 133/1A2, 154/11 Nothulapuram Village, Taluk - Nilakottai, District- Dindigul, State- Tamil Nadu. The proposed facility will involve a range of activities, such as collection, transportation, operation or treatment or processing of the biomedical waste and disposal of wastes.

2.2. NEED OF THE PROJECT

Hospital Waste Management is a part of hospital hygiene and maintenance activities. This involves management of a range of activities, which are mainly engineering functions, such as collection, transportation, operation or treatment of processing systems, and disposal of wastes. The Centralised system of waste management is the best method in terms of cost reduction and minimises legal and ethical hassles of health care staff & authority. Through a centralised system, the hospital would feel less burden of waste management and might devote more time on development of quality patient care.

With rapid industrialization and urbanisation in developing India, the Government of India is taking many steps to address the environmental and health concerns. To ensure environmentally sound management of Bio Medical Waste, the central government has issued Bio-Medical Waste Management Rules, 2016.

The management of bio-medical waste is of serious concern since biological, chemical and radioactive pollutants present in the common biomedical waste causes environmental problems, unpleasant smell, growth and multiplication of vectors like insects, rodents and worms which may ultimately lead to the transmission of diseases like typhoid, cholera, hepatitis, etc. and AIDS through injuries from contaminated syringes and needles. Emissions from incinerators and open burning also lead to exposure to harmful gases which can cause cancer and respiratory diseases. Hence it becomes the primary responsibility of Health administrators to manage hospital waste in the most safe and eco- friendly manner.

Need for setting up of CBWTF:

Dindigul district , as such , doesn't have any CBWTF within the district; It is being covered by the services of CBWTF by Ramky Energy & Environmental Limited , Virudhunagar which is located at a distance of more than 75 Km. CBWTF facilities around Dindigul district are listed below:

Table 7. List of CBWTF facilities around Dindigul

S. No.	Details of other CBWTF site	Distance, Km	Capacity kg/day	No.of Beds Covered
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1	Ramky Energy and Environmental Limited, Virudhunagar District	>75	4900	>26500
2	Ramky Energy and Environment Limited, Salem District	>165	5900	>23600
3	Tekno therm industries ltd. Coimbatore	>127	2500	>10000
4	Medicare Enviro System, Thanjavur	>150	1800	>15000

COVID-19 PANDEMIC:

- Healthcare facilities having isolation wards for COVID-19 patients need to follow these steps for ensure safe handling and disposal of biomedical waste generated during treatment:
- Keep separate colour coded bins/bags containers in wards and maintain proper segregation of waste as per BMW Rules,2016 and amended CPCB guidelines for implementation of BMW Management Rules.
- As a precaution double layered bags (using 2 bags) should be used for collection of waste from COVID-19 isolation wards so as to ensure adequate strength and no-leaks.
- Collect and store biomedical waste separately prior to handling over the same CBWTF. Use a dedicated collection bin labelled as “COVID-19” waste and keep separately in temporary storage prior to handing over to authorised staff of CBWTF. Biomedical waste collected in such isolation wards can also be lifted directly from the ward into the CBWTF collection van.
- In addition to mandatory labelling, bags/containers used for collecting biomedical waste from COVID-19 wards, should be labelled as “COVID-19 Waste”. This marking would enable CBWTF to identify priority treatment and disposal immediately upon receipt.
- General waste not having contamination should be disposed of as Solid Waste as per SWM Rules, 2016.
- Maintain a separate record of waste generated from COVID-19 isolation wards.
- Use dedicated trolleys and collection bins in COVID-19 isolation wards. A label “COVID-19 Waste ” to be pasted on these items also.
- The (inner and outer) surface of containers/bins/trolleys used for storage of COVID-19 waste should be disinfected with 1% sodium hypochlorite solution.
- Report opening or operation of COVID-19 ward to SPCBs.
- Depute dedicated sanitation workers separately for BMW and general solid waste so that waste can be collected and transferred timely to temporary waste storage areas.

“Common Bio-Medical Waste Treatment Facility ” at SF Nos. 131/1A2 & 154/11, Noothalapuram village , Nilakottai Taluk, Dindigul By M/s Dindigul Waste Management Private Limited .

2.3 LOCATION (MAPS SHOWING GENERAL LOCATION, SPECIFIC LOCATION, PROJECT BOUNDARY AND SITE LAYOUT)

2.3.1 GENERAL AND SPECIFIC LOCATIONS OF THE SITE

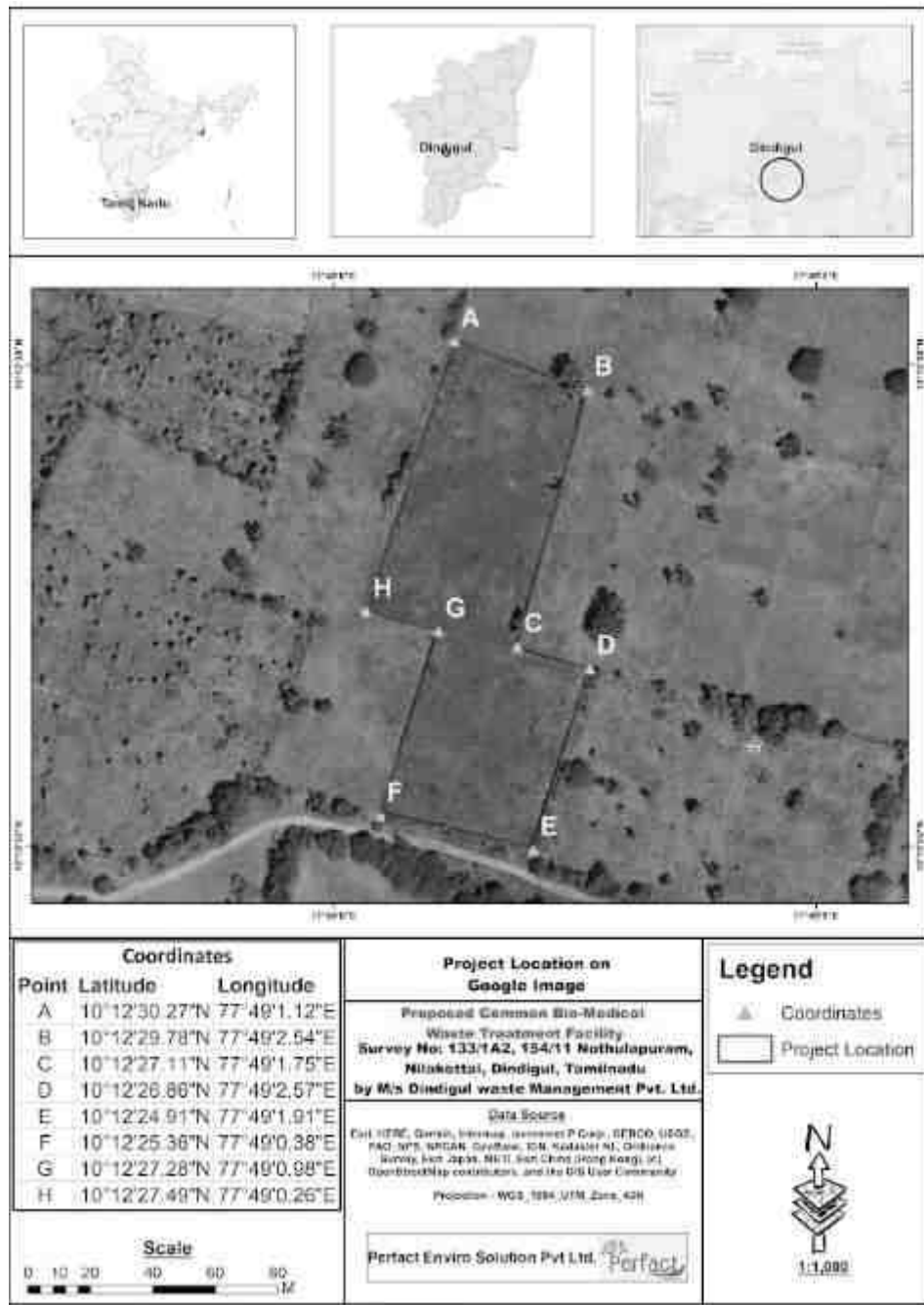


Figure 2. General location of the Project

Google image showing project boundary Map 2

Table 8. Coordinates to the site

Coordinates	Latitude	Longitude	Elevation
A	10°12'30.27"N	77°49'1.12"E	266
B	10°12'29.78"N	77°49'2.54"E	267

“Common Bio-Medical Waste Treatment Facility ” at SF Nos. 131/1A2 & 154/11, Noothalapuram village , Nilakottai Taluk, Dindigul By M/s Dindigul Waste Management Private Limited .

C	10°12'27.11"N	77°49'1.75"E	266
D	10°12'26.86"N	77°49'2.57"E	266
E	10°12'24.91"N	77°49'1.91"E	264
F	10°12'25.36"N	77°49'0.38"E	264
G	10°12'27.28"N	77°49'0.98"E	266
H	10°12'27.49"N	77°49'0.26"E	266

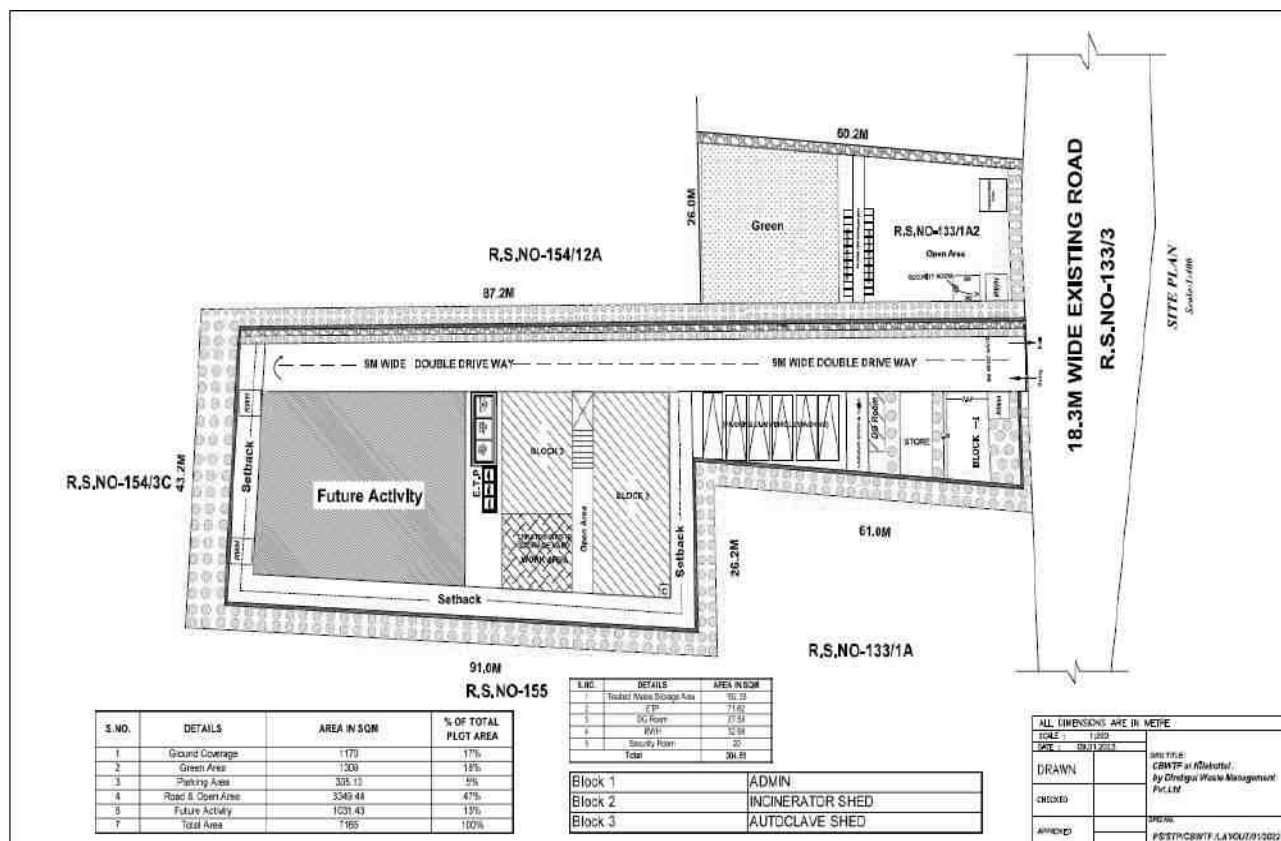


Figure 3. Layout Plan

Table 9. List of the major industries near project site

List of Industries nearby 10 Km Radius of Dindigul Waste Management, Tamil Nadu		
Sl.no.	Name of Industry	Distance and Direction
1	Gain up Industries India Pvt. Ltd.	1.26 Km NW
2	Shriram Coconut Products Ltd	5.49 Km SW
3	Devi Crop Science Pvt Limited	5.88 Km SW
4	Aditya Infra and Engineering	5.90 Km SE
5	JAY AND CO	5.93 Km SW
6	G S Steel Works	5.99 Km SE

"Common Bio-Medical Waste Treatment Facility " at SF Nos. 131/1A2 & 154/11, Noothalapuram village , Nilakottai Taluk, Dindigul By M/s Dindigul Waste Management Private Limited .

7	Capra Textiles	6.36 Km SW
8	Rasi fibre industries -	6.81 Km NW
9	Rakkachi Agro Industries	7.07 Km NE
10	Pappa coir industry -	7.23 Km NW
11	TKS Engineering Industries, Grill Works, Truss Work	7.44 Km SW
12	fathima flour mill vathalagundu -	7.75 Km SW
13	Dodla Dairy Batlagundu -	7.93 Km SW
14	STS Engineering Works	7.93 Km SW

“Common Bio-Medical Waste Treatment Facility ” at SF Nos. 131/1A2 & 154/11, Noothalapuram village , Nilakottai Taluk, Dindigul By M/s Dindigul Waste Management Private Limited .

2.3.2 TOPOGRAPHICAL MAP SHOWING 10 KM RADIUS AROUND THE PROJECT

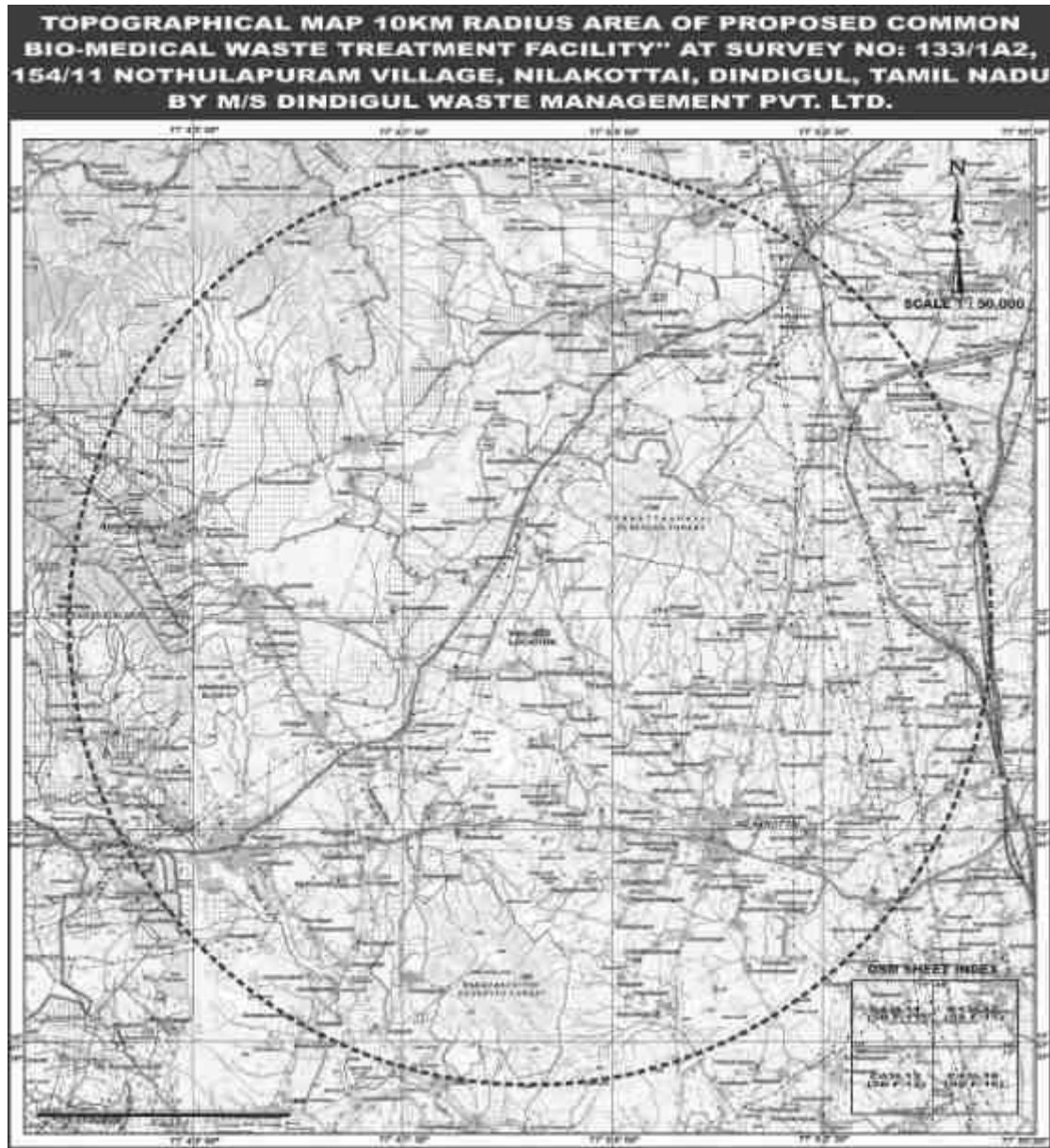


Figure 4. Topographical Map of 10 km buffer zone of the project site.

2.3.3 SITE PHOTOGRAPHS

North - south

“Common Bio-Medical Waste Treatment Facility ” at SF Nos. 131/1A2 & 154/11, Noothalapuram village , Nilakottai Taluk, Dindigul By M/s Dindigul Waste Management Private Limited .



Figure 8. Site Photographs

2.3.4 ENVIRONMENT SENSITIVITY AROUND THE PROJECT

Table 10. Environment sensitivity around the project site

Water Body		
Name	Distance	Direction
Nala near Lease Area	0.24 Km	NW
Nala near Chinnamanayakkankotti	1.5 Km	SE
Nala near Appinayakkanpatti	2.43 Km	SE
Pond near Perumpatti	2.46 Km	SSE
Pond near Kovilpatti	3.19 Km	SSE
Maruda Nadi	4.65 Km	SW
Nilakottai Lake	6.09 Km	SE
Canal near Devarappanpatti	6.65 Km	WNW
Pond near Puduppatti	6.80 Km	N
Marutha Nadi	6.92 Km	WNW
Pond near Chittayankottai	7.87 Km	NE
Sempatty Lake	8.06 Km	NE
Manjalar River	8.15 Km	SW

Periya Odai	8.38 Km	NW
Canal near Adusappatti	8.40 Km	SW
Kodavanar River (Kudagan River)	8.85 Km	N
Gopinath Pond	8.99 Km	NE
Vannamparai Odai	9.04 Km	NW
Kamrajar Sagar Dam	9.17 Km	N
Kaladi Lake	9.25 Km	SW
Veerakudumban Lake	9.62 Km	SW
Batlagundu Dam	9.8 Km	SW
Thalapathiveeran Sundaralingam Lake	9.89 Km	SW
Canal near Betal (Plantain garden)	10.10 Km	SW
Periyar main Canal	10.12 Km	SSW
Canal near C Puaur	10.48 Km	SSW
Vaigai River	10.53 Km	SSW
Lake Kullichettipatti	10.93 Km	S
Canal near Avarampatti	12.98 Km	SE
Forest		
Senkattanpatti Reserved Forest	2.26 Km	NE
Kadavakurichi Reserved Forest	5.63 Km	SSW
Mankaradu Block Reserved Forest	6.31 Km	WSW
Jambuduraikkottai Reserved Forest	9.00 Km	NE

2.4 SIZE OF THE MAGNITUDE OF THE OPERATION

2.4.1 SIZE OF PROJECT & PRODUCTION CAPACITY

Size of Project

The total plot area is 7165 m². Located at Survey Nos. 131/1A2 & 154/11, Noothalapuram village , Nilakottai Taluk, Dindigul.

Land document are enclosed as **Annexure 2**

Production capacity

As per the proposed project cost, the project is covered under the large scale category of manufacturing industries.

Details of proposed Treatment capacity are provided in Table 11

Table 11. .Details of the proposed production capacity

S. No	Product	Production Capacity
1	Incinerable bio medical waste	11 TPD

“Common Bio-Medical Waste Treatment Facility ” at SF Nos. 131/1A2 & 154/11, Noothalapuram village , Nilakottai Taluk, Dindigul By M/s Dindigul Waste Management Private Limited .

S. No	Product	Production Capacity
2	Autoclavable waste	6 TPD
3	Other BMW wastes- not incinerated or autoclaved but will be sent for secured landfill after proper recording at CBWTF	2 TPD
Total		19 TPD

2.4.2 PROJECT COST

Total cost of the project is INR 4.45 Crore

Table 12. Proposed Capital Cost Projection

Capital Expenditure in Lakhs		
S. No.	Particulars	Proposed Unit (INR . Lacs)
1	Air management	25
2	Wastewater management	15
3	Landscaping/Green Belt	3
4	HWM Storage	1.5
5	Solid Waste Management	2
6	Social Activities*	6
7	Misc.	20
8	Total	72.5

2.5. ASSOCIATED ACTIVITIES REQUIRED FOR THE PROJECT

2.5.1 UTILITIES/ WASTE TREATMENT UNITS

The utilities/Waste treatment units required for the proposed project are detailed in Table 13

Table 13. Utilities required for the project

Sl. No	Name of utility	Capacity	Quantity in Nos.	Type of fuel	Remark
1	Incinerator	250 kg/hr	2	HSD Diesel	-
2	Autoclave	300 kg/ Batch	1	Diesel	-
3	Shredder	200 kg/hr	2	Diesel	-
4	DG Set	125 kVA	1	Diesel	-

2.5.2 POWER

Details of Proposed Energy and Power requirements are tabulated in Table 14.

Table 14. Power Details

Particular	Quantity	Type of Fuel
Power load with Source	65 KW (TANGEDCO) Tamil Nadu Generation Distribution Corporation Limited	

“Common Bio-Medical Waste Treatment Facility ” at SF Nos. 131/1A2 & 154/11, Noothalapuram village , Nilakottai Taluk, Dindigul By M/s Dindigul Waste Management Private Limited .

Capacity of D.G. Sets	125kVA	Diesel
Fuel Type & Quantity for DG Sets	12 Ltr/Hr, 1x125 kVA	Diesel
Capacity of Incinerator	2 x 250 Kg/Hr	HSD Diesel
Fuel Type & Quantity for Incinerator	24 Ltr/hr	Diesel

2.5.3 FUEL

Details of Fuel requirements are provided in Table 15.

Table 15. Fuel Details

S.No.	Name	Requirement	Source
1	Used Oil	D.G set	By local supplier
2	HSD	Incinerator	By local supplier

2.5.4 WATER

Water Requirement: The water demand of the project will be 20.25 KLD. Fresh water @ 9.25 KLD fresh water shall be sourced from nearby Local Body . The total waste water generation will be **13 KLD** which will be discharge to soak pit via septic tank

2.5.5 MANPOWER

Table 16. Manpower details

Manpower Details		
S. No.	Position	No. of individuals
1	Construction employee	50
2	Semi skilled employee	40
	Total	90

2.5.6 STRUCTURE LOCATED WITHIN 100,200 & 300m

No large size structure within the area only villages are there at the distance of 1.41 km SW

2.5.7 DETAILS OF PERMANENT STRUCTURE AVAILABLE WITHIN 2 KM

Individual houses are present in the village and constitute the permanent structure apart from few

Govt. buildings

2.6. PROPOSED SCHEDULE FOR APPROVAL AND IMPLEMENTATION

Table 17. Proposed schedule for approval and implementation

Activity/ Month, year	Month 1	
Receipt of EC	June 2023	First Week
CTE/ NOC	July 2023	Second Week
Construction - Start	August 2023	Third week
Construction -Ends	Feb 2024	Second Week
Erection & Commissioning -Start	Mar 2024	Third week
Erection & Commissioning competition	August 2024	Fourth Week
CTO/CCA	Sep 2024	Fourth Week
Commissioning of Operations	Oct 2024	First Week

2.7 TECHNOLOGY AND PROCESS DESCRIPTION

Details of raw Material

Table 18. Details of proposed product Wise Raw Material

S.No	Particulars	Source	Details
1	Biomedical waste	GH,PHC,HCF,OHC,Vet clinics	19.0 tons per day
2	Plastic colour coded containers	Outsourced	5000 Nos/Month
3	Plastic colour coded bags	Outsourced	400000 Nos/Month
4	Furnace Oil	Outsourced	1000 L/Month
5	Chemicals Lime, Alum, Causic, Polyelectrolyte	Outsourced	800 kg/Month

2.7.1 PROCESS DESCRIPTION:

Collection, Transportation, Storage and treatment of Bio Medical waste.

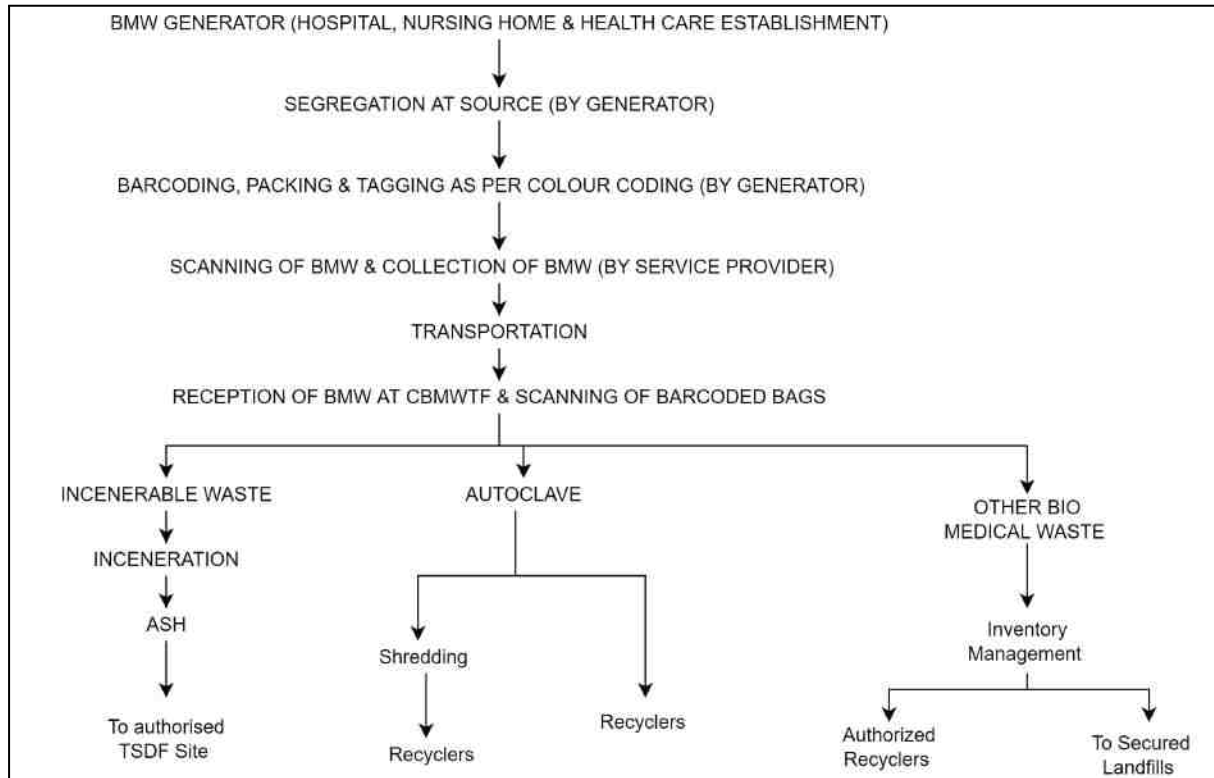


Figure 9. Process Description

The project will involve the following activities:

2.7.1.1. COLLECTION

The Collection of Bio Medical Waste shall be carried out in a manner so as to avoid any possible hazard to human health and environment. Following steps shall be followed for collection of the waste from biomedical units:



- ◆ Segregated waste shall be collected from the endpoint of healthcare units on a daily basis by the Biotic staff. The waste collected shall be barcoded bar coded by the generator which shall be recorded during collection and treatment
- ◆ The waste shall be collected from the colour coded bags in health care units to colour coded containers (non chlorinated bags) in dedicated vehicles. Sharps shall be collected in puncture proof containers.
- ◆ A Record Book shall be maintained by the Healthcare unit in acknowledgement of waste collected.
- ◆ Non-segregated waste shall not be accepted and such incidents shall be reported to the prescribed authority.

“Common Bio-Medical Waste Treatment Facility ” at SF Nos. 131/1A2 & 154/11, Noothalapuram village , Nilakottai Taluk, Dindigul By M/s Dindigul Waste Management Private Limited .

- ◆ All the collection staff shall be equipped with protective gears for handling common Biomedical Waste.
- ◆ Each and every care shall be taken to ensure that the segregated common biomedical waste, handed over by the Health care unit, to reach Bio Medical Waste Treatment Facility without any damage, spillage and unauthorised access by public or animals etc.

2.7.1.2. TRANSPORTATION

Waste shall be transported in fully covered designated Vehicles designed as per following CPCB norms:

- ◆ Separate cabins for driver/staff and the bio medical waste.
- ◆ The base of the waste cabin shall be leak proof and will be easy to wash and disinfect.
- ◆ The inner surface of the waste cabin shall be made of smooth surface to minimise water retention.
- ◆ The vehicles shall be properly labelled with the symbol of Biohazard as per schedule III of the Rules and will display the name, address and telephone number of the Company.
- ◆ The waste cabin shall have provision for sufficient opening from the rear side so that common Biomedical Waste can be easily loaded and unloaded.
- ◆ The vehicles shall be provided with the first aid kit to handle emergency situations.
- ◆ Vehicles shall be equipped with communication equipment and safety gadgets & GPS systems.



2.7.1.3. STORAGE

Waste Storage Area

The characteristics of the waste storage room will be as follows:

- The Size of the room shall be adequate to store all wastes.
- The front portion of the room shall be utilised for unloading the wastes from the vehicle and back or side portion shall be utilised for shifting the wastes to the respective treatment equipment.
- The area in front of the room shall be made impermeable so that any liquid spilled during unloading does not percolate into the ground. However, the liquid waste generated (if any) during handling of waste and washing, shall be diverted to the inlet of ETP.
- The waste shall be stacked with clear distinction as per the colour coding.
- The waste storage room shall be well ventilated, easy to wash floors and walls and shall have smooth and fine surfaces.

Treated Waste Storage Room

- A separate room shall be provided for the storage of treated waste.
- The waste shall be stored in separate groups as per the disposal options.
- This room shall also be provided with smooth and fine flooring and tiles on walls.

“Common Bio-Medical Waste Treatment Facility ” at SF Nos. 131/1A2 & 154/11, Noothalapuram village , Nilakottai Taluk, Dindigul By M/s Dindigul Waste Management Private Limited .

- The room shall be well ventilated.

2.7.1.4. TREATMENT

The hospital waste consists of 60-65% of incinerable waste and 35% - 40% autoclavable waste. 3 types of treatment units shall be provided in common biomedical waste management facilities - **Incineration, Autoclaving & Shredder.**

2.7.1.5. TREATMENT EQUIPMENT ROOM

- ◆ A separate housing shall be provided for each treatment equipment at the Bio Medical Waste Treatment Facility.
- ◆ Each room shall have a well designed roof and walls and it shall be properly ventilated and easy to wash. The floor and interior finishing of the room shall be such that chances of sticking/harbours microorganisms is minimised. Smooth and fine flooring and tile walls shall be provided to a height of 2 m from the floor.
- ◆ A separate cabin shall be provided to supervise the operation of the equipment and to record the waste handling and equipment operation data.
- ◆ Attached to each equipment room there shall be two waste storage rooms, one for the storage of untreated waste and another for treated waste.
- ◆ Following separate treatment rooms will be provided:
 - I. Incinerator Room
 - II. Autoclave Room
 - III. Shredder Room

2.7.1.6. FINAL DISPOSAL

The treated common biomedical waste shall be disposed off as given below:

- ◆ Plastic waste after disinfection and shredding shall be given to the recycler.
- ◆ Disinfected sharps shall be encapsulated on site.
- ◆ A non-leachate and covered ash pit shall be provided inside the Bio Medical Waste Treatment Facility for storage of Incineration ash. Ash generated from the incinerator shall be handed over to authorised treatment and disposal facilities.
- ◆ Treated water will be used for washing & APCS.

Different types of waste shall be treated in the following units.

2.7.1.7. COMMON BIOMEDICAL WASTE TREATMENT METHOD

The common biomedical waste shall be treated in the following units:

2.7.1.8. INCINERATION

The incinerator is fed with the following type of waste:

“Common Bio-Medical Waste Treatment Facility ” at SF Nos. 131/1A2 & 154/11, Noothalapuram village , Nilakottai Taluk, Dindigul By M/s Dindigul Waste Management Private Limited .

- ◆ Human anatomical waste (human tissue, organs, body parts).
- ◆ Animal anatomical waste (animal tissue, organs, body parts, bleeding parts, experimental animals used in research)
- ◆ Discarded medicines and toxic drugs (waste consisting of outdated, contaminated and discarded medicines).
- ◆ Soiled waste (items contaminated with blood and body fluids including cotton, dressing, soiled plaster casts, lines, bedding and other material contaminated with blood).
- ◆ The incinerator is composed of one chamber- **Primary or Main combustion chamber**. Description of the chambers is given below:

2.7.2 AIR EMISSION

Process Gas Vents:

The process emissions from the manufacturing activities are detailed in Table 18.

Table 19. Process gas emission details

S. No.	Product Name	Stack attached to	Stack height (m)	Diameter	APCM	Parameter	Permissible Limit
1	Incinerator	Stand alone	30	0.6 m	Wet Scrubber	Particulate Matter, Sulphur Dioxide (SO ₂), Nitrogen Oxides (NO _x) for Incinerators, boiler & DG Sets Hg, HCl, Dioxins & Furans for Incinerators	<ul style="list-style-type: none"> ● 30 or 1NM3 of sample volume, whichever is more ● 30 for online sampling or grab sample ● 8 hours or 5NM3 of sample volume, whichever is more ● 30 or 1NM3 of sample volume, whichever is more ● 2 hours or 1NM3 of sample volume, whichever is more

Flue Gas Stack:

Details of stacks number, stack height, pollutants emitted are covered in Table 21

Table 20. Proposed flue gas details

Environmental Consultant : M/s Perfect Enviro Solutions Pvt. Ltd.

“Common Bio-Medical Waste Treatment Facility ” at SF Nos. 131/1A2 & 154/11, Noothalapuram village , Nilakottai Taluk, Dindigul By M/s Dindigul Waste Management Private Limited .

S. No.	Stack attached to	Stack height (m)	Fuel	APCM	Type of Emission	Permissible Limit
1	DG Sets-125 KW	6	LSO	Stack	PM10, PM 2.5, SO2, NO2	PM10 - 100 µg/m ³ , PM 2.5 60 µg/m ³ , SO2& NO2 (80 µg/m ³)

2.7.3 WATER CONSUMPTION, WASTEWATER GENERATION & DISPOSAL DETAILS

Water consumption of proposed project

Table 21. Proposed Water Consumption break up\

Water management	
Water Usage	Requirement in KLD
Domestic	1.25
Floor & Vehicle Washing	6.5
Venturi Scrubber	6.5
Autoclave Steam	2
Gardening	4
Total	20.25

Fresh water @ 9.25 KLD will be sourced from local body balance and will be recycled treated wastewater. The water assurance from the local body is attached as **Annexure 5**.

Wastewater generation:

Detailed waste water generation break-up of proposed project is provided in Table 22.

Table 22. Proposed wastewater generation breakup

S No.	Particular	Proposed Wastewater Generation (KLD)	Effluent treatment and disposal/ Remarks (if any)
1	Domestic	1.25	(1 KLD will send to Septic Tank and Soak Pit)
2	Floor & Vehicle Washing	6.5	6.50
3	Venturi Scrubber	6.5	6.50
4	Autoclave Steam	2	0.00
5	Gardening	4	Nil
	Total	20.25	13.00

A copy is attached as **Annexure 5**.

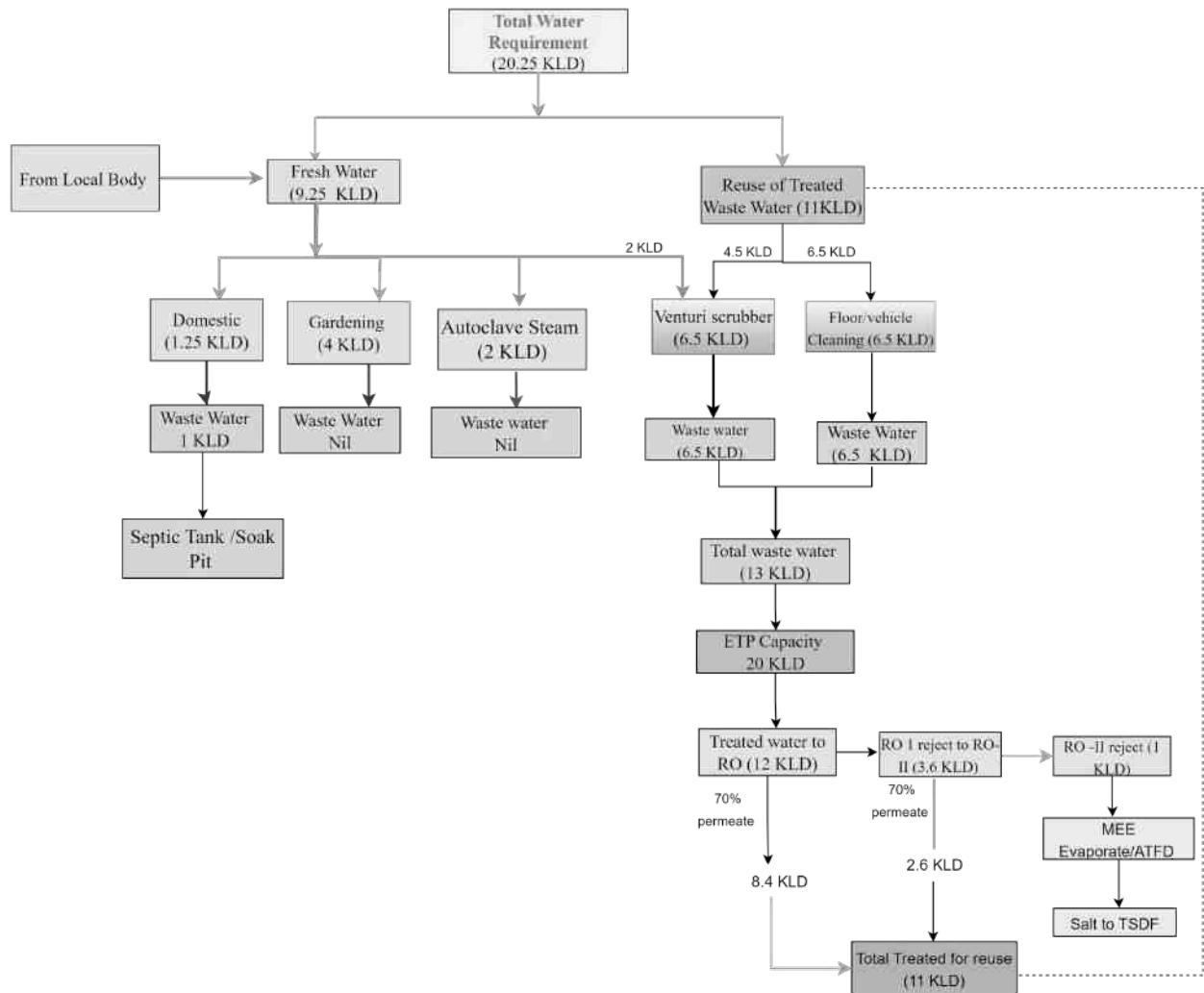


Figure 10. Water Balance Diagram

2.7.4 WASTEWATER AND ITS MANAGEMENT

Table 23. Wastewater characteristics

S. No	Characteristics of process wastewater stream	Quantity (KLD)	
1	Sewage From Domestic	1	Soak pit
2	Effluent from Process / Utilities	12	ETP

Details of proposed effluent treatment plant: 20 KLD * 1 No.

Details of ETP: Physico -Chemical Treatment plant

Stream wise effluent Characteristics

Stream 1:

Table 24. Steam 1

Environmental Consultant : M/s Perfect Enviro Solutions Pvt. Ltd.

“Common Bio-Medical Waste Treatment Facility ” at SF Nos. 131/1A2 & 154/11, Noothalapuram village , Nilakottai Taluk, Dindigul By M/s Dindigul Waste Management Private Limited .

S. No	Characteristics of process wastewater stream	Quantity (KLD)	Disposal / Treatment
1	Sewage	1	Soak Pit

Stream 2

Table 25. steam 2

S. No	Characteristics of process wastewater stream	Quantity (KLD)	Disposal/Treatment
1	ETP	12	ETP scheme given in figure 11

Capacity and number details of ETP, RO, MEE ATFD

Table 27. Capacity and Number details of ETP, RO, MEE, ATFD,

Name	Quantity (Nos.)	Capacity each (KL)
ETP	1	20
RO-I	1	12
RO-II	1	5

Table 28. Mechanical equipment list of proposed effluent treatment plant

SI No.	Mechanical Equipment Name	Quantity Nos	Capacity	Type	MOC
1	BAR SCREEN	1	-	-	MSEP
2	OIL SKIMMER	1	-	Triple type	-
3	EFFLUENT TRANSFER PUMPS	Two (1w+1s)	0.4 m3/hr	Horizontal centrifugal non clog type	Cast Iron
4	FLASH MIXER	1	-	-	MSEP
5	DOSING SYSTEM	Three Nos.	50 Litres – HDPE	-	PP
6	SLUDGE TRANSFER PUMP	1	0.5 m3/hr5	Horizontal centrifugal non clog type	Cast Iron
7	AIR BLOWER	Two (1w+1s)	15.0 m3 /hr	Twin lobe type	Cast Iron
8	COARSE BUBBLE	One Lot.	-	-	PVC

	DIFFUSER FOR SCS				
9	FINE BUBBLE DIFFUSER FOR AERATION TANK	Two (1w+1s)	-	-	EPDM
10	TUBE SETTLER MEDIA	One Lot	-	-	HDPE
11	SLUDGE TRANSFER PUMPS	1	-	Horizontal centrifugal non clog type	Cast Iron
17	FILTER FEED PUMPS	Two (1w+1s)	-	Horizontal centrifugal type	Cast Iron
18	HYPO DOSING SYSTEM	1	50 Litres – HDPE		PP
19	PRESSURE SAND FILTER	1	-	Multiport Valve, Vertical vessel	FRP
	ACTIVATED CARBON FILTER	1	-	Multiport Valve, Vertical vessel	FRP
	UV SYSTEM	1	0.4 m3/hr.	-	Stainless Steel
	ELECTROMAGNETIC FLOW METRE	2 nos. (Inlet & Outlet)	-	-	Frehning
	FLASH MIXER TANK	1	-	-	MSEP
	PRIMARY SETTLING TANK	1	-	-	MSEP
	AERATION TANK	1	-	-	MSEP
	SECONDARY SETTLING TANK	1	-	-	MSEP
	CLARIFIED WATER TANK	1	1000 Litres	-	HDPE

A schematic diagram of proposed ETP is provided in Figure 11

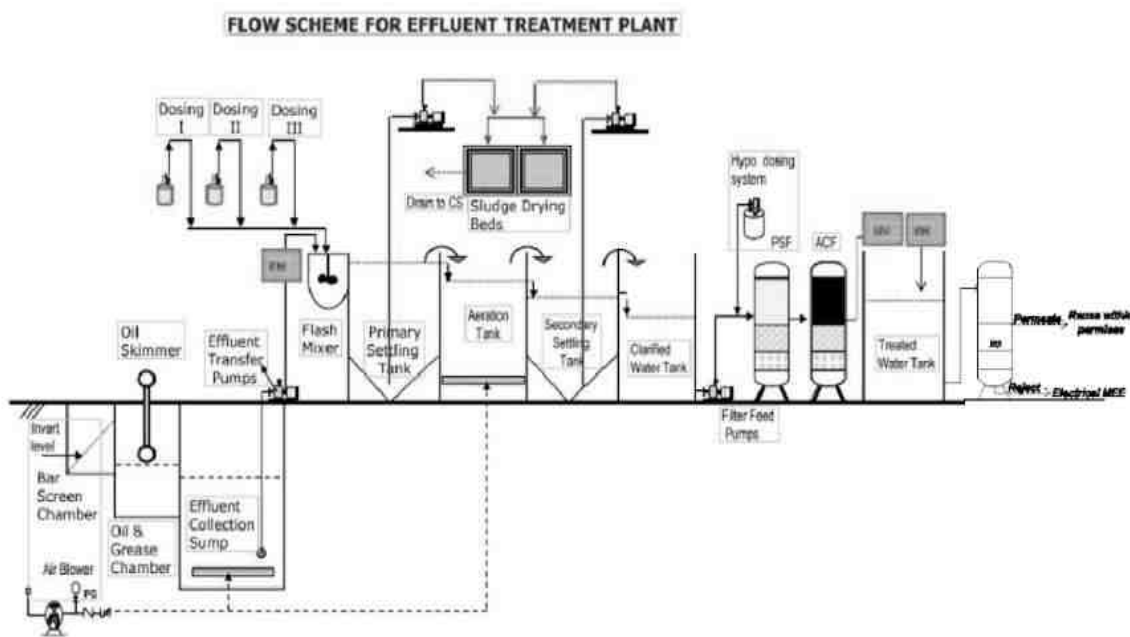


Figure 11. Schematic diagram of proposed ETP

2.7.5 SOLID AND HAZARDOUS WASTE IDENTIFICATION, QUANTIFICATION, AND DISPOSAL

Details of proposed Hazardous & Solid waste generated along with its management are provided in Table 25 & Table 26 respectively.

Table 29. Disposal of Hazardous Waste and its Management

S. No	Name of Waste	Source of generation (Plant/ Group)	Schedule & Category	Quantity	Disposal method
1.	ETP Sludge	ETP	35.3	13.4	It will be stored in leak proof PVC containers in isolated area on pakka floor with in the premises as per HWM Rules and handed over to authorized treatment and disposal facility of Tamil Nadu Pollution Control Board.
2.	Incinerator / ash	Incinerator	37.2	40.15	Send to TSDF site
3.	Used Oil	Engine, Machinery etc.	5.1	0.094	Used oil from D.G. Set will be stored temporarily in HDPE drums and will be sold to authorized vendors for the treatment of the same.

NOC/ Membership certificate for same is attached as **Annexure 7**

Table 30. Disposal of Solid & Other waste management

S. No	Name of Waste	Source of generation (Plant/ Group)	Quantity	Disposal method
1	Biodegradable	Organic Waste	4	Through OWC
2	Non-Biodegradable	Recyclable Waste (Plastic, paper, etc)	2	Through recyclers

MoU is attached as **Annexure 8**.

2.7.6 NOISE POLLUTION

The sources considered at the project site during operation phase are given in Table 28.

Table 31. Sources of Noise with their Sound Pressure Levels (Work Place)

S . No	Sources	Level dB (A)	Level dB (A) at 1 m distance
1	Incinerator	90	65
2	Autoclave	55	50
3	Shredder	100	70
4	DG Set	85	55
5	Unloading Activities	85	70
6	Loading into Incinerator Feed Mechanism	85	70

2.7.7 ODOUR

Source and mitigation: Waste storage & ETP

The source & mitigation is mentioned in Chapter 7

2.8 PROJECT DESCRIPTION

- Project Layout:

Project Layout is shown in Map 3.

2.8.1 COMPONENT OF PROJECT

Details of project showing storage details for Raw Material, Hazardous Chemicals, Finished goods etc. is provided below Table 32

Table 32. Detail storage of Hazardous material

“Common Bio-Medical Waste Treatment Facility ” at SF Nos. 131/1A2 & 154/11, Noothalapuram village , Nilakottai Taluk, Dindigul By M/s Dindigul Waste Management Private Limited .

Sl. No	Name of the substance or material	HS Code	Quantity(use appropriate standard units) TPA	Toxicity LD50(m g/ kg)
1	Biomedical Waste(incinerable / Sterilising)	99943300	6205	NA
2	Other BMW wastes- not incinerated or autoclaved but will be recorded in a proper register and will be sold to authorised recyclers or will be sent to secured landfilling in TSDF site	25202090	730	NA
3	Plastic Color coded containers	39231020	675	NA
4	Plastic Color coded Bags	39232100	547.5	NA
5	Chemicals- Lime,Alum,Causic, Polyelectrolyte	25210010	35.04	NA

2.8.2 PROJECT LAYOUT AND COMPONENTS

The site layout plan explaining the salient project features with an index giving area breakup is tabulated in Table 32

Table 33. Site Area Breakup

Particulars	Area in m ²	% Area
Ground Coverage	1,163.00	16.23
Green Area	1,309.00	18.27
Total open road & Parking Area	312.00	46.75
Future Activity	3,350.00	14.40
Total Parking area	1,031.00	4.35
Total	7,165	100

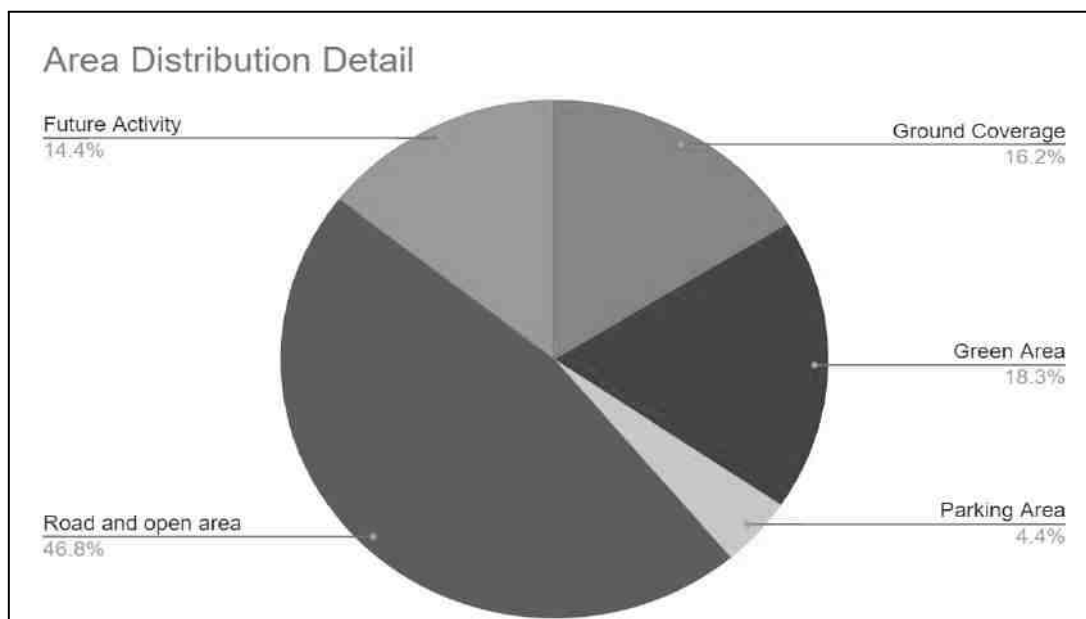


Figure 12. Area Distribution detail

2.9 DESCRIPTION OF MITIGATION MEASURES INCORPORATED IN TO THE PROJECT TO MEET ENVIRONMENTAL STANDARDS

2.9.1 MITIGATION MEASURES AT DESIGN STAGE

Details of mitigation measures adopted at design stage are provided in Table 33.

Table 34. Details of mitigation measures at design stage

Name of plant	Environmental attributes	Operational Controls at Design stage		
		Air Noise	Water	SHW
		Air (Prevention & Control of Pollution) Act – 198 and Rules, 1982 as amended to date The Noise Pollution (Regulation and Control) Rules, 2000 as amended to date	Water (Prevention & Control of Pollution) Act – 1974 and Rules 1975 as amended to date	Hazardous and Other Wastes (Management and Trans Boundary Movement) Rules, 2016 as amended to date
Incinerator Bay	The SPM, SO ₂ , NO _x , and HCl emission from the stacks attached to Incinerators and may cause eye irritation and acute respiratory illness to the people nearby. -Fugitive emission is air	To control emissions from incinerators of 500 (2x250) kg/hr, a combined Chimney of 30 m will be provided. -A gas cooler will be provided to drop the temperature of flue gases, followed by flue gas neutralisation system to neutralise the flue gas from SO _x , No _x and HCl through alkali reagent.	Collection of effluent will be done properly and safely. -All the standards of effluent given in GSR. 446 (E) dated 13.06.2011 will be maintained.	All the waste will be collected and kept in separate rooms with pucca floors. No disposal of waste will be done on soil. -Procedures for maintenance of equipment would ensure that this risk is minimised.

	pollutants released to the air other than those from stacks. Typically small releases from leaks in plant equipment, handling and transportation of Biomedical Waste, Internal Roads,etc. which will			-Sump shall be made and proper channelization of spillage shall be made.
Autoclave Bay	-	None	It will be a zero liquid discharge unit. Waste water generated will be treated in ETP. All the treated water will be used in the process, no untreated/treated water will be discharged. It will be zero liquid discharge project.	None
DG Set	D.G. set in which diesel will be used as fuel and PM will also be generated due to the burning of fuels.	The dioxin control system is provided to take care of NOx, Dioxin & Furans, and odour present in the flue gases. -Further the flue gas will be passed through the stack	The hazardous waste generated will be used oil apart from ETP sludge . Used oil will be stored in HDPE drums and kept in covered rooms under lock and key and will be sold to authorised vendors only.	Sump shall be made and proper channelization of spillage shall be made

2.10 ASSESSMENT OF NEW & UNTESTED TECHNOLOGY FOR THE RISK OF TECHNOLOGICAL FAILURE

Nil . The proposed setting up of CBWTF will use only proven technologies in line with the recommendations of CPCB

2.11 CONDENSED DESCRIPTION OF THOSE ASPECTS OF THE PROJECT

The condensed description of those aspects of the project likely to cause environmental effects is given in

Table 35. Condensed description of aspects of the project likely to cause environmental effects

S . No	Activity	Aspects
1	Preparation and Labelling activity	<ul style="list-style-type: none"> ● Loss of green cover ● Increased PM/ dust ● Increased gaseous emissions ● Increased ambient noise
2	Installation Activity	<ul style="list-style-type: none"> ● Emission of dust ● Increased PM level ● Generation of noise ● Soil contamination
3	Operation of Construction machinery(Operation of concrete Machinery, KCB, ETC. Mixing)	<ul style="list-style-type: none"> ● Used oil generation ● Air emission ● Dust generation ● Oil & Chemical Spillages ● Noise generation
4	Activity - Transportation (Raw Material, Labour)	<ul style="list-style-type: none"> ● Vehicular emission ● Diesel/petrol leakage ● Road congestion & breakage of roads ● Noise generation
5	Activity working & Daily Activity of Construction Activity	<ul style="list-style-type: none"> ● Solid waste generation ● Water requirement & waste water disposal
6	Loading & Unloading of Biomedical waste	<ul style="list-style-type: none"> ● Generation of PM, Dust ● Spillage/Leakage of bio-medical waste ● Generation of Noise ● Generation of packaging material ● Generation of odour
7	Treatment Process Incineration Autoclave treatment process	<ul style="list-style-type: none"> ● Water requirement ● Generation of heat ● Generation of hazardous waste ● Energy requirement ● Generation of odour

“Common Bio-Medical Waste Treatment Facility ” at SF Nos. 131/1A2 & 154/11, Noothalapuram village , Nilakottai Taluk, Dindigul By M/s Dindigul Waste Management Private Limited .

8	Operation of Machinery & Equipment (DG Set, ETP, incinerator, Autoclave and Shredder	<p>Generation of waste gases, PM, SO₂, NO₂, CO, VOC, Dioxin, Furan, CO₂</p> <p>Generation of Sludge, used oil.</p> <p>Water requirement</p> <p>Generation of Noise & vibration</p> <p>Generation of waste water</p> <p>Requirement of Fuel</p> <p>Generation of Ash</p> <p>Spillage/leakage</p> <p>Generation of Hazardous waste</p>
9	Activity Working & Daily of Staff Visitors	<ul style="list-style-type: none"> ● Solid & e-waste generation ● water requirement & waste water generation

3. ENVIRONMENTAL BASELINE DATA

3.1. INTRODUCTION

The baseline data is generated through field study within the impact zone (Core Zone and Buffer Zone) for various components of the environment viz. Air, Noise, Water, Land/Soil, Ecology and Socioeconomic. With the project as the centre, a radial distance of 10 km is considered as a ‘study area’ for baseline data collection. Baseline data was collected for various environmental attributes so as to compute the impacts that arise due to developmental activity.

3.2. METHODOLOGY

The baseline environmental quality has been assessed from July- September 2022 in a study area of 10 km radius distance from the project site. While generating the baseline status of the physical and biological environment of the study area, the concept of impact zone has been considered. The impact zone selection is based on preliminary screening and modelling studies. The methodology for measurement of various environmental indices is as follows:

Table 36. Methodology

S. No.	Functional Area	Methodology
1	Micro-Meteorological Data	Site specific Micro-Meteorological Data has been used for the study. The important parameters considered are temperature, humidity & wind speed.
2	Ambient Air Quality	The ambient air quality monitoring was done to assess the ambient air quality in one season. The guidelines for selections of ambient air monitoring stations given in IS – 5182 part 14, 2000 were followed.
3	Water Quality	To assess the water quality of the proposed area, Grab, & Integrated sampling done for water sample collection. Water samples were taken as per the Standard Methods (IS & APHA, 23rd Edition 2017). Necessary precautions were taken for preservation of samples. The physical parameters viz. pH, temperature and conductivity were measured at site using a portable water analyser.
4	Ambient Noise Quality	At each station noise level was monitored for 24-hours. For each measurement, dB (A) readings were taken for every 15 minutes for 24 hrs once in a season to get Leq values.
5	Soil Quality	Augur method was used for soil sampling and samples were collected at 15 cm depth after removing the upper crust.

“Common Bio-Medical Waste Treatment Facility ” at SF Nos. 131/1A2 & 154/11, Noothalapuram village , Nilakottai Taluk, Dindigul By M/s Dindigul Waste Management Private Limited .

6	Topography, Land-form and Land Use	The land use/ land cover map has been generated on 1:50,000 scale using Satellite imagery, topographical maps, Survey of India and ground truth information.
7	Biological Environment	Primary and secondary data collection has been done by the Ecology and Biodiversity team for the study of flora and fauna in the core and Buffer Zone.
8	Socio Economic Environment	For demography and socioeconomics, block wise data has been collected and used for the assessment of impacts.

3.3. GOOGLE IMAGE OF THE PROJECT SITE



Figure 13. Google image of the project site

3.4. GOOGLE IMAGE SHOWING 10,5 AND 2 KM RADIUS AREA

Figure 11. Google image showing 10, 5 & 2 Km radius area from the project site

3.5. METEOROLOGY

3.5.1. CLIMATIC CONDITIONS (AS PER INDIAN METEOROLOGICAL DATA)

The proposed project is “Common Bio-medical Waste Treatment Facility” located at Survey No: 133/1A2, 154/11 Nothulapuram Village, Taluk - Nilakottai, District- Dindigul, State- Tamil Nadu developed by M/s Dindigul waste Management Pvt. Ltd. The meteorological data from Indian Meteorological Station was processed for the nearest IMD station at Dindigul which has been

“Common Bio-Medical Waste Treatment Facility ” at SF Nos. 131/1A2 & 154/11, Noothalapuram village , Nilakottai Taluk, Dindigul By M/s Dindigul Waste Management Private Limited .

utilised for the study. The important parameters considered are temperature, humidity, wind speed, wind direction and rainfall. The meteorological data of last 6 years (2016-2022) as recorded at Nilakottai, Dindigul are given below:

3.5.1.1. TEMPÉRATURE

The maximum temperature of the area was recorded as may 24.1 °C in whereas the minimum temperature of the area was recorded 2.3 °C in . Data of the maximum and minimum temperature are given below.

Temperature record

Table 37. Temperature record

Temperature (°C)							
Year	HMax	Year	LMin	Year	MMax	Year	MMin
2016	21.9	2018	5.3	2019	18.8	2017, 2018	8.3
2016	22.6	2019	6	2016	19.4	2022	8.8
2016	23.8	2021	6.5	2016	21.9	2021	10.1
2016	23.7	2021, 2022	9.9	2016	21.8	2022	11.5
2019	24.1	2019	10.4	2019	22	2022	12.2
2019	22.5	2022	10.1	2019	20.1	2022	11.7
2020	20	2021	9.5	2017	18.3	2021	11.5
2020	20.6	2021	9.9	2016	18.3	2021	11.4
2017	21	2017	9.8	2018	18.6	2021	11.5
2016	21.5	2017	8.5	2017	18.3	2018	10.9
2016	21.5	2019	7.8	2016	17.9	2019	10
2016	21.5	2021	5.7	2017	17.4	2017, 2021	9.2

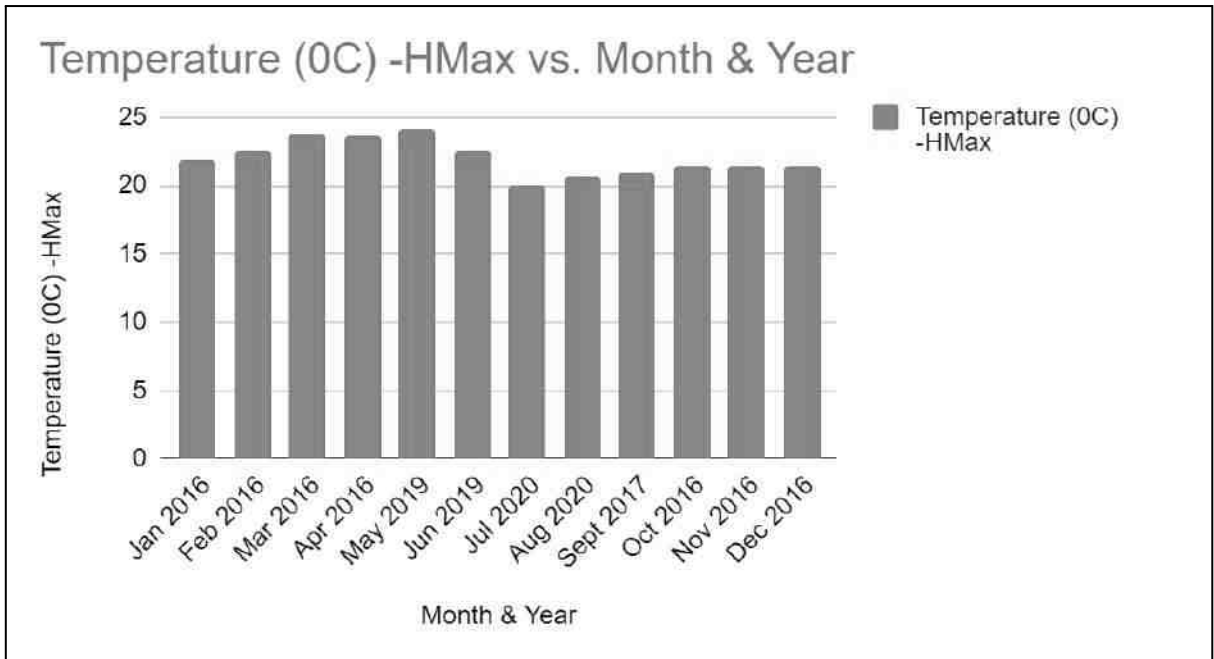


Figure 14. Highest maximum temperature

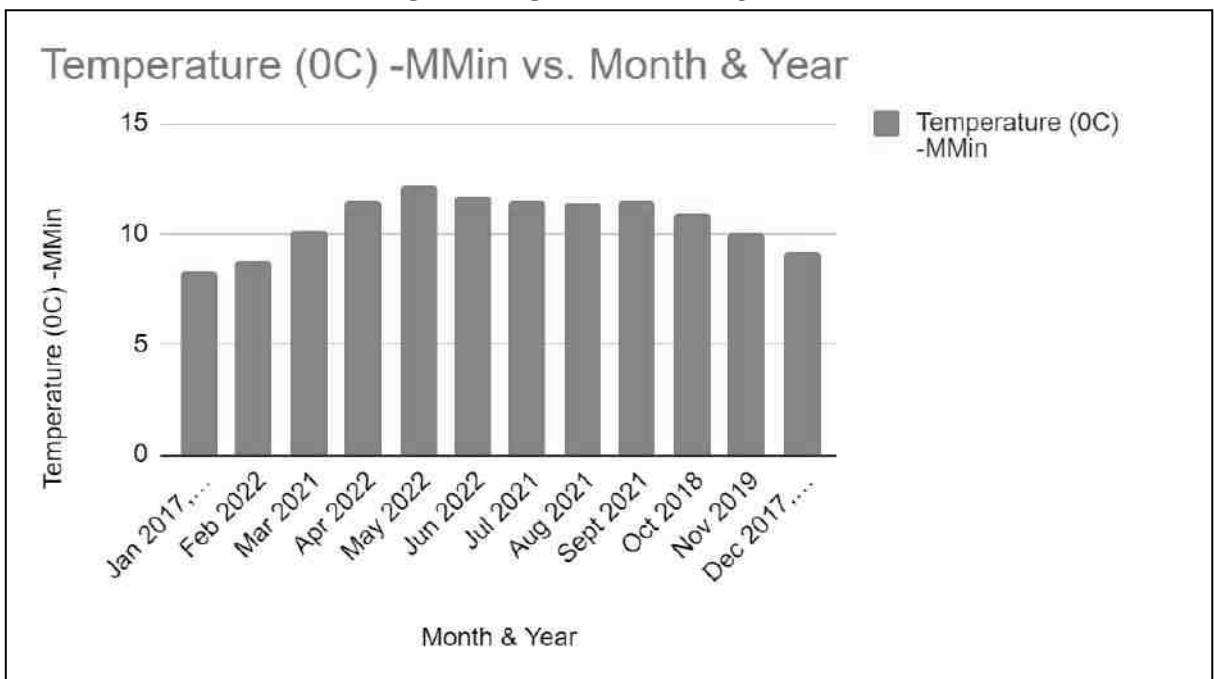


Figure 15. Lowest minimum temperature

3.5.1.2. RELATIVE HUMIDITY

The Maximum relative humidity was recorded as in Nov. Minimum relative humidity was recorded as in Oct . The humidity figures show that the area is semi-arid.

Table 38. Relative Humidity record

Month	Humidity (%)			
	Year	MMax	Year	MMin
January	2021	90	2019	38
February	2022	89	2017	47
March	2020	86	2016	39
April	2022	89	2017	50
May	2021 2022	92	2,019	62
June	2017	94	2019	69
July	2021	95	2019	77
August	2021	95	2019	77
September	2021	93	2018	79
October	2021	95	2020	81
November	2021	98	2016	72
December	2020	94	2017	63

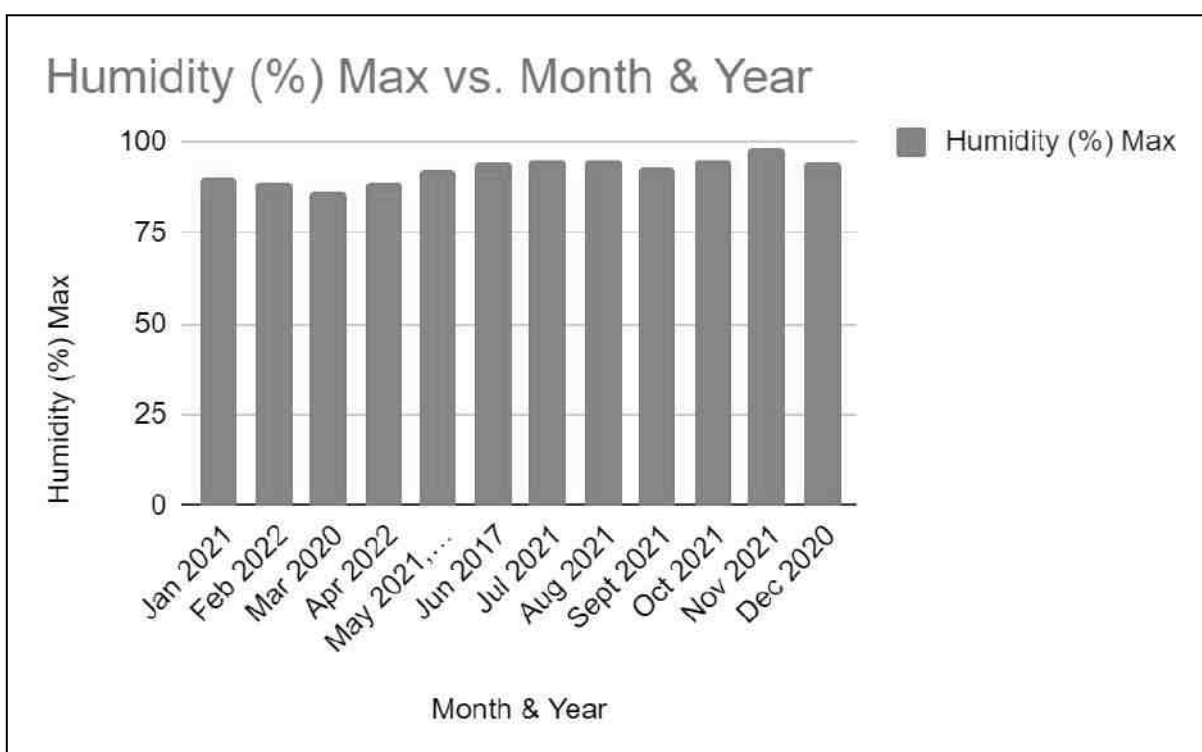


Figure 16. Maximum humidity

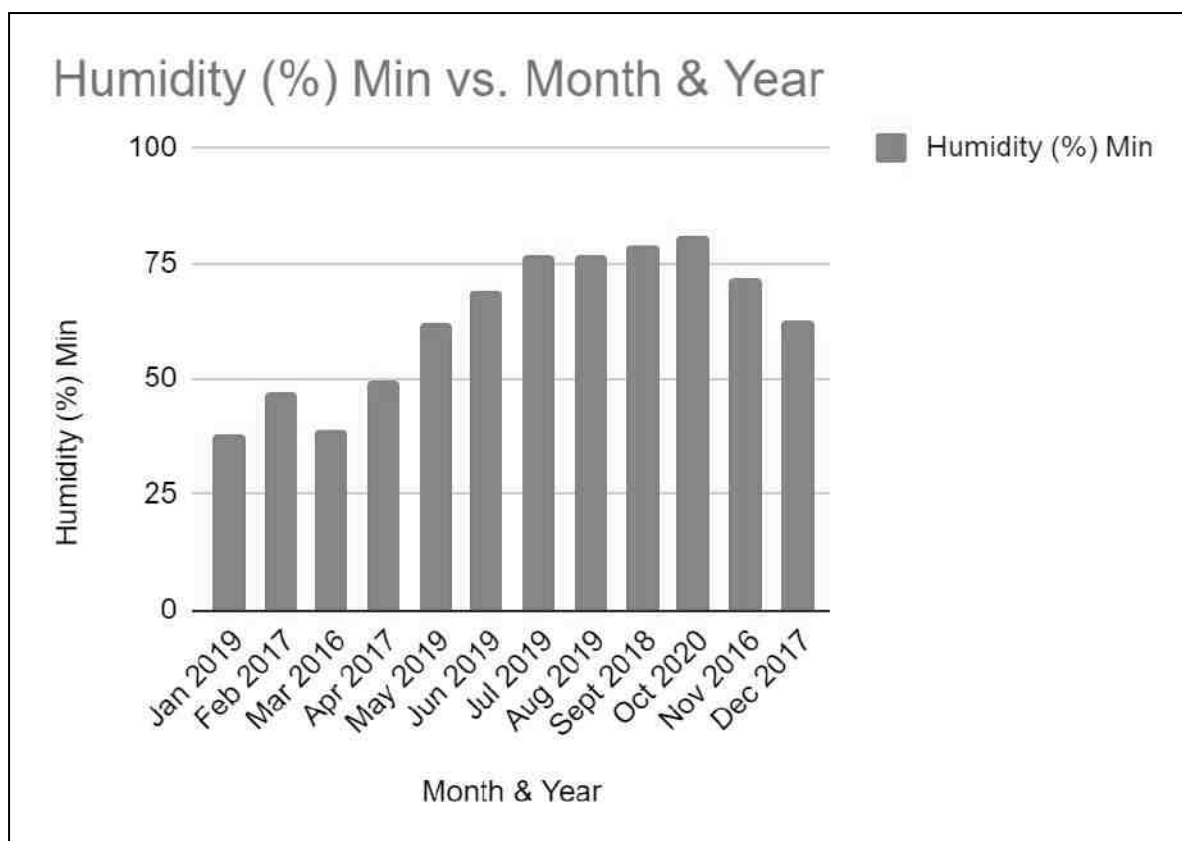


Figure 17. Minimum humidity

3.5.1.3. RAINFALL

The maximum rainfall was recorded in Oct . From data it is clear that maximum time of year remains dry, the dry months exceed wet months. July, August & September are the wettest months and are considered the monsoon season. The Average Annual Rainfall is August . (As per IMD data).

Table 39. Rainfall

Month	Rainfall (mm)				
	Year	Max	Year	Min	Average
January	2021	284.6	2019	0.1	30.65
February	2019	30.3	2020	0	13.9
March	2017	134	2016	10.9	41.5
April	2022	239.8	2017	18	38.9
May	2018	320.3	2019	37.2	62
June	2021	152.1	2018	38.5	37.45
July	2020	239.6	2017	52.6	36.15
August	2017	271.2	2018	70.2	35.3
September	2019	376	2016	50.1	62.3
October	2019	586.2	2020	67.6	59.75

“Common Bio-Medical Waste Treatment Facility ” at SF Nos. 131/1A2 & 154/11, Noothalapuram village , Nilakottai Taluk, Dindigul By M/s Dindigul Waste Management Private Limited .

Month	Rainfall (mm)				
	Year	Max	Year	Min	Average
November	2021	356.6	2016	29.3	76.9
December	2020	212.4	2018	32.9	74.9

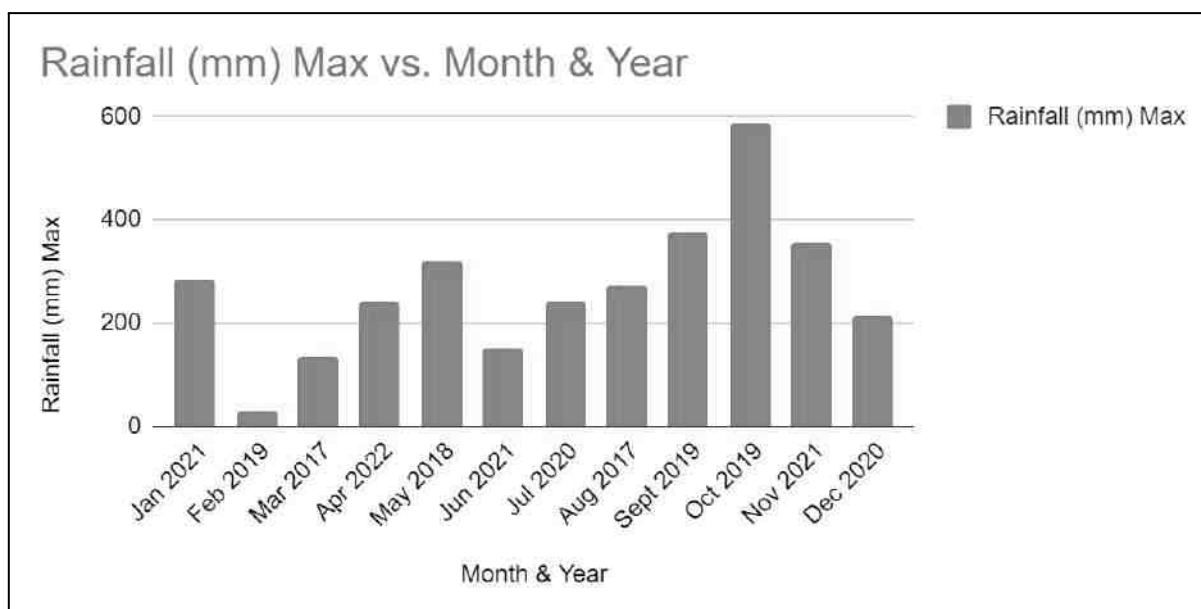


Figure 18. Maximum rainfall

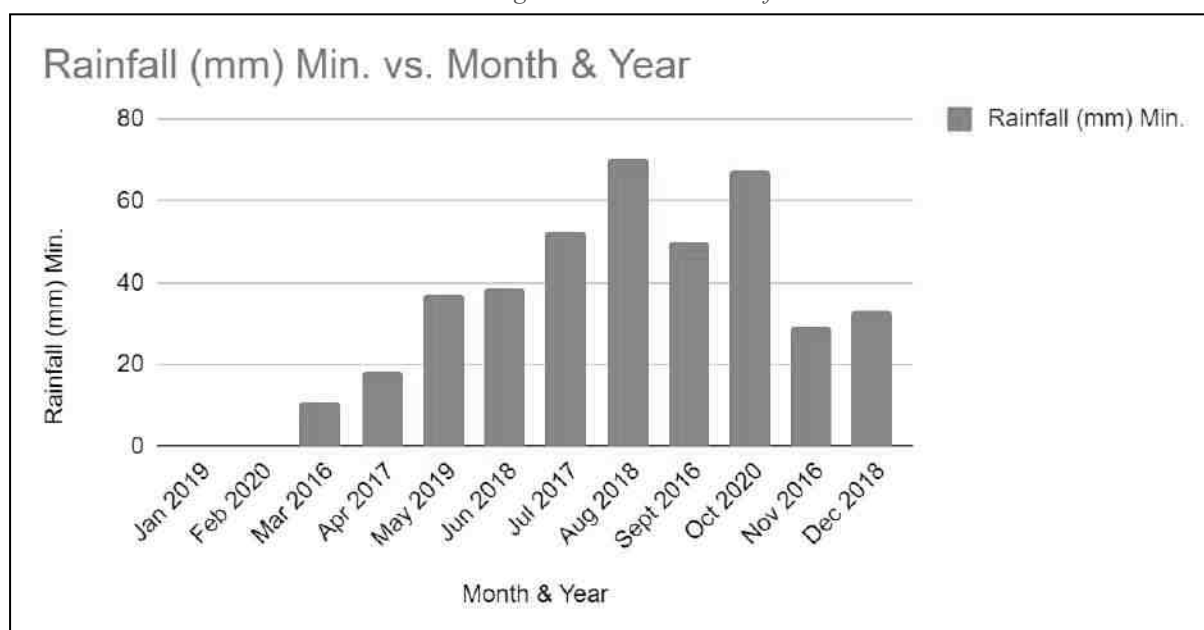


Figure 19. Minimum rainfall

3.5.1.4. WIND SPEED

The maximum wind speed was recorded in January and minimum wind speed was recorded in March .

Table 40. Wind speed record

“Common Bio-Medical Waste Treatment Facility ” at SF Nos. 131/1A2 & 154/11, Noothalapuram village , Nilakottai Taluk, Dindigul By M/s Dindigul Waste Management Private Limited .

Month	Wind speed (km/hr)			
	Year	Max	Year	Min
January	2021	10.7	2019	8.2
February	2016	10.5	2022	6.9
March	2018	10.8	2022	8.4
April	2017	9.4	2021	7.7
May	2020	8.3	2021	6.6
June	2016	8.1	2022	5.7
July	2018	7.9	2019	6.6
August	2018	8	2017	6.2
September	2017	7.3	2021	5.6
October	2019	8.9	2020	5.6
November	2018	10.7	2016	7.6
December	2019	10.5	2021	8.3

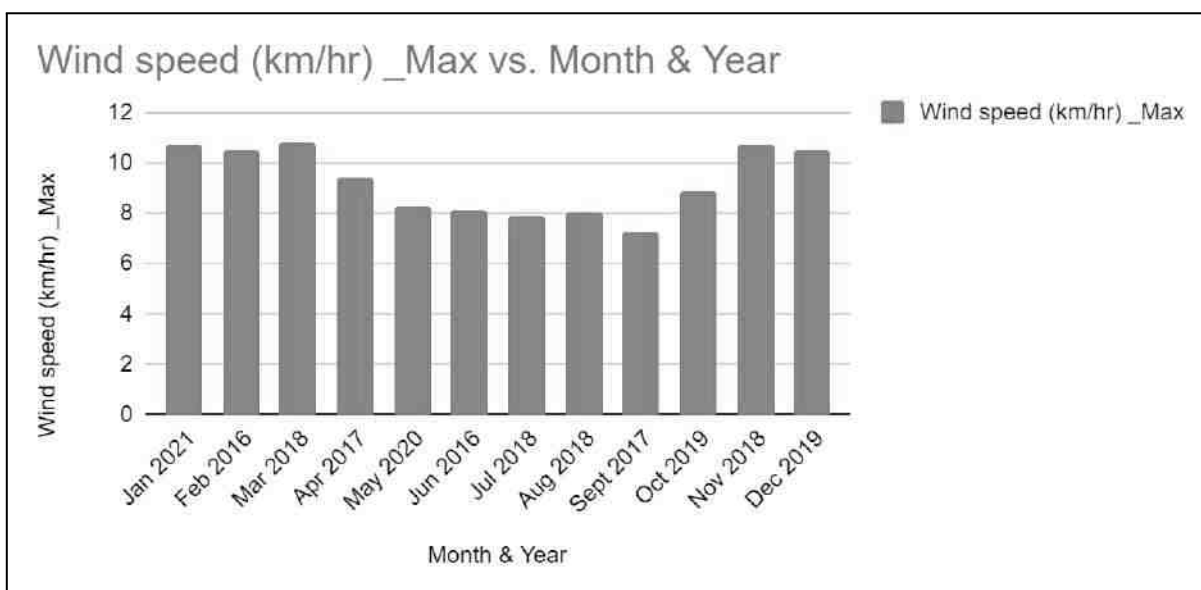


Figure 20. Mean maximum wind speed

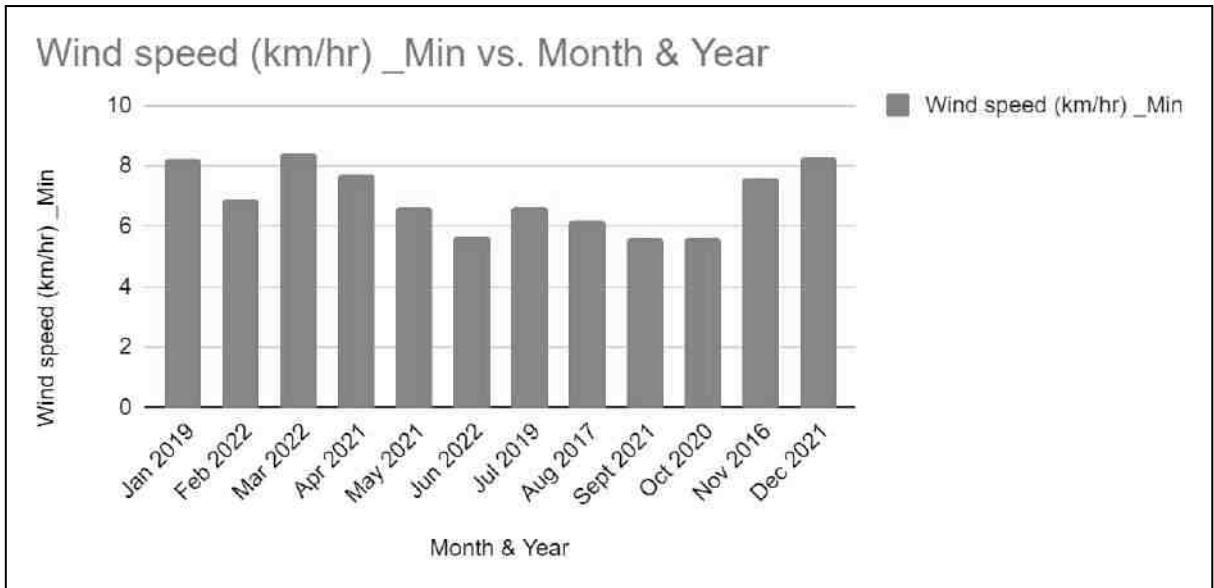


Figure 21. Mean minimum wind speed

3.5.1.5. WIND DIRECTION

The predominant wind direction is south to North.

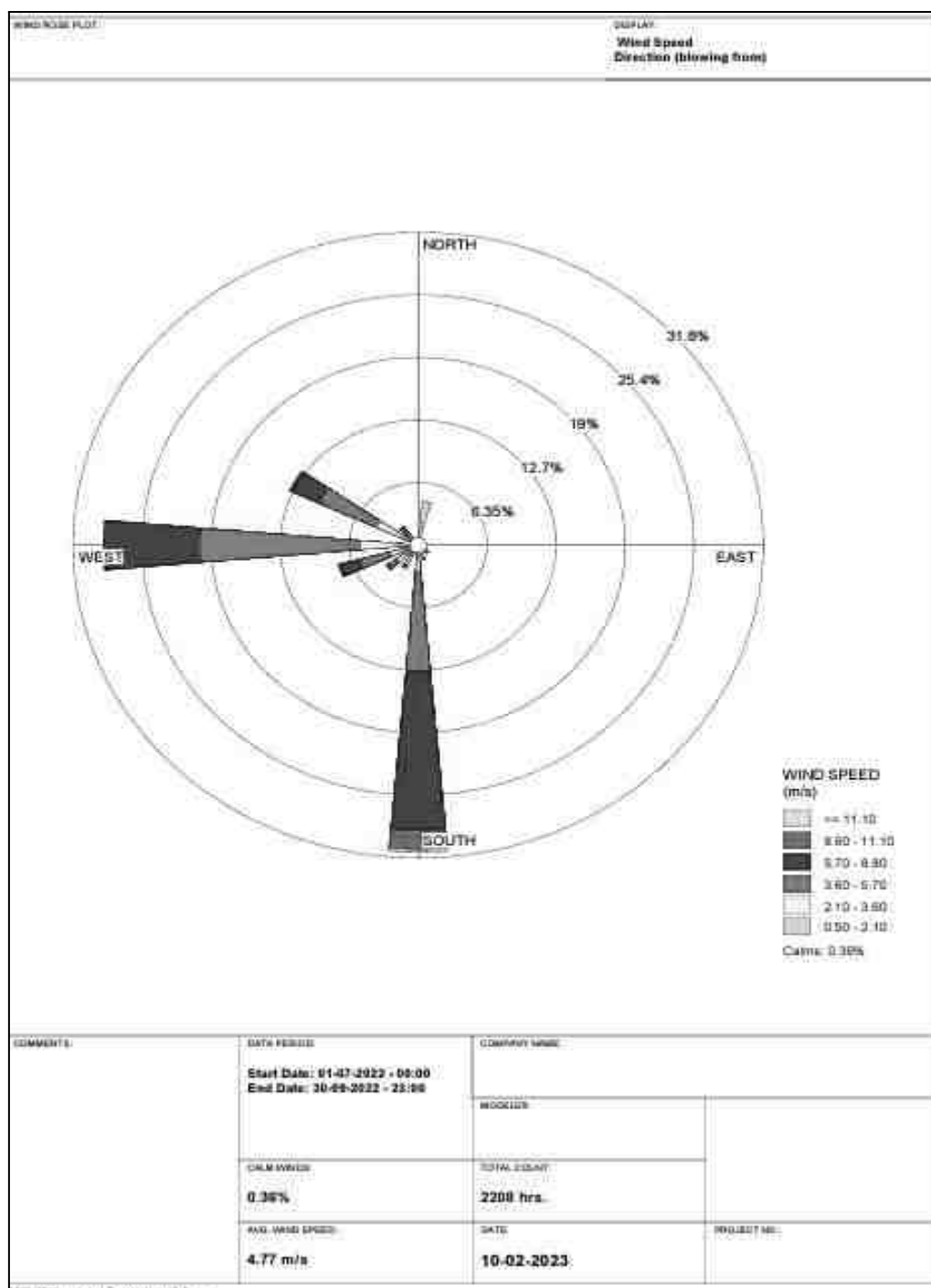


Figure 22. Wind Rose of micro-meteorology data for July 2022 - September 2022

3.6. MICRO METEOROLOGICAL DATA

A weather station was installed near the site for hourly monitoring of temperature, humidity, wind speed & wind direction for the month of July - September . Average data is given below:

Table 41. Micro-meteorological data

Month	Temperature(°C)			Humidity (%)			Wind speed (m/s)		
	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean

July 1st -31st	37	27	30.34	74	34	57.24	12.8	2.5	6.6
August 1st –31st	37	24	29.16	100	36	68.49	10.3	0	4.2
September 1st-30 st	37	24	28.91	100	32	70.08	10.3	0	3.4

3.7. AMBIENT AIR QUALITY

The ambient air quality monitoring was done to assess the ambient air quality. Monitoring was carried out at six stations for the month of July-September 2022.

3.7.1. SAMPLING STATION SELECTION

The sampling sites were selected so as to monitor and evaluate the impacts or hazards due to accidental release of chemicals into the environment. The number of stations selected for the sampling is six because as per National ambient air quality standards, the area should have at least Eight stations. Selection of sampling stations was done as per IS 5182 (P-14) 2000 and guideline of CPCB NAAQS, 2009.

The location is dependent on the wind rose diagram that gives predominant wind direction and speed. The location of Air sampling stations is shown below:

Table 42. Ambient air sampling location

S. No.	Location	Distance & Direction from project area	Latitude & Longitude	Project area / study area	Environmental Significance	Sampling type and parameter and their rationale
A1	Onsite	SE	10°12'26.02"N 77°49'2.16"E	Industrial	Existing Ambient Air quality at core zone (Upwind and Downwind direction) Existing Ambient Air quality at Buffer Zone	PM ₁₀ , PM _{2.5} , CO, SO ₂ and NO ₂
A2	Nearby Site	(0.31km SSE)	10°12'17.64"N 77°49'6.62"E	Residential		
A3	Thummalapatti	(0.93km SSE)	10°11'59.08"N 77°48'51.20"E	Residential		
A4	Sengatampatti	(1.50km North)	10°13'16.38"N 77°49'5.46"E	Residential		
A5	Ottupatti	(1.58km NW)	10°12'56.63"N 77°48'18.61"E	Residential		
A6	Sevugampatti	(1.6km SW)	10°11'56.86"N 77°48'18.78"E	Residential		
A7	Chinnamanayakan Kottai	(1.61 km SE)	10°11'47.19"N 77°49'38.05"E	Residential		
A8	Othupatty	(2.0km SE)	10°11'45.66"N 77°49'58.77"E	Residential		

3.7.3. SAMPLING PROCEDURE

Respirable Dust Samplers and Fine Dust Samplers were used to collect samples for PM_{10} and $PM_{2.5}$ in ambient air at a flow rate of The ambient air was sucked through the cyclone and filter paper by a blower. Samples of gases were drawn at a flow rate of 0.5 litres per minute and were analysed in the laboratory.

Monitoring was conducted in respect of the following parameters:

- Particulate Matter (PM_{10})
- Particulate Matter ($PM_{2.5}$)
- Sulphur Dioxide (SO_2)
- Oxides of Nitrogen (NO_2)
- Carbon Monoxide (CO)

This procedure was adopted because there are no short-term variations and low concentration of gaseous pollutants was expected.

3.7.4. ANALYTICAL METHODS FOLLOWED FOR AMBIENT AIR QUALITY MONITORING

- I. Particulate Matter ($PM_{2.5}$): (USEPA Quality Assurance HandBook (Vol.II) Part II, Quality Assurance Guideline Document, 2.12):** Particulate Matter ($PM_{2.5}$) was analysed by Gravimetric Method. Particulate matter was collected on the 37 mm diameter glass microfiber Filter Paper. $PM_{2.5}$ value is determined from the values of volume of air passed through Ambient Fine Dust Sampler.
- II. Particulate Matter (PM_{10}) (IS: 5182 Part 23:2006):** Particulate Matter (PM_{10}) was analysed by the Gravimetric Method. It was carried out by Respirable Dust sampler as per IS: 5182(Part 23):2006. Particulate matter was collected on the GF/A Filter Paper. Particles with aerodynamics diameter less than the cut-point of the inlet are collected by the filter. The mass of these particles is determined by the difference in filter weight prior to and after sampling.
- III. Sulphur dioxide (SO_2) (IS: 5182; Part – II – 2001):** Sulphur dioxide is absorbed by aspirating a measured air sample through a solution of Potassium or sodium tetrachloromercurate, TCM. This procedure results in the formation of a dichloro sulphite mercurate complex. The Sulphite Ion produced during sampling is reacted with sulphamic acid, formaldehyde and pararosaniline to form an azo dye and then determined colorimetrically.
- IV. Nitrogen Oxides (IS: 5182; Part – VI – 2006):** Nitrogen dioxide is collected by bubbling air through a sodium hydroxide- sodium arsenite solution to form a stable solution of sodium Nitrite. The Nitrite Ion Produced during sampling is reacted with hydrogen peroxide, Sulphanilamide and NEDA to form an azodye and then determined colorimetrically.

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- V. Carbon monoxide (CO) (IS:5182; Part -10-1999):** Samples containing Carbon monoxide in the range of 0 to 100 mg/m³ are analysed on a non-dispersive infrared absorption gas analyser, namely, an electro-optical spectrophotometer with no spectral dispersion component. It may consist of a single or double source of infrared energy and one or more infrared detectors separated by an optical cell or cells to one or more of which the sample flows, whereby the specific spectral absorption of the component of interest is determined.

3.7.5. AMBIENT AIR QUALITY RESULTS

At each station ambient air quality parameters i.e. PM₁₀, PM_{2.5}, SO₂, NO₂, CO was monitored twice a week for 3 months (July-August 2022) 24 hourly at uniform intervals and ambient air quality parameters.

Table 43. Ambient air quality results for PM10 & PM2.5

PM10 NAAQ standard-100 ug/m ³					PM2.5 NAAQ standard-60 ug/m ³			
Sampling Location	Min	Max	Mean	98th Percentile	Min	Max	Mean	98th Percentile
A1 (Onsite, NW)	45.2	66.1	54.8	66.0	20.9	31.7	26.005	30.22
A2 (Onsite, SE)	43.9	64.1	53.2	64.0	20.2	30.8	25.2	29.3
A3 (Thummalapatti)	49.28	72.00	59.93	71.91	22.74	34.59	28.42	32.68
A4 (Sengattanpatti)	50.63	73.99	61.58	73.89	23.37	35.55	29.20	33.84
A5 (Ottupatti)	43.85	73.99	60.65	77.85	43.85	73.99	28.42	35.66
A6 (Sevugampatti)	43.85	73.99	61.34	77.85	20.24	35.66	28.73	34.48
A7 (Chinnamanayakkan Kottai)	43.85	77.85	61.90	61.90	20.24	35.66	28.91	31.13
A8 (Othupatty)	43.85	77.85	62.04	69.93	20.24	35.66	28.92	32.03

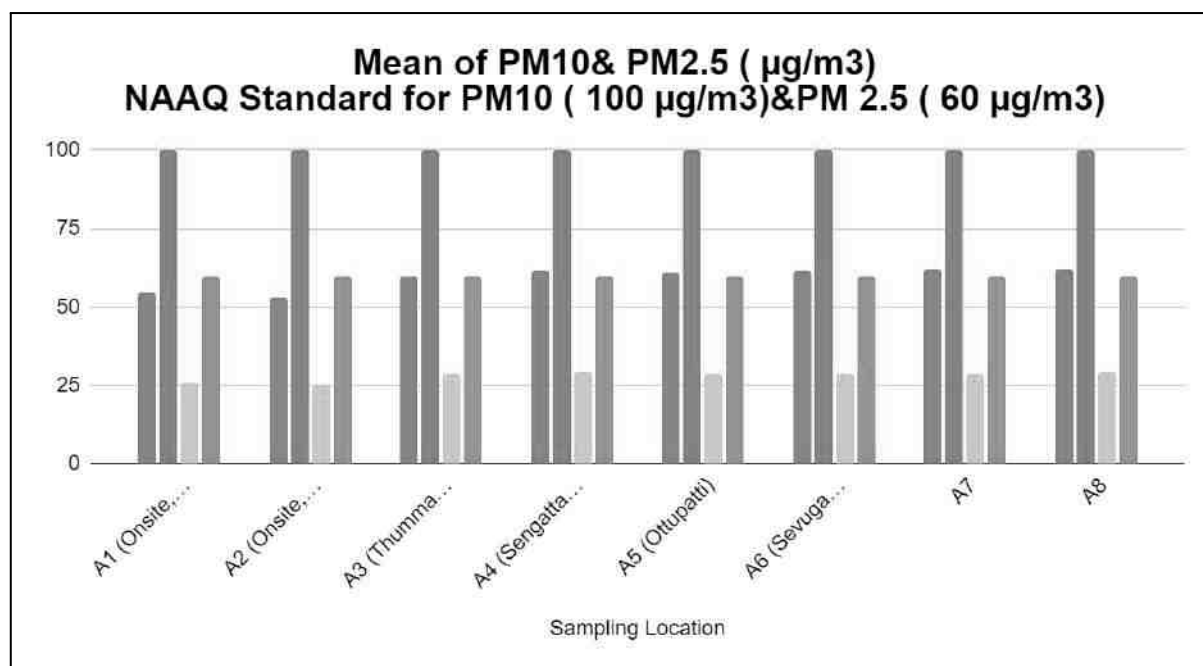


Figure 24. Mean values of the concentration of the pollutants (PM2.5 and PM10) at 8 different sampling station

Table 44. Ambient air quality results for SO2 and NO2

SO2 NAAQ standard-80 ug/m3					NOX NAAQ standard-80 ug/m3			
Sampling Location	Min	Max	Mean	98th Percentile	Min	Max	Mean	98th Percentile
A1 (Onsite, NW)	6.7	12.7	8.8	10.2	23.3	35.1	29.7	34.4
A2 (Onsite, SE)	6.5	12.3	8.5	9.4	22.6	34.1	28.8	33.3
A3 (Thummalapatti)	7.32	13.82	9.60	11.09	25.42	38.27	32.33	37.45
A4 (Sengattanpatti)	7.52	14.20	9.86	11.39	26.12	39.32	33.22	38.48
A5 (Ottupatti)	6.51	14.2	9.99	11.44	22.62	39.32	32.00	40.54
A6 (Sevugampatti)	6.51	14.2	10.10	11.15	22.62	40.54	32.32	39.51
A7 (Chinnamanayakkan Kottai)	6.51	14.2	10.16	10.48	22.62	40.54	32.56	35.39
A8 (Othupatty)	6.51	14.2	10.19	10.78	22.62	40.54	32.59	36.42

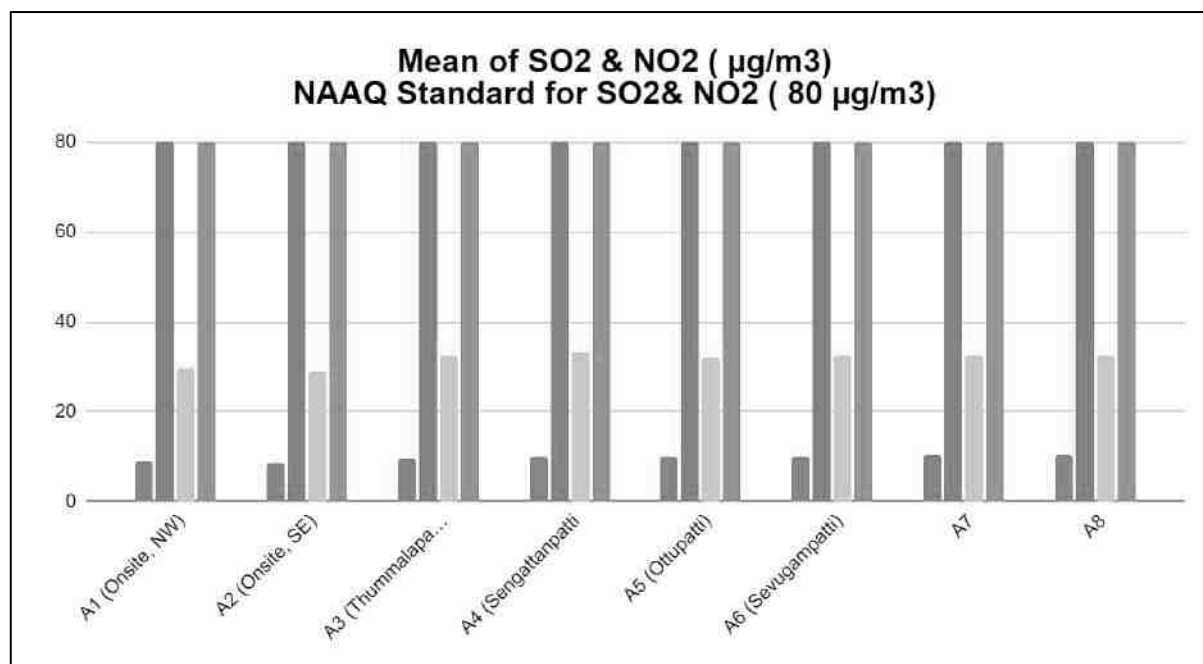


Figure 25. Mean values of the concentration of the pollutants (SO₂ and NO₂) at 8 different sampling stations

Table 45. Ambient air quality results for CO & VOC

Sampling Location	CO NAAQ standard-2 mg/m ³				VOC NAAQ standard-1 mg/m ³			
	Min	Max	Mean	98th Percentile	Min	Max	Mean	98th Percentile
A1 (Onsite, NW)	0.5	0.7	0.6	0.7	0.1	0.1	0.1	0.1
A2 (Onsite, SE)	0.5	0.7	0.6	0.7	0.1	0.1	0.1	0.1
A3 (Thummalapatti)	0.51	0.77	0.65	0.75	0.08	0.12	0.10	0.12
A4 (Sengattanpatti)	0.52	0.79	0.66	0.77	0.08	0.13	0.11	0.12
A5 (Ottupatti)	0.45	0.79	0.64	0.81	0.126	0.072	0.102	0.129
A6 (Sevugampatti)	0.45	0.81	0.65	0.79	0.072	0.129	0.10	0.126
A7 (Chinnamanayakkan Kottai)	0.45	0.81	0.65	0.71	0.129	0.072	0.10	0.11
A8 (Othupatty)	0.45	0.81	0.65	0.73	0.072	0.129	0.10	0.117

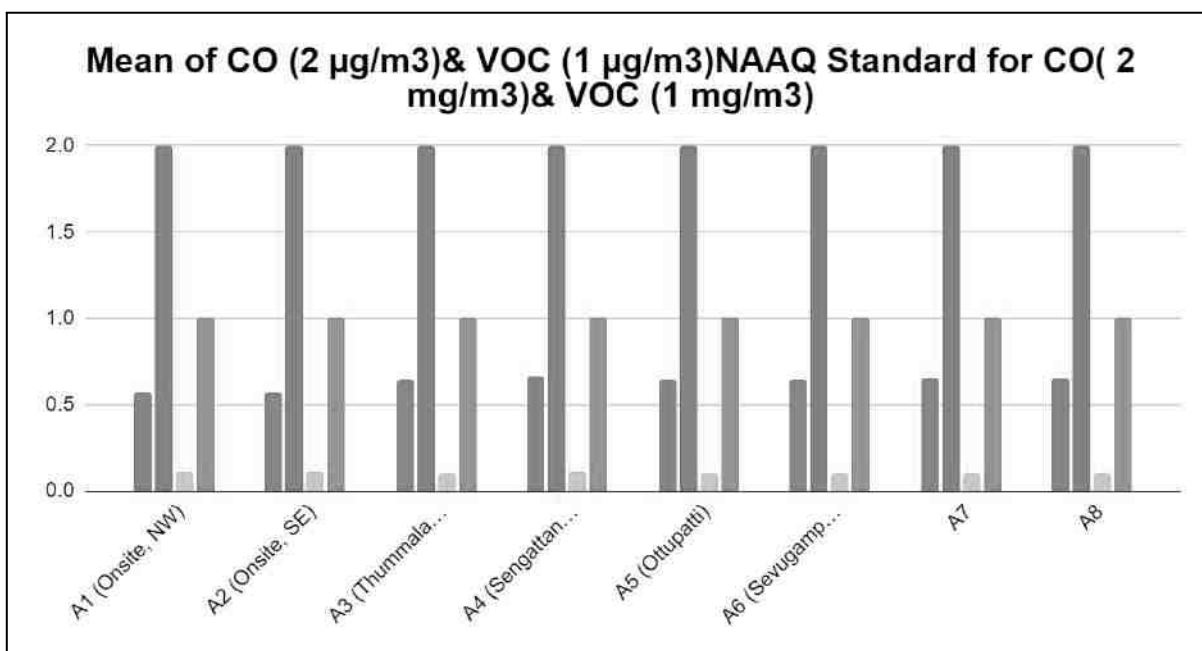


Figure 26. Mean values of concentration of pollutant (CO) & VOC at 8 different locations

3.7.6. AIR QUALITY INDEX

The table given below shows the Air Quality Index (AQI) range and category

AQI RANGE	AQI CATEGORY	AQI RANGE	AQI CATEGORY
Good (0–50)	Minimal Impact	Poor (201–300)	Breathing discomfort to people on prolonged exposure
Satisfactory (51–100)	Minor breathing discomfort to sensitive people	Very Poor (301–400)	Respiratory illness to the people on prolonged exposure
Moderate (101–200)	Breathing discomfort to the people with lung, heart disease, children and older adults	Severe (401–500)	Respiratory effects even on healthy people

Figure 27. Air quality Index as per CPCB

Table 46. AQI at six locations

Location	Highest Sub-index Parameter	AQI Value	AQI
A1 (Onsite, NW)	PM ₁₀	66	Satisfactory
A2 (Onsite, SE)	PM ₁₀	64	Satisfactory
A3 (Thummalapatti)	PM ₁₀	72	Satisfactory

A4 (Sengattanpatti)	PM ₁₀	74	Satisfactory
A5 (Ottupatti)	PM ₁₀	78	Satisfactory
A6 (Sevugampatti)	PM ₁₀	78	Satisfactory
A7 (Chinnamanayakkan Kottai)	PM ₁₀	62	Satisfactory
A8 (Othupatty)	PM ₁₀	70	Satisfactory

Core zone

The mean value of PM₁₀ at two core zone locations ranges from (53.2- 54.8 µg/m³) & PM_{2.5} ranges from (25.2 - 26 µg/m³), SO₂ ranges from (8.5-8.8 µg/m³), NO₂ ranges from (28.8- 29.7 µg/m³) & CO (0.6-0.6 mg/m³)

As per the Air Quality Index by CPCB, the air quality of the core zone is found to be Satisfactory during the sampling period - July 2022 to September 2022

Buffer zone:

The mean value of PM₁₀ ranges from (61.90- 77.85 µg/m³), PM_{2.5} ranges from (28.42- 29.20µg/m³), SO₂ ranges from (12.33-15.8 µg/m³), NO₂ ranges from (32- 33.22µg/m³), CO ranges from (0.64 - 0.66mg/m³) As per the Air Quality Index by CPCB the air quality of the buffer zone is found to be Satisfactory during the period -July 2022 - September 2022

3.8. NOISE QUALITY

Continuous, temporal and spatial variations occur in ambient noise levels depending on the type of surrounding activities. The impact of noise on the health of an individual depends on physical dose of noise level, frequency, intermittency etc. and human factors (age, health status, type of activity, occupational exposure). The impact due to noise undergoes seasonal variations except some directional changes depending upon the predominant wind direction. Noise levels have been measured for 8 locations. The baseline study of noise levels in the study area of 2 km has been carried out by selecting the noise monitoring locations based on the following criteria:

Proximity of the noise generating source to the human settlements

The major source of noise in the site surrounding the area is increased urbanisation, vehicular movement at day time and Ambient base noise at night. The impacts from these sources are expected to be captured in the levels of noise measured in the site-specific background noise monitoring study.

3.8.1. SAMPLING LOCATIONS

As per CPCB guidelines, site of an area shall be selected such that it meets the land use pattern e.g. Industrial, Commercial, Residential & Silence Zone. As per the site location, the type of location that was selected: industrial location, roads, and residential area lies within the core and buffer area. The influence of ambient air noise pollution is more in nearby sites, so study was conducted in the area located within 2 km radius of the project location. The sampling area for noise impact assessment lies within the core and buffer zone (10 km radius). About 10 stations were selected (2 onsite locations, Thummalapatti, Sengattanpatti, Ottupatti, Sevugampatti, Chinnamanayakkan Kottai, Othupatty, App. Road) to assess the noise level of the proposed area.

Location of Noise sampling stations are described below and locations are given below.

Table 47. Noise Sampling Locations

S. No	Location	Latitude & Longitude	Distance & Direction from project area	Project area / study area	Environmental Significance	Sampling type and parameter
N1	Onsite	10°12'28.38"N 77°49'0.66"E	NW	Industrial	Existing Ambient Noise quality at core zone	Noise Values (Leq in dB(A))
N2	Onsite	10°12'26.02"N 77°49'2.16"E	SE	Industrial		
N3	Thummalapatti	10°11'59.08"N 77°48'51.20"E	(0.93km SSE)	Residential	Existing Ambient Noise quality at Buffer zone	
N4	Sengattanpatti	10°13'16.38"N 77°49'5.46"E	(1.50km North)	Residential		
N5	Ottupatti	10°12'56.63"N 77°48'18.61"E	(1.58km NW)	Residential		
N6	Sevugampatti	10°11'56.86"N 77°48'18.78"E	(1.6km SW)	Residential		
N7	Chinnamanayakkan Kottai	10°11'47.19"N 77°49'38.05"E	(1.61 km SE)	Residential		
N8	Othupatty	10°11'45.66"N 77°49'58.77"E	(2.0km SE)	Residential		
N9	App. Road	10°12'27.76"N 77°49'22.07"E	0.6 km East	Commercial		
N10	NH- 183	10°13'40.19"N 77°48'50.98"E	2.2 km North	Commercial		

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3.8.2. NOISE SAMPLING LOCATIONS

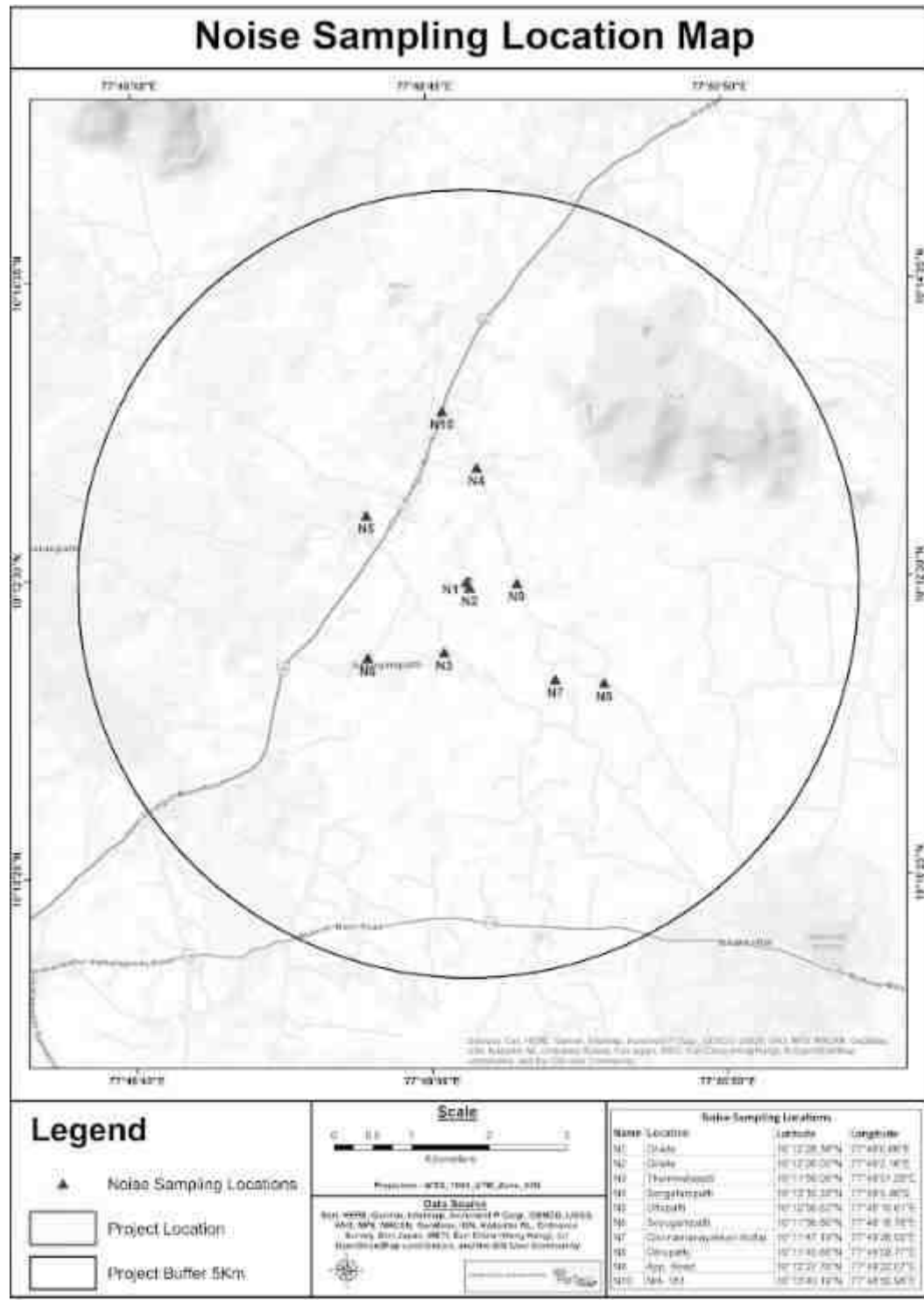


Figure 28. Noise sampling locations on 10 km topographical map

3.8.3. METHODOLOGY

At each station noise level was monitored for 24-hours simultaneously. For each measurement, dB (A) readings were taken for every 15 minutes for 24 hrs in a season to get Leq values.

Environmental Consultant : M/s Perfect Enviro Solutions Pvt. Ltd.

Table 48. Noise quality results

S. No.	Locations	Zone	Leq Day noise level dB(A)	Leq Night noise level dB(A)	Day time (6.00 A.M to 10.00P.M)	Night time (10.00 P.M to 6.00A.M)
					Standard (Leq in dB(A))	Standard (Leq in dB(A))
Core zone noise quality						
N1	Onsite NW	Industrial area	55.7	45.8	75	70
N2	Onsite SE	Industrial area	55.9	45.9	75	70
Buffer zone noise quality						
N3	Thummalapatti	Residential area	57.7	47.4	55	45
N4	Sengattanpatti	Residential area	58.2	47.4	55	45
N5	Ottupatti	Residential area	56.8	48.3	55	45
N6	Sevugampatti	Residential area	56.6	48.1	55	45
N7	Chinnamanayakkan Kottai	Residential area	56.3	47.5	55	45
N8	Othupatty	Residential area	56.2	47.1	55	45
N9	App. Road	Commercial	63.2	56.2	65	55
N10	NH- 183	Commercial	73.5	67.9	65	55

(The highlighted section is the noise level of daytime and night time exceeding the standard noise level)

(Source of Standards: CPCB standards for Noise Pollution (Regulation & control) Rules, Laboratory: M/s Perfect Researchers Pvt. Ltd. (NABL Accredited)

Figure 29. Noise level at six different location during daytime and night time

1. Day time shall mean from 6.00 a.m. to 10.00 p.m.
2. Night-time shall mean from 10.00 p.m. to 6.00 a.m.
3. Silence zone is defined as an area comprising not less than 100 m around hospitals, educational institutions and courts. The silence zones are zones, which are declared as such by the competent authority. The permissible limit is 50 dB at day time and 40 dB at night time.
4. The permissible limit of ambient air in respect of noise in residential zone is 55 dB in day time and 45 dB in night time.
5. The permissible limit of ambient air in respect of noise in commercial zone is 65dB in day time and 55 dB at night time.

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6. The permissible limit of ambient air in respect of noise in the Industrial zone is 75 dB during the day and 70 dB at night time.

3.8.4. Data Interpretation:

The Ambient Noise Quality results are summarised above. The results are discussed below:

Core Zone:

Industrial Area N1 & N2: The ambient noise level during day time at the proposed project site varies from **55.7** to **55.9** which is within the standard limit of industrial area **dB(75)** . During the night the noise level at the project site ranges from **45.8** to **45.9** which are within the standard limit of industrial area **dB (70)**.

Buffer Zone:

Residential Area N3 to N8: The ambient noise level during day time at the proposed project site varies from **56.2** to **58.2** which is slightly higher than permissible limit **dB (55)** in residential area .During the night the noise level at the project site ranges from **47.1** to **48.3** slightly higher than permissible limit **dB(45)**.

Commercial Area N9 to N10:The ambient noise level during day time at the proposed project site varies from **63.2** to **73.5** which is within permissible limit **dB (65)** commercial area .During the night the noise level at the project site ranges from **56.2** to **67.9** slightly higher than permissible limit **dB(55)**.

3.9. WATER REGIME

Drainage

Core zone: The core area is on plain. The general slope of the area is towards the South.

Buffer zone: The study area is drained by various ephemeral drains. The major river of the area is kodavnar river (flows West-East) located at about 9.5 km in the north direction.

The study area has a dendritic pattern of drainage and the stream order is 1 st to 5th order. Overall slope of the area is towards South.

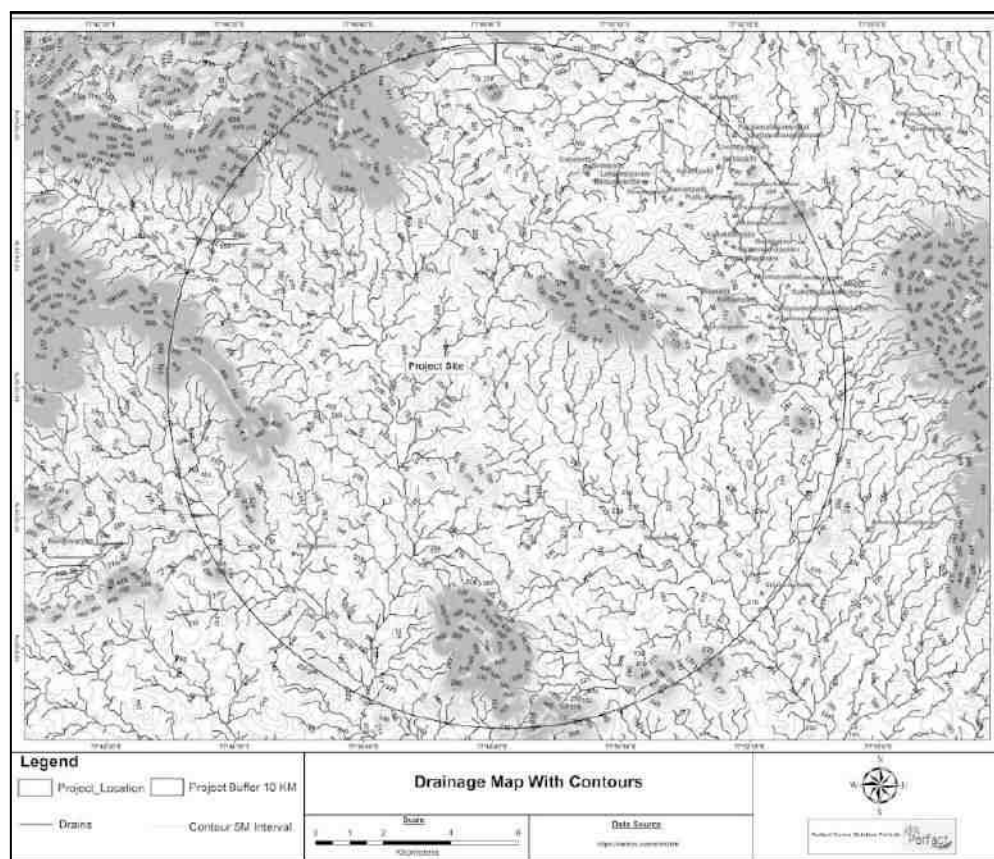


Figure 29. Drainage map

GEOHYDROLOGY

As per CGWB report, The major part of the district is underlain by Archaean crystalline metamorphic complex. The important aquifer systems encountered in the district are classified into

- i) Fissured, fractured and weathered crystalline formations consisting of charnockites, Granite Gneisses and
- ii) Valley fill sediments (Unconsolidated Sediments) comprising clay, sand, silt and kankar.

The depth to water level during pre monsoon in the area varied from 0.12 to 13.10 m bgl where as during post monsoon it varies from 0.90 to 14.90 m bgl

GEOLOGY

The area is essentially a high grade gneissic terrain characterized by highly deformed rocks, which can be classified under three groups as 1) Khondalite Group, 2) Charnockite Group and 3) Migmatite Group. The terrain also exposes basic/ultrabasic and younger acid intrusives

Stratigraphic sequence

Age	Group	Lithology
QUATERNARY	Recent to Pleistocene	Kankar
		Laterite
PROTEROZOIC	Acid intrusives	Quartz veins
		Pegmatite
		Granite
ARCHAEANPROTEROZOIC	Migmatite Group	Pink migmatite
		Granitic gneiss

		Hornblende-biotite gneiss
	Basic/Ultrabasic Intrusives	Anorthosite
		Amphibolite / Norite / Gabbro
		Ultramafics
	Charnockite Group	Magnetite quartzite
		Pyroxene granulite
		Charnockite
	Khondalite Group	Garnet quartz - feldspar gneiss
		Garnet - sillimanite gneiss ± cordierite
		Calc-gneiss / Limestone
Quartzite		

Seismicity - India is one of the most earthquake-prone countries because of the existence of technically active young fold mountains in the Himalayas. The seismic scenario of peninsular India has been changed due to many devastating earthquakes in the past few years.

According to the Bureau of Indian Standards, the cosmopolis falls under seismic zone-II, on a scale of I to V (in order of increasing proneness to earthquakes). The area is not considered dangerous as it falls under the less earthquake prone zone.

GROUNDWATER DEVELOPMENT

The study area comprises two blocks of Dindigul district named Nilakkottai and Athoor. Our project falls in the Nilakkottai block.

The stage of ground water development in 2017, for all the talukas of the Vadodara district computed range from 17.05% to 78.11% and 7 units of assessment (talukas) have been categorised as Safe.

As per CGWB, the Groundwater Resource Potential as follows—

Therefore, Tehsil/ Block wise ground water resources of the region is given below:-

Table 49. Ground water resource potential

Blocks	Net groundwater availability	Existing Gross Draft for all uses	Allocation for Domestic and Industrial Requirement supply upto next 25 years (2029)	Net Groundwater Availability for future Irrigation Development	Stage of Ground Water Development	Category
Nilakkottai	6878.13	6484.20	215.41	386.61	94	Critical
Athoor	3698.57	5156.40	280.24	0.00	139	Over Exploited

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(Source- Central Ground Water Board South Eastern Coastal Region Chennai, 2008)

It is categorised as Critical category of groundwater development.

3.10. WATER QUALITY

3.10.1. SAMPLING STATIONS

The various indicators of water quality from one of the most important tools for impact assessment in future, therefore it is imperative to assess the existing water quality of both ground and surface water occurring in the core and buffer zone.

To assess the water quality of the proposed area, the samples were collected in July to August 2022 following 13 stations (08 groundwater & 05 surface water) were selected.

Location of Water sampling stations is described below and location below:

Table 50. Groundwater and Surface water sampling locations

S.No.	Location	Lat.& Longitude	Distance & Direction from Project area	Environmental Significance	Sampling type and their rationale
GW1	Nearby Site/Onsite	10°12'27.69"N 77°48'56.01"E	Nearby Site	Existing Ground water quality at Core zone	IS10500: Drinking Standards 2012, Water
GW2	Thummalapatti	10°11'59.08"N 77°48'51.20"E	0.93km SSE	Existing Ground water quality at Buffer Zone.	
GW3	Sengattupatti	10°13'16.38"N 77°49'5.46"E	1.31km NW		
GW4	Ottupatti	10°12'56.63"N 77°48'18.61"E	1.50 km N		
GW5	Sevugampatti	10°11'56.86"N 77°48'18.78"E	1.58km NW		
GW6	Chinnamma Nayakkan Kottai	10°11'47.19"N 77°49'38.05"E	1.6km SW		
GW7	Othupatty	10°11'45.66"N 77°49'58.77"E	1.63km SE		
GW8	Selvam Nagar	10°12'33.28"N 77°50'39.90"E	2.0km SE		
SW1	Water body in East	10°12'22.71"N 77°49'27.74"E	0.73 km E		
SW2	Selvam Nagar Pond	10°12'19.98"N 77°50'46.58"E	0.96 km ESE		
SW3	Pond near	10°11'1.25"N 77°49'25.50"E	2.75 km SSE		

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	Seethapuram				
SW4	Sengattampatti Pond	10°14'06.12"N 77°49'01.47"E	2.96 km N		
SW5	Nilakottai Lake	10° 9'54.83"N 77°51'39.43"E	6.64 km SE		
SW6	Sempathy Lake	10°16'25.15"N 77°51'55.88"E	8.82 km NE		

3.10.2. GROUNDWATER SAMPLING LOCATIONS

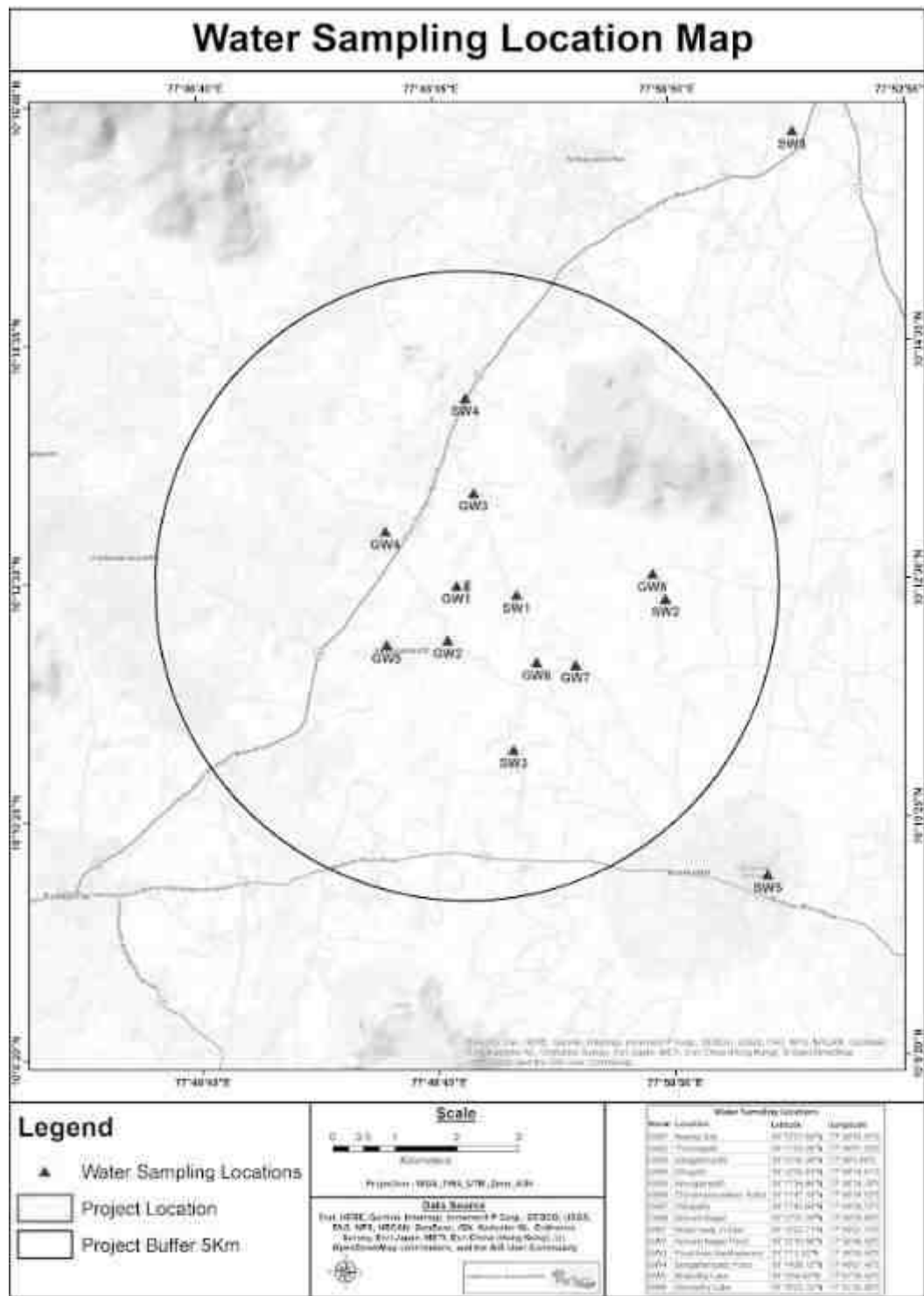


Figure 30. Groundwater & Surface water sampling location on 10 km topographical map

Criteria of Selection of sampling Locations:

Water sampling locations were selected based on the following criteria: source of water, the flow of water, geological structure (hydrogeology), use of water, depth of water table etc. Further in the core and buffer zone, the Groundwater was collected from 8 villages. Nearby site, Thummalapatti, Sengattanpatti, Ottupatti, Sevugampatti, Chinnamanayakkan Kottai, Othupatty and Selvam Nagar.

Surface water was collected from five locations to study the chemical parameters. During surface water sampling flow of water plays an important role. In the present study, sources of surface water are Water bodies in East, Selvam Nagar, Sempathy Lake, Pond near Seethapuram, Nilakottai Lake

3.10.4. SAMPLING FREQUENCY AND SAMPLING TECHNIQUES

GROUNDWATER QUALITY RESULTS:

Table 51. Groundwater Quality Results

Parameters	Unit	IS 10500:2012 (Drinking water standard)	Open well Nearby site (70FT)	Othupatty (Borewell 700FT)	Ottupatti (Borewell 800FT)	Chinnamanayakkan Kottai (Borewell 650FT)	Selvam nagar (Borewell 800FT)	Sangattampatti (Borewell 550 FT)	Thummalapatti (Borewell 500FT)	Sevugampatti (Borewell 900FT)
Colour	Hazen	5.00	<1	<1	<1	<1	<1	<1	<1	<1
Odour	--	Unobjectionable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Turbidity	NTU	5.00	<1	<1	<1	<1	<1	<1	<1	<1
pH		6.5-8.5	7.61	7.44	7.38	7.64	7.70	7.89	7.67	7.24
Temperature	°C	--	23.7	25.6	25.0	25.1	24.7	24.5	24.2	24.0
Conductivity	µmho/cm	--	1043.0	762.0	1516.0	1386.0	834.0	463.0	2008.0	1449.0
Total Dissolved Solids	mg/l	500	513	381	791	693	407	233	1060	685
Chloride (as Cl)	mg/l	250	68.0	52.0	171.9	160.0	66.0	43.0	223.9	108.0
Fluoride (as F)	mg/l	1.00	2.05	2.08	1.94	1.97	2.38	2.21	2.09	1.92
Total Hardness	mg/l	200	204	160	240	232	172	116	368	220
Calcium (as Ca)	mg/l	75	40.0	31.2	56.0	44.8	35.2	22.4	76.8	35.2
Magnesium (as Mg)	mg/l	30.0	25.3	19.9	24.3	29.2	20.4	14.6	42.8	32.1
Iron (as Fe)	mg/l	0.30	0.253	0.348	0.612	0.328	0.403	0.502	0.502	0.902
Sulphate (as SO ₄)	mg/l	200.0	133.4	78.7	121.3	101.6	42.3	44.5	155.5	68.0
Nitrate Nitrogen	mg/l	45.0	33.7	23.8	104.2	108.2	230.3	13.8	193.5	125.4
Nitrite Nitrogen	mg/l	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alkalinity	mg/l	200	70.6	81.3	118.7	130.4	129.7	71.5	212.5	152.0
Aluminum (as Al)	mg/l	--	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02

Boron	mg/l	0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phosphate	mg/l	–	0.30	<0.01	0.15	<0.01	<0.01	<0.01	0.50	<0.01
Sodium (as Na)	mg/l	–	32.0	21.0	97.4	88.0	22.0	14.0	93.0	36.5
Potassium (as K)	mg/l	–	7.3	3.6	9.7	7.8	1.5	1.7	47.0	4.8
Total Chromium	mg/l	0.05	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Nickel (as Ni)	mg/l	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Manganese (as Mn)	mg/l	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Copper (as Cu)	mg/l	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Mercury (as Hg)	mg/l		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cadmium (as Cd)	mg/l	0.003	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Lead (as Pb)	mg/l	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc (as Zn)	mg/l	5	0.050	0.084	0.340	0.066	0.038	0.097	0.048	0.700
TSS	mg/l		<1	<1	<1	<1	<1	<1	<1	<1

Aluminium, Phosphate, Nitrite Nitrogen, Lithium, Total Chromium, Zinc, Lead, Cadmium, Copper, Manganese, & Boron are below the detection level (Source of standards: IS: 10500, Laboratory: M/s Perfact Researchers Pvt. Ltd (NABL Accredited)

3.10.5. DATA INTERPRETATION OF GROUNDWATER QUALITY

The Ground water quality results clearly explain that:

Buffer zone groundwater results: is taken as the area within 10 km radius from the proposed project site. Collected samples are from ground and Surface water sources.

The Ground water quality at location GW1, GW2, GW3, GW4, GW5, GW6, GW7 and GW8 shows that

- ❖ The concentration of Total Dissolved solid (TDS-mg/l) at GW1, GW2, GW3, GW4, GW5, GW6, GW7 and GW8 ranges between 233 - 1060 mg/l that is higher than the drinking water standards (IS:10500). Slightly high total dissolved solids have minimal impact on human health but according to BIS, the TDS level between 500- 2000 ppm is not considered fit for drinking water.
- ❖ The concentration of Chloride ranges between 43 mg/l- 223.9mg/l.
- ❖ The total hardness of sites ranges between 116 mg/l – 368 mg/l
- ❖ Calcium in ranges between 22.4 mg/l- 76.8 mg/l,
- ❖ Magnesium in ranges between 14.6 mg/l- 42.8 mg/l;
- ❖ Alkalinity ranges between 70.6 mg/l- 212.5 mg/l

SURFACE WATER QUALITY RESULTS

“Common Bio-Medical Waste Treatment Facility ” at SF Nos. 131/1A2 & 154/11, Noothalapuram village , Nilakottai Taluk, Dindigul By M/s Dindigul Waste Management Private Limited .

Table 52. Surface water quality Results

Parameters	Unit	IS 10500:2012 (Drinking water standard)	Selvam nagar (Mining pond S.W)	Seethapuram Lake (S.W)	Sengatampatti near lake (S.W)	Nillakkattai (S.W)	Water Body in East Dir (S.W)
Colour	Hazen	5.00	<1	<1	<1	<1	<1
Odour	--	Unobjectionable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Turbidity	NTU	5.00	1.7	5.8	5.1	43.3	7.4
pH		6.5-8.5	8.05	7.45	7.67	7.54	7.69
Temperature	°C	—	25.7	25.4	25.1	25.1	25.7
Conductivity	µmho/cm	—	242.7	209.8	191.4	421.0	180.7
Total Dissolved Solids	mg/l	500	119	124	121	256	116
Chloride (as Cl)	mg/l	250	34.0	37.0	35.0	78.0	37.0
Fluoride (as F)	mg/l	1.00	0.55	0.33	0.29	0.34	0.26
Total Hardness	mg/l	200	48	76	76	144	72
Calcium (as Ca)	mg/l	75	11.2	17.6	14.4	32.0	16.0
Magnesium (as Mg)	mg/l	30.0	4.9	7.8	9.7	15.6	7.8
Iron (as Fe)	mg/l	0.30	2.560	0.940	0.520	0.037	0.185
Sulphate (as SO4)	mg/l	200.0	4.2	3.5	2.1	19.2	2.9
Nitrate Nitrogen	mg/l	45.0	6.9	6.3	3.2	10.2	4.1
Nitrite Nitrogen	mg/l	—	<0.1	<0.1	<0.1	<0.1	<0.1
Alkalinity	mg/l	200	43.8	72.5	73.9	124.8	69.1
Aluminum (as Al)	mg/l	—	<0.02	0.37	0.15	3.82	0.35
Boron	mg/l	0.5	<0.1	<0.1	<0.1	<0.1	<0.1
Phosphate	mg/l	—	<0.01	0.10	<0.01	<0.01	<0.01
Sodium (as Na)	mg/l	—	11.7	7.6	7.1	26.2	8.1
Potassium (as K)	mg/l	—	4.7	4.2	1.9	4.7	2.7
Total Chromium	mg/l	0.05	BDL	BDL	BDL	BDL	BDL
Nickel (as Ni)	mg/l	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Manganese (as Mn)	mg/l	0.10	<0.1	<0.1	<0.1	<0.1	<0.1
Copper (as Cu)	mg/l	0.05	<0.02	<0.02	<0.02	<0.02	<0.02
Mercury (as Hg)	mg/l	—	<0.01	<0.01	<0.01	<0.01	<0.01
Cadmium (as Cd)	mg/l	0.003	<0.001	<0.001	<0.001	<0.001	<0.001
Lead (as Pb)	mg/l	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc (as Zn)	mg/l	5	0.063	0.045	0.179	0.040	0.058
TSS	mg/l	—	5.6	6.0	2.8	6.4	6.4

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BOD	mg/l		6.1	6.0	9.1	5.8	8.1
COD	mg/l		24	24	40	24	40
DO	mg/l		4.8	4.8	5.0	4.2	5.0
Ammonical Nitrogen	mg/l		<1	<1	<1	<1	<1
Oil & Grease	mg/l						
Total Coliform	MPN/100ml		1500	930	1100	1200	930

Zinc, Aluminium, Boron, Iron, Total Chromium, Nickel, Manganese, Copper, Mercury, Cadmium, Arsenic, Lead, & Selenium are below the detection level (Source of standards: IS: 10500, Laboratory: M/s Perfact Researchers Pvt. Ltd (NABL Accredited)

Table 53. Surface Water quality criteria as per CPCB

Designated-Best-Use	Class of water	Criteria
Drinking Water Source without conventional treatment but after disinfection	A	pH between 6.5 and 8.5 Dissolved Oxygen 6 mg/l or more Biochemical Oxygen Demand 5 days 20 °C 2 mg/l or less
Outdoor bathing (Organised)	B	pH between 6.5 and 8.5 Dissolved Oxygen 5 mg/l or more Biochemical Oxygen Demand 5 days 20 °C 3 mg/l or less
Drinking water source after conventional treatment and disinfection	C	pH between 6 to 9 Dissolved Oxygen 4mg/l or more Biochemical Oxygen Demand 5 days 20 °C 3mg/l or less
Propagation of Wildlife and Fisheries	D	pH between 6.5 to 8.5 Dissolved Oxygen 4 mg/l or more Free Ammonia (as N) 1.2 mg/l or less
Irrigation, Industrial Cooling, Controlled Waste disposal	E	pH between 6.0 to 8.5 Electrical Conductivity at 25 °C micro mhos/cm Max.2250 Boron Max. 2 mg/l

(Source: Surface Water quality criteria as per CPCB)

3.10.6. DATA INTERPRETATION OF SURFACE WATER QUALITY

The baseline quality of water based on the results of the surface water quality monitoring within the study area, it is observed that Quality of SW 1, SW2,SW3,SW4,SW5,SW6 meets the requirement of Class B and Class C,hence it is used as outdoor bathing and drinking water.

3.11. SOIL QUALITY

3.11.1. SOIL TYPE

Soil type

Soil in the area may be classified as:

- Loamy sand to sandy loam
- Sandy clay loam
- Sandy clay
- Windblown sand
- River sand

3.11.2. CRITERIA FOR SELECTING SAMPLING LOCATION:

Soil samples were collected from nine locations, i.e. onsite, Thummalapatti, Sengattanpatti, Ottupatti, Sevugampatti, Chinnamanayakkan Kottai, Othupatty, Selvam Nagar and Singarakottai to assess the soil condition in the project influenced area and the soil analysis was carried out as per the guidelines of the Indian Standards (IS). Soil quality monitoring locations are shown in the topographical map. To assess the soil quality of the proposed area, the following 9 stations were selected. The soil profile and quality were studied at different locations near the project site. Location of Soil sampling stations is described below.

Soil sampling locations are generally selected based on the variability within a field, areas that have had different crop history, yield, and fertiliser treatments, or that vary substantially in slope, texture, depth, or soil colour. The Soil characteristics for the project location are influenced by topography, soil depth and soil type.

The sampling design is a fundamental part of data collection for scientifically based decision making. A well-developed sampling design plays a critical role in ensuring that data are enough to draw the conclusions needed. The samples are collected to determine nutrient content, composition, and other characteristics such as the acidity or pH level. The locations of soil sampling are described below:

3.11.3. SAMPLING LOCATION

Table 54. Soil sampling locations

S.No	Location	Distance and direction	Latitude & longitude	Land Use/Land Type	Environmental Significance
S1	Onsite	Onsite	10°12'28.38"N 77°49'0.66"E	Land put to non agricultural uses- Residential	Existing Soil quality at core zone
S2	Thumlapatti	0.93km SSE	10°11'59.08"N 77°48'51.20"E	Permanent Pastures and Other grazing land- Grassland	Existing Soil quality at Buffer zone
S3	Sangatampatti	1.31km NW	10°12'38.28"N 77°47'24.59"E	Permanent Pastures and Other grazing land- Grassland	

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S4	Ottupatti	1.50km North	10°12'56.63"N 77°48'18.61"E	Permanent Pastures and Other grazing land-Grassland
S5	Sevugampatti	1.58km NW	10°11'56.86"N 77°48'18.78"E	Permanent Pastures and Other grazing land-Grassland
S6	Chinamanayakan kottai	1.6km SW	10°11'47.19"N 77°49'38.05"E	Permanent Pastures and Other grazing land-Grassland
S7	Othupatty	1.63km SE	10°11'45.66"N 77°49'58.77"E	Permanent Pastures and Other grazing land-Grassland
S8	Singarakottai	1.75 km NW	10°13'8.14"N 77°48'18.06"E	Permanent Pastures and Other grazing land-Grassland
S9	Selvam Nagar	2.0km SE	10°12'33.28"N 77°50'39.90"E	Permanent Pastures and Other grazing land-Grassland

3.11.4. SOIL SAMPLING LOCATIONS ON TOPOGRAPHICAL MAP

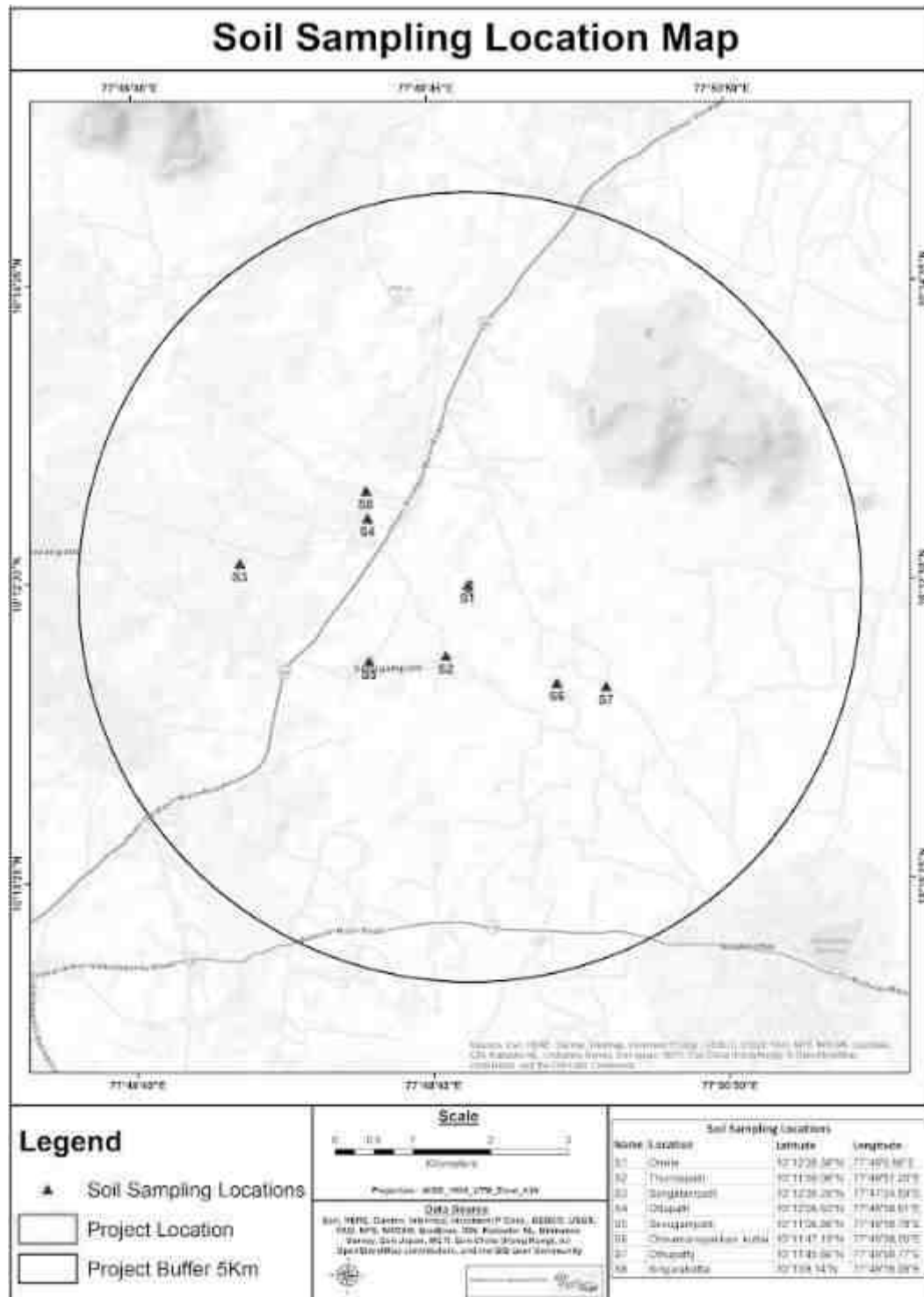


Figure 31. Soil sampling location on 10 km Topographical Map

3.11.5. SAMPLING PROCEDURE AND ANALYSIS

Augur method was used and samples were collected at 15 cm depth after removing the upper crust. Sample from each spot were well mixed with hand on a clean polythene sheet. About 1 kg of soil

was retained after the quartering process. This sample was kept for some time for air-drying at room temperature, stored in a polythene bag with a label at the top. Samples were analysed for bulk density, pH, nitrogen, phosphorus, calcium, magnesium and organic contents. Soil Quality Results are summarised below:

3.11.6. SOIL QUALITY RESULTS

Table 55. Soil Quality Results

Parameters	Unit	Onsite	Ottupatti	Othupatty	Sevugampatti	Singarakottai	Sangatampatti	Thumlapatti	Chinamanayakankottai
Physical properties									
Color	–	dull reddish Brwon 3/4	reddish Black 2/1	reddish Brwon 3/3	reddish Brwon 2/3	dull reddish Brwon 3/4	Brwon 3/4	dull reddish Brwon 3/4	reddish Black 2/1
Texture Class	–	Sandy Loam	Clay Loam	Sandy Loam	Sandy Clay Loam	Clay	Sandy Clay Loam	Sandy Clay Loam	Clay Loam
Texture	Sand %	69.2	41.6	62.1	56.0	36.9	58.0	47.4	39.8
	Silt %	21.4	24.8	24.0	19.4	21.0	14.4	19.3	21.5
	Clay %	9.3	33.4	13.8	24.4	42.0	27.5	33.2	38.5
Electric Conductivity	µS/cm	22.6	98.4	23.4	106.3	118.3	91.5	52.2	41.8
Moisture content	%	2.3	1.3	1.7	2.4	2.1	1.8	1.6	1.2
Bulk density	g/cc	1.46	1.34	1.39	1.36	1.21	1.38	1.32	1.37
Porosity	%	28.3	34.6	29.3	27	38	31	30	35
Chemical properties									
pH	-	7.90	7.82	7.10	7.83	7.84	8.11	7.72	7.56
Organic Matter	%	0.41	0.96	0.33	2.96	1.22	1.22	0.93	1.00
Available Nitrogen	mg/kg	9.8	19.3	11.7	23.3	26.4	19.2	13.3	9.8
Available Calcium	mg/kg	28.2	44.6	28.4	56.8	56.4	44.4	34.6	20.8
Available Magnesium	mg/kg	12.4	18.8	14.2	18.4	16.8	14.6	12.8	8.4
Available Potassium	mg/kg	9.8	19.3	11.7	23.3	26.4	19.2	13.3	9.8
Nitrate Nitrogen	mg/kg	54.6	43.6	27.8	39.6	33.6	37.3	26.9	31.8
Available	mg/kg	10.6	11.8	8.5	14.6	12.4	12.6	10.2	8.4

Phosphorous									
Chloride	mg/kg	26.6	53.3	26.6	62.1	79.9	44.4	35.5	35.5
Cation Exchange Capacity	meq/100gm	12.4	17.4	13.4	16.6	19.8	14.5	13.5	17.4
Available Sulphur	mg/kg	3.1	4.6	2.6	1.6	1.5	1.6	1.5	3.1
Available Sodium	mg/kg	23.0	38.6	18.5	40.4	44.5	32.5	28.8	21.2
Ortho Phosphate	mg/kg	-	-	-	-	-	-	-	-
Bicarbonate	mg/kg	170.8	146.4	158.6	109.8	122.0	134.2	97.6	85.4

Soil quality results (Core and Buffer zone) (Laboratory: M/s Perfact Researchers Pvt. Ltd (NABL Accredited)

3.11.7. FERTILITY OF SOIL AT ONSITE

Table 56. Onsite Fertility status of Soil

Parameters	Result in mg/kg	Low mg/kg (0-15 cm)	Medium mg/kg (0-15 cm)	High mg/kg (0-15 cm)	Remarks
Available Nitrogen	67.2	<156	157-313	>314	Low
Available Potassium	61.2	<67	67.1-156	>156	Low
Available Phosphorus	29.2	<5.5	5.6-13.9	>14.0	High

(Source: Laboratory: M/s Perfact Researchers Pvt. Ltd. (NABL Accredited)

3.11.8. Data Interpretation

Soil texture is one of the most important physical properties that affect its fertility and productivity. Texture influences the ease with which soil can be worked, the amount of water and air it holds, and the rate at which water can enter and move through the soil. The whole soil environment is regulated by soil texture. Soil texture governs most of the properties of the soil, its permeability, its capacity to retain water, its degree of aeration, its ability to make the nutrients stored in the clay-humus complex available to plants, its ability to withstand mechanical working of the top soil, and finally, its ability to support a permanent plant cover.

Core zone: Soil is predominantly sandy loam with slightly alkaline pH of 7.9. Traditionally soil in an area is classified based on mode of deposition. The reddish brown soil in the zone has an Organic matter content of 0.41%. The available nutrient content ranges from 3.1 mg/kg for Sulphur to 119 for Nitrogen, while sodium and potassium content were 23.0 mg/kg and 9.8 mg/kg. The soil is low on fertility due to lower available nitrogen and potassium content.

Buffer Zone: The soil in this zone is found in black as well as brown colour. pH value ranges from 7.11 to 8.11. Amount of primary nutrients like Organic matter ranges between 0.23 to 2.96 %, the

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Available Nitrogen ranges between 54.6 mg/kg to 84.5 mg/kg, the Available Phosphorus 8.4 mg/kg to 14.6 mg/kg, Available Potassium 9.8 mg/kg to 26.4 mg/kg. Primary nutrient profile shows that soil is average fertile due to the availability of low amounts of nitrogen, available potassium.

Primary nutrient profile shows the average fertile soil along the stretch. Nitrogen is the most important fertilizer element. Plants respond quickly to application of nitrogen. This element encourages above ground vegetative growth and gives a deep green colour to the leaves & Potassium is the third essential fertilizer element and it is essential for photosynthesis, for protein synthesis, starch formation and for the translocation of sugars. So, the addition of bio fertilizers will enhance the fertility of soil.

3.12. TOPOGRAPHY

Already discussed in section 2.3.2 in chapter 2 of EIA

3.13. LAND AND USE

INTRODUCTION:

Mankind’s presence on the earth and his modifications to the landscape has had a profound effect upon the natural environment. These anthropogenic influences on shifting patterns of land use are a primary component of many current environmental concerns as land use and land cover change is gaining recognition as a key driver of environmental change (Riebsame et al, 1994). Changes in land use and land cover are pervasive, increasingly rapid, and can have adverse impacts and implications at local, regional and global scales. Present study to better understand the impact of land use change within buffer zone of 10 km radius around the projects, the factors affecting land use needs to be examined.

METHODOLOGY:

Image processing software and GIS Software were used for the project. Image Processing Software was used for digital processing of the spatial data. Digital image processing techniques were applied for the mapping of the land use/land cover classes of the provided area from the satellite data. The methodology applied comes under following steps:

- Satellite imagery for the Area of Interest was created through image processing software.
- Geometric correction includes correction for geometric distortions due to sensor, earth geometry variations and conversion of the data to real world coordinates.
- Image enhancement is one of the important image processing functions primarily done to improve the appearance of the imagery to assist in visual interpretation and analysis.
- Google image is used as a reference map for base layer preparation.

Visual interpretation technique has been used for digitization of geographical feature for different land use and vegetation cover classes based on spatial pattern of geographic feature.

DESCRIPTION:

“Common Bio-Medical Waste Treatment Facility ” at SF Nos. 131/1A2 & 154/11, Noothalapuram village , Nilakottai Taluk, Dindigul By M/s Dindigul Waste Management Private Limited .

The land use/ land cover map has been generated on 1:50,000 scale using Satellite imagery, topographical maps, Survey of India and ground truth information. Based on the methodology developed for the present land use/ land cover, categories have been grouped under the following major land use/land cover categories.

Table 57. Land Use Pattern of buffer zone

S No.	Category	Type of Land	Area in SQ Km	Area In Ha	Percentage
1	Agriculture Land (73.27%)	Agriculture, Crop land	44.588	4458.8	14.02%
		Agriculture, Fallow Land	133.18	13318	41.88%
		Agriculture, Plantation	55.228	5522.8	17.37%
2	Buitup Land (8.23%)	Buitup-Rural	23.754	2375.4	7.47%
		Buitup-Urban	0.791	79.1	0.25%
		Buitup Mining	1.615	161.5	0.51%
3	Barren Land (9.63%)	Barren / Unculturable wastelands,Scrub land	29.995	2999.5	9.43%
		Barren / Unculturable wastelands,Barren rocky	0.637	63.7	0.20%
4	Forest Land (6.06%)	Forest,Deciduous	19.281	1928.1	6.06%
5	Wetland (2.81%)	Wetland / Waterbodies,Waterbodies	8.644	864.4	2.72%
		Wetland / Waterbodies,River / Stream / Canals	0.289	28.9	0.09%
	Total		318.002	31800.2	100.00%

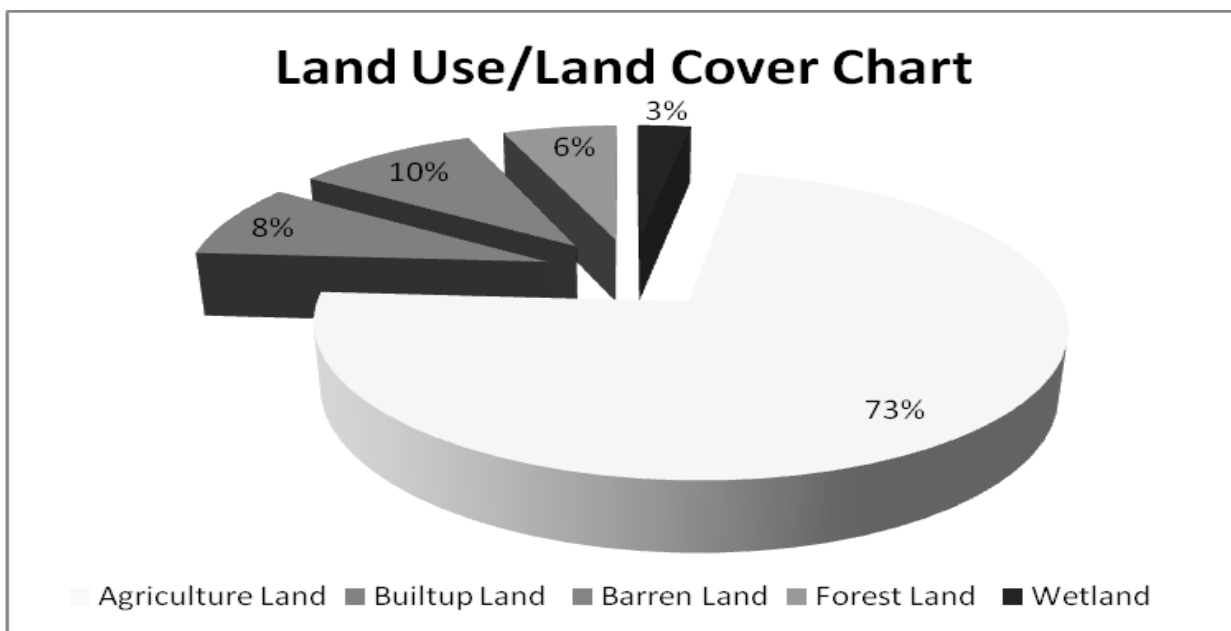


Figure 32. Land Use breakup of Buffer Zone

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Conclusion:

- **Built-up land:**

Built-up land includes the urban or rural settlements. The village locations and their area extent have been extracted from the existing satellite imagery. The major built-up area is about 2616.0 hectares which is 8.23% percent of the total 10 km radius study area.

- **Agricultural land:**

Based on Satellite Imagery and ground truth the major part is agricultural Land Use. The total agricultural area is about 23299.6 hectares which is 73.27 percent of the total study area.

- **Forest:**

Forest land includes the forest Deciduous area. The major forest area is about 1928.1 hectares which is 6.06 percent of the total 10 km radius study area.

- **Barren land:**

Based on satellite imagery and ground truth Waste/ Barren land their area extent has been extracted. The Barren land area is about 3063.2 hectares which is 9.63 percent of the total 10 km radius study area.

- **Rivers/Water Bodies:**It comprises areas of surface water, either impounded in the form of ponds, lakes and reservoirs or flowing as streams, rivers, canals etc. the total area covered by the river or water bodies is 893.3 hectares which is 2.81 percent of the total study area.

Land Use / Land Cover map of the study area

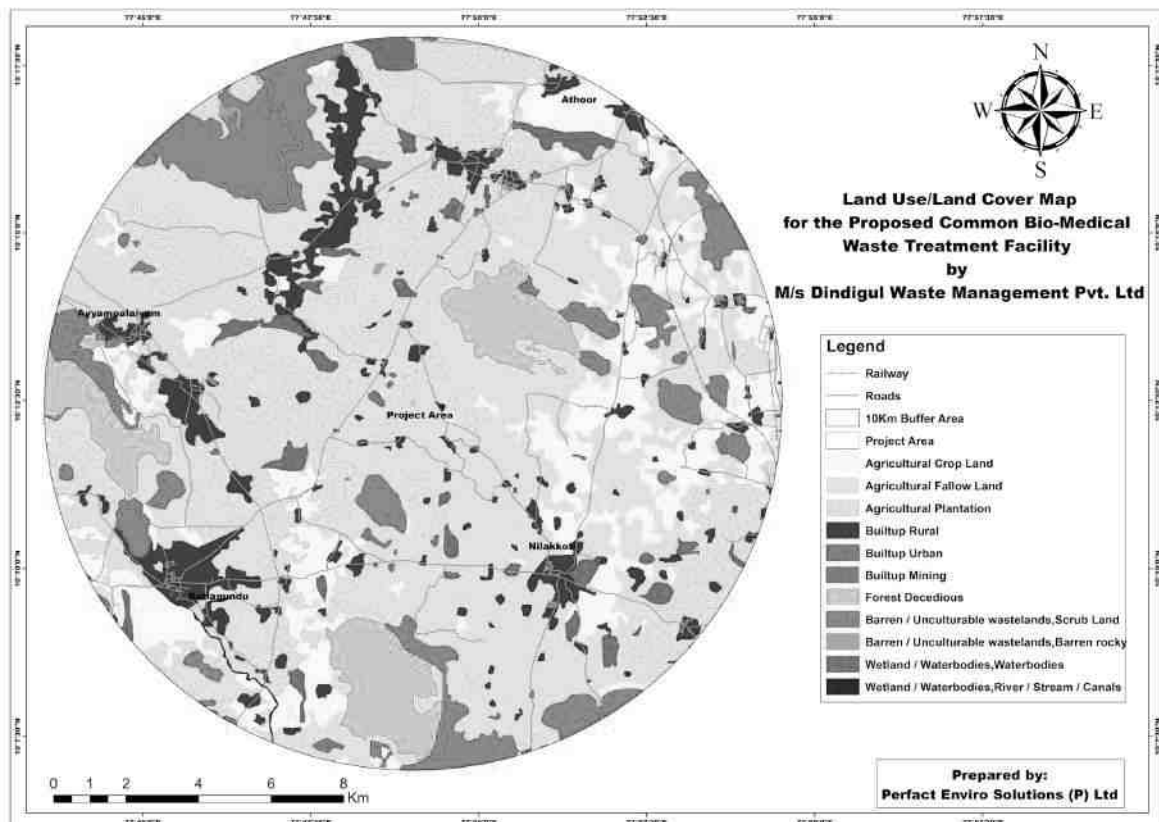


Figure 33. Land Use/Land Cover of buffer zone

3.14. ECOLOGY & BIODIVERSITY

BACKGROUND

The present study is a flora, fauna and associated ecology status assessment report for the proposed project of M/s Dindigul waste Management Pvt. Ltd. at Survey No: 133/1A2, 154/11 Nothulapuram Village, Taluk - Nilakottai, District- Dindigul, State- Tamil Nadu . The study is carried out by M/s Perfect Enviro Solutions Pvt. Ltd. in order to review the present status of natural ecology and biodiversity elements in the Core area and surrounding region i.e. Buffer area (10 km radius). The objectives of this study were to provide an assessment of present status of flora, fauna and ecological habitat in the site, comment upon ecological richness, assess the occurrence of ecologically important or rare variety of floral and faunal species, evaluate possible direct or indirect impact of the project on ecology - biodiversity and suggest mitigation measures accordingly. The present document considers the definition of ecological impact as “any and all changes in the structure and function of ecosystems.” In a general perspective, loss or alteration of species, communities and population structure may cause changes in ecological dynamics, interactions and functions and thereby may lead to ecological impact. Therefore, flora and fauna is documented and used in this particular study/survey as a primary tool to understand the status of ecology in core and buffer areas and analyse the ecological impact of the corresponding project.

BIOLOGICAL ENVIRONMENT

A reduction and deterioration of ecosystem services entail a loss of biodiversity, directly affecting the economic and social system, which guarantees the availability of food, human health, and a steady supply of healthy air and water. Ecosystems have the capacity to adapt to changes and absorb impacts. Throughout history they have been transformed by the action of man, but in the last 100 years this transformation has been faster and more extensive than in any other comparable period. As a result, the Earth's biodiversity has been considerably impoverished. According to the International Union for Conservation of Nature (IUCN), the extinction rate of species over the last century has been one thousand times higher than its natural rate, as a result of the increasing impact of human activities. The extinction of species threatens not just nature, but humanity itself. All living beings, including humans, depend on biodiversity and the natural resources such diversity provides.

In accordance with environmental regulation, Baseline study has been carried out to assess the environmental impacts due to the proposed activity and the management plan to minimise the predicted impacts. An evaluation of existing baseline ecological conditions in the study area before starting the construction as far as possible, adopting the best available methods and measures for minimising and mitigating project impact. Data collected through extensive survey of flora and fauna of the area.

Introduction of the project highlighting the Environmental sensitivity:

Table 58. Environmental sensitivity

Water Body		
Name	Distance	Direction
Nala near Lease Area	0.24 Km	NW
Nala near Chinnamanayakkankotti	1.5 Km	SE
Nala near Appinayakkanpatti	2.43 Km	SE
Pond near Perumpatti	2.46 Km	SSE
Pond near Kovilpatti	3.19 Km	SSE
Maruda Nadi	4.65 Km	SW
Nilakottai Lake	6.09 Km	SE
Canal near Devarappanpatti	6.65 Km	WNW
Pond near Puduppatti	6.80 Km	N
Marutha Nadi	6.92 Km	WNW
Pond near Chittayankottai	7.87 Km	NE
Sempatty Lake	8.06 Km	NE
Manjalar River	8.15 Km	SW
Periya Odai	8.38 Km	NW
Canal near Adusappatti	8.40 Km	SW
Kodavanar River (Kudagan River)	8.85 Km	N
Gopinath Pond	8.99 Km	NE
Vannamparai Odai	9.04 Km	NW
Kamrajar Sagar Dam	9.17 Km	N
Kaladi Lake	9.25 Km	SW
Veerakudumban Lake	9.62 Km	SW
Batlagundu Dam	9.8 Km	SW

Thalpathiveeran Sundaralingam Lake	9.89 Km	SW
Canal near Betal (Plantain garden)	10.10 Km	SW
Periyar main Canal	10.12 Km	SSW
Canal near C Paur	10.48 Km	SSW
Vaigai River	10.53 Km	SSW
Lake Kullichettipatti	10.93 Km	S
Canal near Avarampatti	12.98 Km	SE
Forest		
Senkattanpatti Reserved Forest	2.26 Km	NE
Kadavakurichi Reserved Forest	5.63 Km	SSW
Mankaradu Block Reserved Forest	6.31 Km	WSW
Jambuduraikkottai Reserved Forest	9.00 Km	NE

OBJECTIVES

The present study was undertaken with the following objectives:

- To assess the nature and distribution of vegetation in core and Buffer Zone.
- To assess the animal life spectra

To achieve the above objectives a study area was undertaken. The different methods adopted were as follows:

- Compilation of secondary data with respect to the study area from literature review published research articles available with various government agencies.
- Generation of primary data by undertaking systematic ecological studies in the area

METHODOLOGY FOR THE STUDY OF FLORA AND FAUNA

During the study, the floral composition of the area was evaluated through primary survey. The study area was divided according to habitat types followed by the random sampling method, surveys, exploration, collection, and preparation of specimens toward building an inventory of floral diversity of the area. Study of fauna species were observed at different timing during and night like standard walk transect, visual encounter survey etc. While doing the survey, photographs were taken for identification of species.

Buffer Sampling Location: Primary Survey of flora and fauna was conducted in only one location.

Map showing distance of Forest from project site.

DESCRIPTION OF FLORA & FAUNA OF CORE ZONE

FLORA OF BUFFER ZONE:

In the Buffer Zone varieties of trees, shrubs, palm, thorny plants, and grasses are found for which Primary survey, Public consultation and Secondary study was carried out in the 10 km Buffer Zone.

List of Trees, shrubs, Herbs, Grasses and other ornamental Plants

Table 59. List of Tree, Shrubs, Herbs, Grasses

S.No.	COMMON NAME	SCIENTIFIC NAME
Trees		
1	Banana	<i>Musa acuminata</i>
2	Coconut	<i>Cocos nucifera</i>
3	Nar Bans	<i>Dendrocalamus strictus</i>
4	Neem	<i>Azadirachta indica</i>
Shrubs:		
1.	Century Plant	<i>Agave americana</i>
2.	Kattu Sundai	<i>Solanum pubescens</i>
3.	Wild Jasmine	<i>Canthium parviflorum</i>
Herbs:		
1.	Indian Copperleaf	<i>Acalypha indica</i>
2.	chaff flower	<i>Achyranthes aspera</i>
3.	Thuthi	<i>Abutilon indicum</i>
4.	blue snake weed	<i>Stachytarpheta jamaicensis</i>
5.	Horse purslanes	<i>Trianthema triquetra</i>
6.	Puncture vine	<i>Tribulus Lanuginosus</i>
7.	Golden Senna	<i>Senna auriculata</i>
Grasses:		
1.	Indian Doab	<i>Cynodon dactylon</i>
2.	Tridax daisy	<i>Tridax porcumbens</i>
3.	Mountain Knot Grass	<i>Aerva lanata</i>

(Source: Field survey done by Ecology & Biodiversity team and Secondary Literature)

Table 60. List of Species Recorded in Core Zone

TYPE	COMMON NAME	SCIENTIFIC NAME	SCHEDULE
Amphibian:			
1.	Indian Toad	<i>Bufo melanostictus</i>	-

2.	<i>Asian common toad</i>	<i>Duttaphrynus melanostictus</i>	IV
3.	<i>Freshwater frog</i>	<i>Rana tigrina</i>	-
Reptiles:			
1.	Monitor Lizard	<i>Varanus bengalensis</i>	I
2.	Common garden lizard	<i>Calotes versicolor</i>	IV
3.	Common skink	<i>Mabuya carinata</i>	-
Mammals:			
1.	Common langur	<i>Presbytis entellus</i>	-
2.	Jungle cat	<i>Felis chaus</i>	II
3.	Small Indian Civet	<i>Viverricula indica</i>	II
4.	Palm Squirrel	<i>Funambulus palmarum</i>	-
5.	Grizzled Indian Squirrel	<i>Ratufa macroura</i>	I
6.	Common Mongoose	<i>Herpestes edwardsii</i>	II
7.	Large Fruit Bat	<i>Pteropus giganteus</i>	IV
8.	Short Nose Fruit Bat	<i>Cynopterus sphinx</i>	IV
9.	Indian pangolin	<i>Manis crassicaudata</i>	I
10.	Indian Cow	<i>Bos taurus</i>	-
11.	Goat	<i>Capra aegagrus hircus</i>	-
Aves:			
1.	Indian robin	<i>Saxicoloides fulicata</i>	-
2.	Asian koel	<i>Eudynamys scolopaceus</i>	-
3.	Peacock	<i>Pavo cristatus</i>	I
4.	Indian Cuckoo	<i>Cuculus micropterus</i>	IV
5.	Cattle Egret	<i>Bubulcus ibis</i>	IV
6.	Common Myna	<i>Acridotheres tristis</i>	IV
7.	House swift	<i>Apus affinis</i>	-
8.	Blue rock pigeon	<i>Columba livia</i>	IV
9.	House Crow	<i>Corvus splendens</i>	V
10.	House Sparrow	<i>Passer domesticus</i>	-
11.	Redvented BulBul	<i>Pycnonotus cafer</i>	-
12.	Indian robin	<i>Saxicoloides fulicata</i>	-
13.	Wild Turkey	<i>Meleagris gallopavo</i>	-
14.	Junglefowl	<i>Gallus gallus</i>	-
Insects:			
1.	Grasshopper	Hieroglyphus Sp.	-
2.	Common Indian crow	<i>Euploea core</i>	IV
3.	Common grass yellow	<i>Eurema hecabe</i>	-
4.	Blue pansy	<i>Junonia orithya</i>	-
5.	Lime butterfly	<i>Papilio demoleus</i>	-

(Source: Field survey done by Ecology & Biodiversity team)

Table 61. List of Floral species of Buffer Zone

S. No	Common Name	Scientific Name
Trees:		
1.	Acacia	<i>Acacia intsia</i>
2.	Acacia Sp.	<i>Acacia latronum</i>
3.	Acacia Sp.	<i>Acacia leucophloea</i>
4.	Acacia Sp.	<i>Acacia planifrons</i>
5.	Kadam Tree	<i>Adina cordifolia</i>
6.	Fine -leaved Albizia	<i>Albizia amara</i>
7.	Siris	<i>Albizia lebbeck</i>
8.	Black Siris	<i>Albizia odoratissima</i>
9.	Dhaora	<i>Anogeissus latifolia</i>
10.	Neem	<i>Azadirachta indica</i>
11.	Indian Balm of Gilead	<i>Balsamodendron berryi</i>
12.	Salai	<i>Boswellia serrata</i>
13.	Black Dammar Tree	<i>Canarium strictum</i>
14.	Wild Jasmine	<i>Canthium parviflorum</i>
15.	Satin Wood	<i>Chloroxylon swietenia</i>
16.	Dalchini	<i>Cinnamomum zylanicum</i>
17.	Hadjod	<i>Cissus quadrangularis</i>
18.	Beete	<i>Dalbergia latifolia</i>
19.	Nar Bans	<i>Dendrocalamus strictus</i>
20.	Panlata	<i>Derris indica</i>
21.	Sanatta	<i>Dodonaea viscosa</i>
22.	Wild Olive Tree	<i>Elaeocarpus serratus</i>
23.	Nilgiri	<i>Eucalyptus</i>
24.	Gamhar	<i>Gmelina arborea</i>
25.	Dhaman	<i>Grewia tiliifolia</i>
26.	Ratanjyot	<i>Jatropha carcus</i>
27.	Menhdi	<i>Lagerstroemia lanceolata</i>
28.	Mango	<i>Mangifera indica</i>
29.	Amla	<i>Phyllanthus emblica</i>
30.	Karanj	<i>Pongamia glabra</i>
31.	Vijaysar	<i>Pterocarpus marsupium</i>
32.	Soapnut Tree	<i>Sapindus emarginatus</i>
33.	Imli	<i>Tamarindus Indica</i>
34.	Teak	<i>Tectona grandis</i>
35.	Arjun	<i>Terminalia arjuna</i>
36.	Harad	<i>Terminalia chebula</i>
37.	Zaitun	<i>Gyrocarpus americanus</i>
38.	Toon	<i>Toona ciliata</i>
39.	White Gulmohar	<i>Delonix elata</i>
40.	Vijaysar	<i>Pterocarpus marsupium</i>
41.	Peacock Chaste Tree	<i>Vitex altissima</i>
42.	Dhundi	<i>Wrightia tinctoria</i>
Herbs:		
1.	Indian Copperleaf	<i>Acalypha indica</i>

2.	chaff flower	<i>Achyranthes aspera</i>
4.	Thuthi	<i>Abutilon indicum</i>
5.	Kupanti Sodakku	<i>Physalis lagascae</i>
6.	Common purslane	<i>Portulaca oleracea</i>
7.	Country mallow	<i>Sida cordifolia</i>
8.	blue snake weed	<i>Stachytarpheta jamaicensis</i>
9.	Horse purslanes	<i>Trianthema triquetra</i>
10.	Puncture vine	<i>Tribulus Lanuginosus</i>
11.	Golden Senna	<i>Senna auriculata</i>
14.	Black nightshade	<i>Solanum nigrum</i>
15.	Verbenas	<i>Lantana camara</i>
Grasses:		
1.	Indian Doab	<i>Cynodon dactylon</i>
2.	Tridax daisy	<i>Tridax porcumbens</i>
3.	Mountain Knot Grass	<i>Aerva lanata</i>
Shrubs:		
1.	Century Plant	<i>Agave americana</i>
2.	Kattu Sundai	<i>Solanum pubescens</i>
Climbers:		
1.	Pavakkai	<i>Momordica charantia</i>
2.	Pirandai	<i>Cissus quadrangularis</i>

(Source: Data from Forest Department)

Quantitative Analysis of Species by Belt Transect Method: In Buffer zone the most dominating species is Neem (*Azadirachta indica*) followed by Acacia (*Acacia Sp.*).

FAUNA OF BUFFER ZONE: List of Faunal Species in Buffer Zone is given below:

Table 62. List of Fauna species of Buffer Zone

TYPE	COMMON NAME	SCIENTIFIC NAME	SCHEDULE
Amphibian:			
1.	<i>Indian Toad</i>	<i>Bufo melanostictus</i>	-
2.	<i>Asian common toad</i>	<i>Duttaphrynus melanostictus</i>	IV
3.	<i>Freshwater frog</i>	<i>Rana tigrina</i>	-
Reptiles:			
1.	Krait	<i>Bungarus caeruleus</i>	IV
2.	Russell Viper	<i>Daboia russelii</i>	II
3.	Monitor Lizard	<i>Varanus bengalensis</i>	I
4.	<i>Common garden lizard</i>	<i>Calotes versicolor</i>	IV
5.	Common skink	<i>Mabuya carinata</i>	
6.	Indian cobra	<i>Naja naja</i>	IV
Mammals:			
1.	Bonnet macaque	<i>Macaca radiata</i>	II
2.	Common langur	<i>Presbytis entellus</i>	-
3.	Nilgiri langur	<i>Presbytis johni</i>	-

4.	Jungle cat	<i>Felis chaus</i>	II
5.	Rusty spotted cat	<i>Felis rubiginosa</i>	-
6.	Palm civet	<i>Paradoxurus hermaphroditus</i>	II
7.	Small Indian Civet	<i>Viverricula indica</i>	II
8.	Palm Squirrel	<i>Funambulus palmarum</i>	-
9.	Indian giant squirrel	<i>Ratufa indica</i>	II
10.	Grizzled Indian Squirrel	<i>Ratufa macroura</i>	I
11.	Black napped hare	<i>Lepus nigricollis</i>	IV
12.	Common Mongoose	<i>Herpestes edwardsii</i>	II
13.	Ruddy Mongoose	<i>Herpestes smithii</i>	II
14.	Large Fruit Bat	<i>Pteropus giganteus</i>	IV
15.	Short Nose Fruit Bat	<i>Cynopterus sphinx</i>	IV
16.	Jackal	<i>Canis aureus</i>	II
17.	Sloth Bear	<i>Melursus ursinus</i>	I
18.	Wild Pig	<i>Sus scrofa</i>	III
19.	Indian Elephant	<i>Elephas maximus</i>	I
20.	Gaur	<i>Bos gaurus</i>	I
21.	Spotted Deer	<i>Axis axis</i>	III
22.	Barking Deer	<i>Muntiacus muntjac</i>	III
23.	Sambar Deer	<i>Cervus unicolor</i>	III
24.	Indian pangolin	<i>Manis crassicaudata</i>	I
25.	Indian porcupine	<i>Hystrix indica</i>	IV
26.	Nilgiri Tahr	<i>Hemitragus hylocrius</i>	-
27.	Tiger	<i>Panthera tigris</i>	I
28.	Leopard	<i>Panthera pardus</i>	I
29.	Wild dogs	<i>Cuon alpinus</i>	II
30.	Mouse deer	<i>Tragulus meminna</i>	-
31.	Slender loris	<i>Loris tardiwadus lydekkerianus</i>	-
32.	Indian Cow	<i>Bos taurus</i>	-
33.	Goat	<i>Capra Aegagrus Hircus</i>	-
Aves:			
1.	Indian robin	<i>Saxicoloides fulicata</i>	-
2.	Spotted dove	<i>Spilopelia chinensis</i>	-
3.	White headed Babbler	<i>Turdoides affinis</i>	-
4.	Common babbler	<i>Turdoides caudatus</i>	-
5.	Asian koel	<i>Eudynamys scolopaceus</i>	-
6.	Spotted Owlet	<i>Athene brama</i>	-
7.	Indian Grey hornbill	<i>Ocyrceros birostris</i>	-
8.	Peacock	<i>Pavo cristatus</i>	I
9.	Coppersmith Barbet	<i>Psilopogon haemacephalus</i>	-

10.	Indian Cuckoo	<i>Cuculus micropterus</i>	IV
11.	Cattle Egret	<i>Bubulcus ibis</i>	IV
12.	Common Myna	<i>Acridotheres tristis</i>	IV
13.	Parakeets	<i>Psittacula krameri</i>	IV
14.	House swift	<i>Apus affinis</i>	-
15.	Pond Heron	<i>Ardeola grayii</i>	-
16.	Blue rock pigeon	<i>Columba livia</i>	IV
17.	Jungle Crow	<i>Corvus macrorhynchos</i>	-
18.	House Crow	<i>Corvus splendens</i>	V
19.	Indian black drongo	<i>Dicrurus adsimilis</i>	-
20.	Green Bee-Eater	<i>Merops orientalis</i>	-
21.	Black kite	<i>Milvus migrans</i>	-
22.	House Sparrow	<i>Passer domesticus</i>	-
23.	Redvented Bul Bul	<i>Pycnonotus cafer</i>	-
24.	Indian robin	<i>Saxicoloides fulicata</i>	-
25.	Spotted dove	<i>Spilopelia chinensis</i>	-
26.	White headed Babbler	<i>Turdoides affinis</i>	-
27.	Common babbler	<i>Turdoides caudatus</i>	-
28.	Wild Turkey	<i>Meleagris gallopavo</i>	-
29.	Junglefowl	<i>Gallus gallus</i>	-
Insects:			
1.	Grasshopper	Hieroglyphus Sp.	-
2.	Common Indian crow	<i>Euploea core</i>	IV
3.	Common grass yellow	<i>Eurema hecabe</i>	-
4.	Blue pansy	<i>Junonia orithya</i>	-
5.	Lime butterfly	<i>Papilio demoleus</i>	-
6.	Blue mormon	<i>Papilio polymnestor</i>	-
7.	Common leopard	<i>Phalanta phalantha</i>	-
8.	Ditch jewel	<i>Brachythemis contaminata</i>	-
9.	Ground skimmer	<i>Diplocodes trivialis</i>	-
10.	Crimson marsh glider	<i>Trithemis aurora</i>	-
11.	Long legged marsh skimmer	<i>Trithemis pallidinervis</i>	-

(Source: Field survey done by Ecology & Biodiversity team and data from forest Department)

Aquatic Macrophytes

ENDANGERED SPECIES

Endangered, Rare, Endemic and Threatened Species: Endangered and threatened animals of India have been listed in the **Schedule I of the Wildlife (Protection) Act, 1972** (amended in 2002). Schedule status is also given in .

No threatened, rare, endangered or endemic species were observed during the survey in the core zone. However, six (10) Schedule II species i.e. *Daboia russelii*, *Macaca radiata*, *Felis chaus*, *Paradoxurus hermaphroditus*, *Viverricula indica*, *Ratufa indica*, *Herpestes edwardsii*, *Herpestes*

smithii, Canis aureus and Cuon alpinus reported while two (08) schedule I Species are reported in Buffer zone lies within 10 km radius and is summarised in **Table-63**

Table 63. Endangered Species

TYPE	COMMON NAME	SCIENTIFIC NAME	SCHEDULE
Reptiles:			
1.	Monitor Lizard	<i>Varanus bengalensis</i>	I
Mammals:			
2.	Grizzled Indian Squirrel	<i>Ratufa macroura</i>	I
3.	Indian Elephant	<i>Elephas maximus</i>	I
4.	Gaur	<i>Bos gaurus</i>	I
5.	Indian pangolin	<i>Manis crassicaudata</i>	I
6.	Tiger	<i>Panthera tigris</i>	I
7.	Leopard	<i>Panthera pardus</i>	I
Aves :			
8.	Peacock	<i>Pavo cristatus</i>	I

3.15. SOCIO ECONOMIC REPORT

OBJECTIVE:

METHODOLOGY ADOPTED FOR DESKTOP STUDY

The methodology adopted to collect secondary data/information on socio-economic areas as given below. The aim of the present study was to identify the population details, literacy details, employment pattern, infrastructure facilities etc. All details were taken from primary census abstract 2011 and district census handbook 2011. The desktop study was performed in a 10 km radius from the project boundary.

The project being a common bio medical waste treatment plant has following valued Environmental component:

- Air Environment
- Water Environment
- Risk & Hazards
- Hydrology
- Ecology & Biodiversity

Details of census study is given below:

- ✧ Administrative details
- ✧ Population details
- ✧ Literacy details
- ✧ Employment pattern
- ✧ Infrastructure facilities

“Common Bio-Medical Waste Treatment Facility ” at SF Nos. 131/1A2 & 154/11, Noothalapuram village , Nilakottai Taluk, Dindigul By M/s Dindigul Waste Management Private Limited .

- ✧ Survey Methodology and observation
- ✧ Awareness and opinion

ADMINISTRATIVE DETAILS

Table 65. Administrative details of the study area

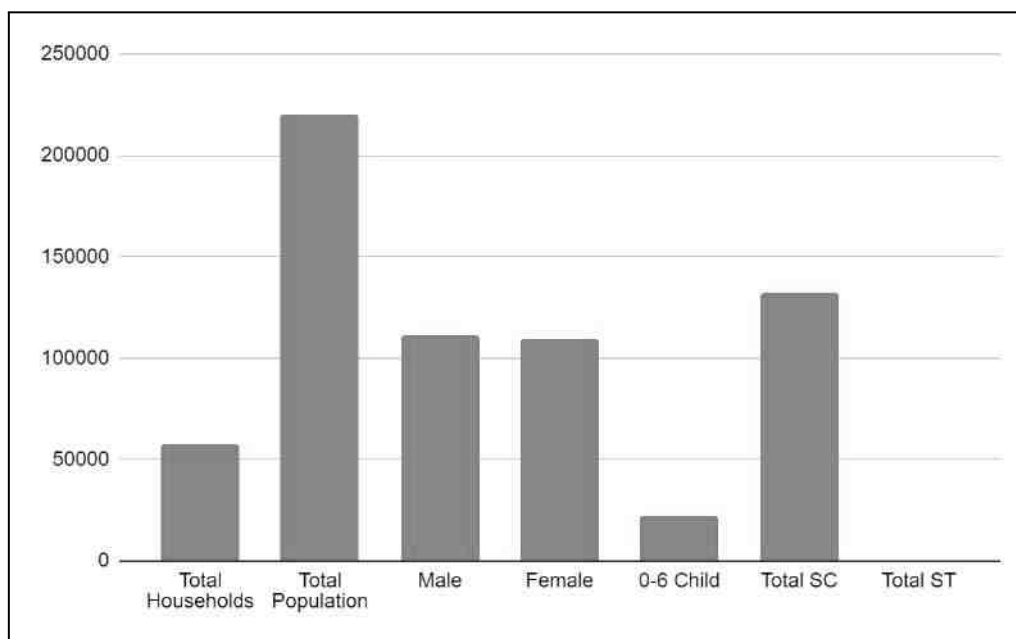
Sr. No	Taluka	Number of villages	Number of Town/Urban area
1	Kodanginaick an patti		
2	Chinnamanaic kankottai		
3	Nuthulapuram		
Total			2

Source: Primary census abstract 2011, Palghar, Maharashtra state

The 10 km radial study of the project site is falling under Maharashtra state. There are a total of 96 villages and 2 towns that fall from Palghar district. There was total of 3 talukas in the study area. Majority of the villages are coming from Vada Taluka.

Population details

According to census 2011, there are households residing in the study area. Average family size is 4.45 persons. Total population is in which total males are) and total females are . 0-6 child population is).SC population is and ST population Average sex ratio is females to males. Demographic details are presented below Table.



Demographic Pattern

DEMOGRAPHIC PROFILE OF THE STUDY AREA

Table 64. Demographic Profile of the Study area

Sl. No.	Taluka	Town/	Name	TRU	Total	Total	Male	Female	0-6	Total	Total
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Environmental Consultant : M/s Perfect Enviro Solutions Pvt. Ltd.

“Common Bio-Medical Waste Treatment Facility ” at SF Nos. 131/1A2 & 154/11, Noothalapuram village , Nilakottai Taluk, Dindigul By M/s Dindigul Waste Management Private Limited .

		Village			Households	Population			Child	SC	ST
1	Dindigul	635140	Ayyampal ayam	Rural	596	1901	977	924	124	1048	0
2	Dindigul	635422	Paraipatti	Rural	2108	8353	4239	4114	907	5021	0
3	Dindigul	635424	Attur	Rural	1669	6279	3112	3167	555	3722	0
4	Dindigul	635429	Ambathurai	Rural	2466	9166	4560	4606	983	5589	0
5	Dindigul	635430	Palayamkottai	Rural	1092	3750	1924	1826	359	2185	0
6	Dindigul	635431	Bodikamanvadi	Rural	739	2872	1484	1388	279	1667	0
7	Dindigul	635432	Sitharevu	Rural	4620	17113	8598	8515	1761	10276	0
8	Dindigul	635449	Pachamala yankottai	Rural	2705	10438	5291	5147	1117	6264	7
9	Dindigul	635450	Jambudurai Kottai	Rural	2319	9986	4875	5111	1015	6126	2
10	Dindigul	635451	Nariyuthu	Rural	1154	4391	2238	2153	453	2606	1
11	Dindigul	635457	Kanavaipatti	Rural	2606	9873	4858	5015	927	5942	0
12	Dindigul	635459	Kombaipatti	Rural	2210	8406	4223	4183	815	4998	0
13	Dindigul	635462	Veelinaickanpatti	Rural	601	2448	1284	1164	344	1508	1
14	Dindigul	635463	Nakkaluthu	Rural	345	1371	725	646	169	815	0
15	Dindigul	635464	Silukkuvarpatti	Rural	2703	10725	5274	5451	1190	6641	0
16	Dindigul	635465	Malayagoundanpatti	Rural	1383	5424	2716	2708	589	3297	0
17	Dindigul	635466	Kullalagundu	Rural	1828	7200	3560	3640	810	4450	2
18	Dindigul	635468	Ethilodu	Rural	2496	9580	4815	4765	1019	5784	0
19	Dindigul	635469	Koovanuthu	Rural	594	2419	1200	1219	319	1538	0

"Common Bio-Medical Waste Treatment Facility " at SF Nos. 131/1A2 & 154/11, Noothalapuram village , Nilakottai Taluk, Dindigul By M/s Dindigul Waste Management Private Limited .

20	Dindigul	635470	Musuvanuthu	Rural	852	3545	1821	1724	398	2122	0
21	Dindigul	635471	Bodiagoundanpatti	Rural	214	732	372	360	82	442	0
22	Dindigul	635472	Sivagnanapuram	Rural	434	1721	888	833	167	1000	0
23	Dindigul	635473	Kunnuvarankottai	Rural	1253	4887	2472	2415	491	2906	0
24	Dindigul	635480	Kulichettipatti	Rural	368	1380	694	686	125	811	0
25	Dindigul	635481	Sithargalatham	Rural	1604	6372	3299	3073	647	3720	0
26	Dindigul	635482	Pillaiyarnatham	Rural	1698	6712	3422	3290	725	4015	1
27	Dindigul	803590	Kannivadi (TP)	Urban	2746	10369	5139	5230	997	6227	14
28	Dindigul	803591	Sithayankottai (TP)	Urban	3522	13634	6907	6727	1336	8063	0
29	Dindigul	803596	Sevugampatti (TP)	Urban	3037	11730	5916	5814	1158	6972	3
30	Dindigul	803597	Ammainai ckanur (TP)	Urban	4983	19257	9728	9529	2031	11560	23
31	Dindigul	803599	Pattiveeranpatti (TP)	Urban	2290	8602	4177	4425	710	5135	0
Total					57235	220636	110788	109848	22602	132450	54

LITERACY PROFILE

Literacy details

Total literates in the study area are(65%) and total illiterates are(35%). Out of total literates' males are(37%) and females are(28%). Literacy details are present in table below

LITERACY PROFILE OF THE STUDY AREA

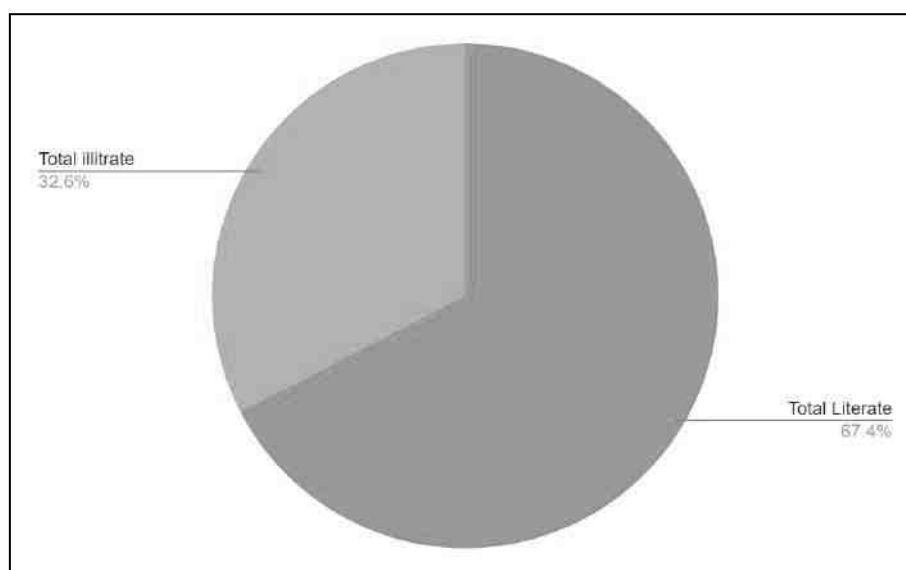
“Common Bio-Medical Waste Treatment Facility ” at SF Nos. 131/1A2 & 154/11, Noothalapuram village , Nilakottai Taluk, Dindigul By M/s Dindigul Waste Management Private Limited .

Table 65. Literacy profile of the study area

S. No	Name	Total Literate	Male	Female	Total Illiterate	Male Illiterate	Female Illiterate
1	Ayyampalayam	1206	728	478	695	249	446
2	Paraipatti	5168	3027	2141	3185	1212	1973
3	Attur	4670	2517	2153	1609	595	1014
4	Ambathurai	6137	3446	2691	3029	1114	1915
5	Palayamkottai	2385	1402	983	1365	522	843
6	Bodikamanvadi	1686	1005	681	1186	479	707
7	Sitharevu	10827	6050	4777	6286	2548	3738
8	Pachamalayankottai	6912	3925	2987	3526	1366	2160
9	Jambudurai Kottai	6740	3570	3170	3246	1305	1941
10	Nariyuthu	2954	1655	1299	1437	583	854
11	Kanavaipatti	7338	3894	3444	2535	964	1571
12	Kombaipatti	5106	2898	2208	3300	1325	1975
13	Veelinaickanpatti	1568	912	656	880	372	508
14	Nakkaluthu	881	526	355	490	199	291
15	Silukkuvarpatti	7272	3870	3402	3453	1404	2049
16	Malayagoundanpatti	3463	1935	1528	1961	781	1180
17	Kullalagundu	4773	2684	2089	2427	876	1551
18	Ethilodu	5962	3426	2536	3618	1389	2229
19	Koovanuthu	1459	818	641	960	382	578
20	Musuvanuthu	2123	1217	906	1422	604	818
21	Bodiagoundanpatti	516	297	219	216	75	141
22	Sivagnanapuram	1095	635	460	626	253	373
23	Kunnuvarankottai	3256	1808	1448	1631	664	967
24	Kulichettipatti	1015	545	470	365	149	216
25	Sithargalnatham	4136	2372	1764	2236	927	1309
26	Pillaiyarnatham	4498	2536	1962	2214	886	1328
27	Kannivadi (TP)	7188	3999	3189	3181	1140	2041
28	Sithayankottai	9492	5232	4260	4142	1675	2467

"Common Bio-Medical Waste Treatment Facility " at SF Nos. 131/1A2 & 154/11, Noothalapuram village , Nilakottai Taluk, Dindigul By M/s Dindigul Waste Management Private Limited .

	(TP)						
29	Sevugampatti (TP)	8077	4439	3638	3653	1477	2176
30	Ammainaickanur (TP)	13803	7587	6216	5454	2141	3313
31	Pattiveeranpatti (TP)	6992	3542	3450	1610	635	975
Total		148698	82497	66201	71938	28291	43647



OCCUPATIONAL AND LIVELIHOOD

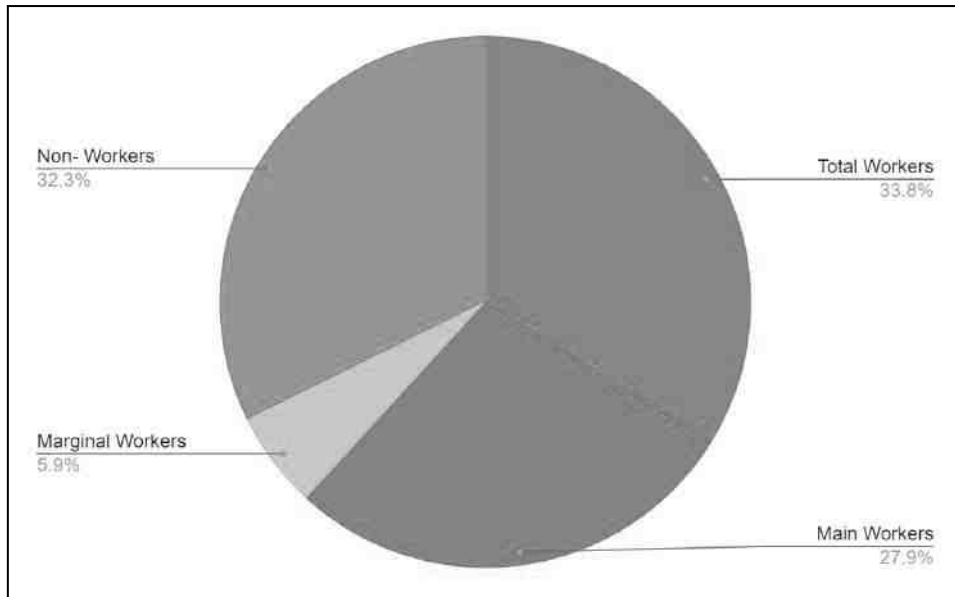
Table 66. Occupational Profile of the study area

S. No.	Name	Total Workers	Main Workers	Marginal Workers	Non- Workers
1	Ayyampalayam	1216	1147	69	685
2	Paraipatti	5158	4655	503	3195
3	Attur	2748	2234	514	3531
4	Ambathurai	5344	4909	435	3822
5	Palayamkottai	2174	2134	40	1576
6	Bodikamanvadi	1591	1062	529	1281
7	Sitharevu	8901	7231	1670	8212
8	Pachamalayankottai	5625	5324	301	4813
9	Jambudurai Kottai	5210	4796	414	4776
10	Nariyuthu	2656	2187	469	1735

“Common Bio-Medical Waste Treatment Facility ” at SF Nos. 131/1A2 & 154/11, Noothalapuram village , Nilakottai Taluk, Dindigul By M/s Dindigul Waste Management Private Limited .

11	Kanavaipatti	4431	3874	557	5442
12	Kombaipatti	4684	3341	1343	3722
13	Veelinaickanpatti	1464	1435	29	984
14	Nakkaluthu	775	757	18	596
15	Silukkuvarpatti	5236	4267	969	5489
16	Malayagoundanpatti	3039	1909	1130	2385
17	Kullalagundu	3763	2718	1045	3437
18	Ethilodu	5372	4449	923	4208
19	Koovanuthu	1396	1113	283	1023
20	Musuvanuthu	2104	1947	157	1441
21	Bodiagoundanpatti	425	223	202	307
22	Sivagnanapuram	1023	716	307	698
23	Kunnuvarankottai	2562	1144	1418	2325
24	Kullichettipatti	864	792	72	516
25	Sithargalnatham	3675	2395	1280	2697
26	Pillaiyarnatham	3231	2223	1008	3481
27	Kannivadi (TP)	5320	4522	798	5049
28	Sithayankottai (TP)	5864	4698	1166	7770
29	Sevugampatti (TP)	4582	4158	424	7148
30	Ammainaickanur (TP)	9108	7784	1324	10149
31	Pattiveeranpatti (TP)	3342	3049	293	5260
Total		112883	93193	19690	107753

“Common Bio-Medical Waste Treatment Facility ” at SF Nos. 131/1A2 & 154/11, Noothalapuram village , Nilakottai Taluk, Dindigul By M/s Dindigul Waste Management Private Limited .



SOCIO STUDY USING PRIMARY SURVEY

METHODOLOGY

Distance and directions of villages from the project site

Table 67. Distance and direction of the villages

Source: Google Earth

The details of surveyed villages

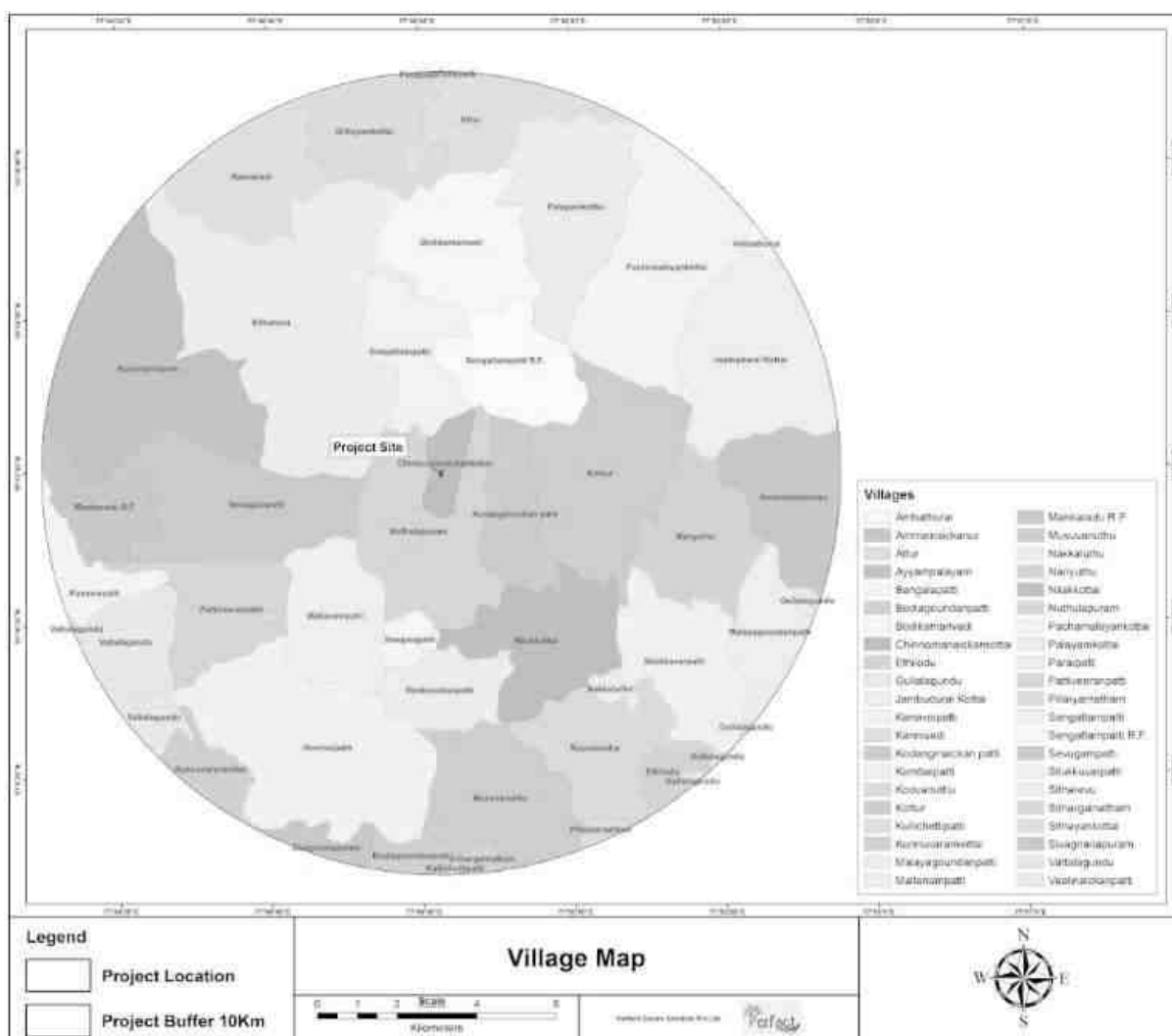


Figure 34. Village Map

Source: Survey by Socio-economic team

PHYSICAL AND SOCIAL INFRASTRUCTURE AND AMENITIES

EDUCATION INFRASTRUCTURE

According to the census of India, Primary Schools provide education from class 1st to 5th, Middle Schools having facilities to provide education upto 8th, Secondary school for the students of class 9th and 10th and Senior Secondary teaches children studying in class 11th and 12th.

According to the consultations with local communities and teachers, it is understood that a well developed infrastructure for the education system in villages and there is also easy access for college for higher education in nearby cities. Boys and girls are given equal opportunities for education by their parents. Most of the children from the villages go for higher studies. The literacy rate was observed to have increased in the last few years.

HEALTH INFRASTRUCTURE AND SERVICES

“Common Bio-Medical Waste Treatment Facility ” at SF Nos. 131/1A2 & 154/11, Noothalapuram village , Nilakottai Taluk, Dindigul By M/s Dindigul Waste Management Private Limited .

As per discussion with Panchayat members and according to the village directory census of India, 2011 the project areas have well developed infrastructure for health services. There is a maternity centre, family welfare centre, health centre and hospitals in approx every village. Primary health care facilities are available in some of them. It was also revealed during the consultation that there is a lack of ambulance services in the area. However, there were no major diseases reported during the survey by the team members. The most common ailments being cold, cough and seasonal fevers.

WATER SUPPLY

The primary source of water for drinking and household purposes in the study area is Supply, borewell and tubewell available in the villages. Every household has easy access to water.

Most households have their own toilet facilities at home, very few of them use common toilets.

ELECTRIC SUPPLY

During physical observation and consultation with local communities it is understood that every village has electricity supply for domestic uses.

HEALTH IMPACT ASSESSMENT

Health Impact Assessment is the process of assessing the health impacts of policies, plans and projects in different sectors. It helps decision makers to plan alternatives and improvements to prevent disease/injury and to promote health.

The health impact assessment of any industry defines the expected injuries that will happen to the workers due to the various activities and to prepare a mitigative plan against the occupational hazards. The Common Biomedical Waste Treatment Facility in the area will directly and indirectly affect the local inhabitants or the workers at the site. The release of leachates from the waste will deteriorate the soil quality of the areas as well it also degrades the underground water quality. The degradation and decomposition of stored waste will produce foul smell in the localities and there may be chances for spread of various air and water borne diseases.

The mitigation measures adopted to reduce the health damages to workers and the local communities during the construction and operation phase of the project by providing “Personal Protective Equipment” to workers like masks, ear muffs, shoes, helmets, safety jackets and it will be mandatory to use during working hours. During construction phase, dust will be generated which will cause respiratory problems to the workers as well as nearby inhabitants so, to suppress dust proper dust mitigation will be taken as per Environmental (Protection) Amendment Rules, 2018 which are mentioned below:

“Common Bio-Medical Waste Treatment Facility ” at SF Nos. 131/1A2 & 154/11, Noothalapuram village , Nilakottai Taluk, Dindigul By M/s Dindigul Waste Management Private Limited .

- ❖ No loose soil or sand or construction and demolition waste will be left uncovered.
- ❖ Wind- breaker and barricading of appropriate height i.e.1/3rd of the building height and maximum upto 10 m will be provided.
- ❖ Water sprinkling system will be put in place.
- ❖ No uncovered vehicles carrying construction materials and waste will be permitted.

During the operation phase, health insurance for labourers will be ensured, first aid kit will be provided within the project premises and ambulances will be made available for any type of emergency situation, one permanent helpline number will be provided for any emergency situation. Proper training will be given to employees. Regular medical checkup will be done for the employee at the site.

3.16. TRAFFIC DENSITY

TRAFFIC SURVEY :

The traffic study was done on the nearby road ascertain the present traffic was on the road and thereafter impact be because of the addition of traffic due to the Proposed Common Bio-Medical Waste Treatment Facility by M/s Dindigul waste Management Pvt. Ltd located at Nothulapuram Village, Taluk - Nilakottai, District- Dindigul, State- Tamilnadu

FACTORS and ASSUMPTIONS: Version Factor (Ref: IRC 106, 1990):

Table 68. PCU values as per IRC

S. No.	VEHICLE TYPE	PCU VALUE
1	Car	1
2	Two-wheeler	0.5
3	Truck/bus	2.2
4	Auto	1.2
5	LCV	2
6	Tractor and Tractor	5
7	Cycle rickshaw	0.5

METHODOLOGY:

1. Manual counting of vehicle plying on the roads
2. To maintain the precision of the report, manual shift is given to the surveyor.
3. The vehicles are then calculated by converting the same in PCU values.

PCU values are used to convert various vehicles into one standard vehicle i.e. Passenger car units

Traffic Analysis: NH-45, 2 Lane, 7.5 Metres

Table 69. Traffic analysis of (NH-45)

Hours	Baseline	Incremental				
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“Common Bio-Medical Waste Treatment Facility ” at SF Nos. 131/1A2 & 154/11, Noothalapuram village , Nilakottai Taluk, Dindigul By M/s Dindigul Waste Management Private Limited .

	Car	Bus/Truck	Two Wheeler	Others/Auto	PCU/ Hr	PCU/ Hr	Incremental PCU/ Hr	Capacity of Road in PCU/Hr	LOS Baseline	LOS Incremental	% increase
06:00- 07:00	394	243	146	16	1021	5	1026	2550	0.400	0.403	0.522
07:00- 08:00	510	215	173	18	1091	4	1095	2550	0.428	0.429	0.377
08:00-09:00	634	153	223	23	1108	5	1112	2550	0.434	0.436	0.425
09:00-10:00	792	151	269	24	1288	6	1295	2550	0.505	0.508	0.502
10:00-11:00	739	120	265	28	1169	5	1175	2550	0.459	0.461	0.456
11:00-12:00	660	135	242	27	1111	4	1115	2550	0.436	0.437	0.400
12:00-13:00	636	181	230	26	1180	4	1184	2550	0.463	0.464	0.376
13:00-14:00	669	191	215	25	1226	5	1231	2550	0.481	0.483	0.435
14:00-15:00	623	222	192	23	1234	4	1239	2550	0.484	0.486	0.360
15:00-16:00	650	188	204	27	1198	5	1203	2550	0.470	0.472	0.445
16:00-17:00	591	218	184	22	1190	4	1193	2550	0.467	0.468	0.299
17:00-18:00	606	145	211	26	1061	4	1065	2550	0.416	0.418	0.418
18:00-19:00	801	157	250	29	1306	6	1312	2550	0.512	0.514	0.476
19:00-20:00	774	182	234	30	1328	5	1333	2550	0.521	0.523	0.401
20:00-21:00	591	184	219	26	1137	4	1141	2550	0.446	0.448	0.375
21:00-22:00	475	225	188	25	1094	6	1100	2550	0.429	0.431	0.568
22:00-23:00	325	267	142	21	1008	8	1017	2550	0.395	0.399	0.816
Average	616	187	211	24	1162	5	1167	2550	0.46	0.46	0.45

PROPOSED TRAFFIC FROM SITE:

Table 70. Summary of Traffic Survey

NH-45	Parameter	Existing	Proposed
	WIDTH (m)	7.5	
	Carrying Capacity (PCU/ Hr)	2550	
	Traffic (PCU/Hr)	1162	5
	LOS	0.46 i.e. Cat "C"	0.46 i.e. Cat "C"

II. Traffic Analysis: Karumbuchaalai Road, 2 Lane, 5 Metres

Table 71. Traffic Analysis Of Karumbuchaalai Road

Hours	Baseline					Incremental		Capacity of Road in PCU/H	LOS Baseline	LOS Incremental	% increase
	Car	Bus/Truck	Two Wheeler	Others/Auto	PCU/ Hr	PCU/ Hr	Incremental PCU/ Hr				

“Common Bio-Medical Waste Treatment Facility ” at SF Nos. 131/1A2 & 154/11, Noothalapuram village , Nilakottai Taluk, Dindigul By M/s Dindigul Waste Management Private Limited .

								r			
06:00- 07:00	4	3	12	2	19	5	25	2550	0.008	0.010	27.458
07:00- 08:00	6	2	34	3	31	4	35	2550	0.012	0.014	13.290
08:00-09:00	8	4	52	1	44	5	49	2550	0.017	0.019	10.693
09:00-10:00	6	2	62	4	46	6	52	2550	0.018	0.021	14.078
10:00-11:00	8	1	60	2	43	5	48	2550	0.017	0.019	12.410
11:00-12:00	4	2	56	2	39	4	43	2550	0.015	0.017	11.486
12:00-13:00	6	3	53	1	40	4	44	2550	0.016	0.017	11.086
13:00-14:00	8	1	50	0	35	5	41	2550	0.014	0.016	15.137
14:00-15:00	6	2	44	2	35	4	39	2550	0.014	0.015	12.772
15:00-16:00	8	4	46	3	43	5	49	2550	0.017	0.019	12.277
16:00-17:00	6	3	38	2	34	4	38	2550	0.013	0.015	10.447
17:00-18:00	4	1	32	0	22	4	27	2550	0.009	0.010	20.001
18:00-19:00	6	2	18	4	24	6	30	2550	0.009	0.012	25.687
19:00-20:00	8	4	12	3	26	5	32	2550	0.010	0.012	20.182
20:00-21:00	4	2	8	2	15	4	19	2550	0.006	0.007	28.801
21:00-22:00	4	0	4	0	6	6	12	2550	0.002	0.005	103.603
22:00-23:00	2	0	2	0	3	8	11	2550	0.001	0.004	274.445
Average	6	2	34	2	30	5	35	2550	0.01	0.01	36.70

Table 72. I Summary of traffic Survey

Karumbuchalalai Road	Parameter	Existing	Proposed
	WIDTH (m)	5	
	Carrying Capacity (PCU/ Hr)	2550	
	Traffic (PCU/Hr)	30	5
	LOS	0.01 i.e. Cat "A"	0.01 i.e. Cat "A"

Table 73. LOS Data

S.no	LOS Value (Ratio of V:C) (V/C)	Category	Inference based on IRC 106: 1990
1	0-0.2	A	Represents a condition of free flow; individual users are generally unaffected by others in the traffic and this condition is generally considered in the Excellent Category.
2	0.2-0.4	B	Represents a condition of stable flow; individual users have a level of comfort and convenience but less than that of A.

S.no	LOS Value (Ratio of V:C) (V/C)	Category	Inference based on IRC 106: 1990
3	0.4-0.6	C	Represents a condition of zonal stable flow; individual users are starting in a bit of discomfort; users start to feel inconvenience due to presence of other users on the road. General level of discomfort increases and there is a noticeable decline in convenience.
4	0.6-0.8	D	Represents the level of stable flow; Level of comfort of users is poor and discomfort is significant in the flow of traffic. This category traffic streams are extremely susceptible to traffic problems.
5	0.8-1	E	Represents operating conditions close to capacity level; freedom to traffic stream is low and the speed is relatively uniform but very less. Comfort and convenience is relatively poor and discomfort is visible.
6	1 or above	F	Breakdown Flow; These streams often break down, susceptible to long delays and therefore there is huge discomfort in these streams.

3.17 CONCLUSION

The carrying capacity of the NH-45 Road is much higher than the proposed traffic volume. The traffic (to & fro) from Common Bio-Medical Waste Treatment Facility by M/s Dindigul waste Management Pvt. Ltd will not create any traffic congestion.

The volume/capacity ratio is being same from 0.46 to 0.46 with LOS being “C” to “C” only

4. ENVIRONMENT IMPACT ASSESSMENT & MITIGATION MEASURES

Prediction of impacts is the most important component in the Environmental Impact Assessment studies. Several scientific techniques and methodologies are available to predict impacts of developmental activities on physical, ecological and socio-economic environments. Such predictions are superimposed over the baseline (pre-project) status of environmental quality to derive the ultimate (post-project) scenario of environmental conditions. The prediction of impacts helps to minimise the adverse impacts on environmental quality during pre and post project execution.

Generally, the environmental impacts are categorised as either primary or secondary. Primary impacts are those, which are attributed directly by the project and secondary impacts are those, which are indirectly induced and typically include the associated investment and changed patterns of social and economic activities by the proposed actions.

For the proposed project, the impact assessment shall be performed in following steps:

- Identification of interactions between activities and environmental receptors.
- Identification of potentially significant environmental impacts.

Based on this preliminary identification, environmental indices that are likely to be impacted due to the project are:

- Land use / Land cover: site preparation and construction/installation.
- Air quality: Dust generation during construction/installation, vehicle movement, loading/unloading, manufacturing process, transportation and operation of Boiler, DG set, APCS, etc.
- Noise: Vehicle movement during construction, operation of Boiler, DG set, APCS, manufacturing process, loading/unloading
- Water: Disposal of waste water from construction activity/ labour, manufacturing process, scrubbing, boiler, cooling tower, laboratory and other domestic use
- Soil: Excavation activity and chemical contamination.
- Storage and handling of Chemicals, solid and hazardous waste.
- Ecology and Biodiversity: clearance of vegetation during construction and emission from operational activities
- Socio – Economic: positive impact due to creation of jobs and increase in indirect income.
- Occupational health, community Health and safety: Occupational risk during various activities associated with construction

4.1. CONSTRUCTION/ INSTALLATION PHASE

4.1.1. ACTIVITY - PREPARATION AND LABELLING ACTIVITY

Aspects

- Loss of green cover
- Increased PM/ dust
- Increased gaseous emissions
- Increased ambient noise

Table 74. Activity- Site Preparation and Levelling

Environmental components	Impact	Proposed Mitigation Measures
Air Environment	Increased PM level and dust generation due to site preparation & levelling may cause respiratory problems to the workers and people in the vicinity.	-Construction activities for the project will be confined to the project site only for a short duration. -Water sprinkling will be done to reduce the dust generation. -Dust suppression systems (water spray) will be done as per requirement at the project site. -Adequate PPE and nose masks will be provided to the workers who will be engaged in dust generating activities.
Water Environment	-The storm water recharge capacity will be decreased. -Dust emission deposition over Surface water body may deteriorate its quality by increasing the pathogen in the water body and thereby affecting aquatic life and making water unfit for consumption.	-Proper drainage for storm-water will be maintained. -Water sprinkling will be done to reduce the dust generation. -Dust suppression systems (water spray) will be done as per requirement at the construction site.
Land Use	-	-
Soil Environment	Due to removal of vegetation, decrease in fertility of soil, chances of soil erosion.	-Compaction of soil will be done to avoid soil erosion.
Socio-Economic	-	-
Ecology & Biodiversity	-Increased PM Level will result in deposition of dust on leaves which may cause decrease in Transpiration rate of flora.	-Proposed construction will be carried out within the premises where the site is barren and vacant; adjacent areas are also vacant and have only bushes.
Noise & Vibration	During site preparation excavators will be used which may cause whole body vibration of the operator and also may cause auditory impact. Other machinery used for consolidation and compaction of	-Noise generated due to site preparation and levelling will be only for a specified period during day time only. Excavator deployed will have a closed cabin with a vibration isolator.

	concrete will also generate noise and vibrate which may cause physiological and psychological effects on the operators like annoyance, headache, hand arm vibration and whole-body vibration and may also cause annoyance to the people in the vicinity.	-Self compacting concrete will be used in place of consolidating the concrete by means of vibrators or hand consolidation due to which there will be minimal or negligible noise and vibration generation. -Proper barricading of the site will be done. Workers will be provided with ear plugs/muffs. -Though the area is isolated and away from habitats 500m away, all precautionary measures will be taken at site during construction
Hydrology & Geology	No major impact envisaged	
Solid & Hazardous Waste	None	None

4.1.2. ACTIVITY - INSTALLATION ACTIVITY

Aspects

- Emission of dust
- Increased PM level
- Generation of noise
- Soil contamination

Table 75. Activity- Installation of machinery

Environmental components	Impact	Proposed Mitigation Measures
Air Environment	Dust will be generated due to the installation of the machineries and other equipment within the project site, which may cause respiratory problems to the workers and decrease the aesthetic look of the area.	-Water sprinkling will be done to reduce the dust generation -Dust suppression systems (water spray) will be done. Soil or mud that will be generated from the project site during the installation of machinery will be properly stacked and covered within the project site for the due course of time and if required water sprinkling will be done on the muck so that it may not blow off.
Water Environment	No major impact envisaged	None
Land Use	None	None
Soil Environment	None	None
Socio-Economic	None	None
Ecology & Biodiversity	Increased PM Level will result in deposition of dust on leaves which may cause decrease in Transpiration rate of flora	Water sprinkling will be done to reduce the dust generation

Noise & Vibration	-Drilling and hammering for installation of different equipment / machines may generate noise and vibration. Drilling at high frequency may cause damage to nerves, tendons and muscles of the driller which may cause vibration white finger and may also cause psychological effects like annoyance and headache.	-Drilling machines should be of reputed make and in good condition and drillers may be provided anti-vibration gloves and earmuffs/plugs.
Hydrology & Geology	None	None
Solid & Hazardous Waste	None	None

4.1.3. ACTIVITY - OPERATION OF CONSTRUCTION MACHINERY (OPERATION OF CONSTRUCTION (CONCRETE MIXING MACHINERY, JCB, ETC

Aspects

- Used oil generation
- Air emission
- Dust generation
- Oil & Chemical Spillages
- Noise generation

Table 76. Activity- Operation of construction machinery

Environmental components	Impact	Proposed Mitigation Measures
Air Environment	-Emissions from the use of construction machinery will cause respiratory problems to the workers at site and nearby population. -Pollutants emitted from the stack will increase the Ground Level Concentration of pollutants which will affect the respiratory health of people in a nearby area.	-Adequate stack shall be provided in order to minimize the GLC. -Low Sulphur fuel shall be used in operation of DG sets. -Personal Protective Equipment like nose masks shall be provided to the construction workers. -Proper maintenance of construction equipment/ machineries, etc. -Dust suppression and water sprinkling systems will be installed for suppression of particulates.
Water Environment	Spillage of Oil & chemicals, if in any case encountered, can deteriorate the ground-water & surface water body. Which in turn may affect life also.	-The hazardous waste generated will be used oil apart from ETP sludge . Used oil will be stored in HDPE drums and kept in covered rooms under lock and key and will be sold to authorised vendors only.
Land Use	None	None
Soil Environment	None	None
Socio-Economic	None	None

Ecology & Biodiversity	-Increase in PM level will result in deposition of dust on leaves which may cause decrease in Transpiration rate of flora	-Water sprinkling will be done at the site to reduce dust emission.
Noise & Vibration	-Noise and vibration generated due to the operation of machinery and equipment may cause physiological and psychological effects on labours like annoyance, problems like speech interference, sleep disturbance, headache, Auditory impact, increase in heartbeat of elderly people. Running of machinery will cause vibration generation in the immediate surrounding area.	-Noise & vibration due to the running of concrete mixture/Pneumatic hammer will be prevented by Provision of protective devices like earmuff/plugs to the workers and keeping the machine in an enclosed system with a provision of vibration isolator. -Green belt will be developed at the project site which will act as a barrier and help in reducing noise levels at the project site as a result of attenuation of noise generated due to plant operations and transportation. -Less noise producing machinery will be purchased and shall be properly lubricated and regularly maintained.
Hydrology & Geology	None	None
Solid & Hazardous Waste	None	None

4.1.4. ACTIVITY - TRANSPORTATION ACTIVITY - TRANSPORTATION(RAW MATERIAL, LABOUR)

Aspects

- Vehicular emission
- Diesel/petrol leakage
- Road congestion & breakage of roads
- Noise generation

Table 77. Activity: Transportation (Raw materials and Labours)

Environmental components	Impact	Proposed Mitigation Measures
Air Environment	-Gaseous emissions from vehicles used for transportation will affect the health of construction workers and nearby population. -Leakage of petrol/Diesel may result in emission of VOCs in the air environment which may cause irritation in eyes, nose and throat, difficulty breathing and nausea. -Transportation of construction material shall result in dust emission which will affect the	-Vehicles with valid PUC certificates will be used for transportation of construction material -The vehicle used for transportation will comply with the conditions stipulated by SPCB in addition to the requirements mentioned in Motor Vehicle Act, 1988 (59 of 1988). -Construction material will be transported in closed and covered trucks. -Water sprinkling will be carried out for dust suppression from movement of transport vehicles.

	respiratory health of construction workers and nearby population	-Plantation of trees around the project periphery will be carried out.
Water Environment	-If dust emitted gets deposited on the water body it can deteriorate the water quality. -If raw material falls down near or on the water body it can deteriorate the water quality.	-The vehicles carrying construction material and construction debris will be cleaned before it is permitted to ply on the road.
Land Use	None	None
Soil Environment	Chemical degradation of soil would occur	-Procedures for maintenance of equipment would ensure that this risk is minimised, and clean-up response is rapid if any spill occurs. Lubricating waste oil shall be collected separately in drums and handed over to the authorised outside agency.
Socio-Economic	None	None
Ecology & Biodiversity	-Vehicular emission like NO ₂ , NO etc. can inhibit the growth of plants and premature leaves senescence. -Increased PM Level will result in deposition of dust on leaves which may cause decrease in Transpiration rate of flora	-Vehicles used in the transportation of construction material will have a PUC certificate. -Water sprinkling will be done to reduce the dust generation -Dust suppression systems (water spray) will be done as per requirement at the construction site.
Noise & Vibration	-Due to transportation of construction materials and machinery for installation high levels of noise may be generated which may cause physiological & psychological effects on workers like annoyance, speech interference, headache, Auditory impact, increase in heartbeat of elderly people. - There will not be much impact due to vibration on project	-Barriers of noise absorbing materials with adequate height will be maintained throughout the boundary of the project site. -Plantation within the project site will be done which will dampen the noise.
Hydrology & Geology	None	None
Solid & Hazardous Waste	Due to improper handling & transportation of raw material	Proper Care shall be taken while handling & transportation of raw material

4.1.5. ACTIVITY WORKING ACTIVITY - WORKING & DAILY ACTIVITY OF CONSTRUCTION

Aspects

- Solid waste generation
- Water requirement & waste water disposal

Table 78. Activity-Working & daily activity of construction labour

Environmental components	Impact	Proposed Mitigation Measures
Air Environment	-Bio-degradable Waste generation may lead to odour problems if not stored properly & treated within time.	-The generated organic waste shall be collected properly & shall be given to the approved vendor.
Water Environment	-The water demand of the project will be 20.25 KLD out of which 9.25 KLD would be fresh water, The total waste water generation will be 13 KLD. If the waste water is not properly disposed of, then it can deteriorate the surface water quality of nearby water bodies by increasing the no. of pathogens, BOD, COD, TSS etc and making water unfit for consumption. It will also affect aquatic life.	- The water demand of the project will be 20.25 KLD out of which 9.25 KLD would be fresh water, The total waste water generation will be 13 KLD which will be discharge to soak pit via septic tank -Temporary toilets will be provided.
Land Use	None	None
Soil Environment	Impact on soil due to improper disposal of solid waste & liquid waste includes the leaching from biodegradable waste and effect on flora from spillage of waste on soil.	Domestic waste water will be generated which will be discharged to the soak pit via septic tank.
Socio-Economic	Solid waste & waste water generated It may cause nuisance due to smell if not properly managed & treated.	The generated organic waste shall be collected properly disposed by approved vendor
Ecology & Biodiversity	none	None
Noise & Vibration	None	None
Hydrology & Geology	-Disposal of untreated waste water if it infiltrates into the ground-water may deteriorate the quality of ground-water.	1 KLD domestic wastewater will be generated which will be discharged to the soak pit via septic tank.

Solid & Hazardous Waste	-For construction labours, 7.5 kg/day of solid waste shall be generated. Improper storage and disposal of Biodegradable waste will enhance the risk of microbial contamination, population, will enhance the risk of disease occurrence and cause foul smell. It will attract the vectors.	-Solid waste will be properly collected, stored in respective colour coded containers. -Recyclable materials like aluminium, steel, wood pieces, cement bags, plastic containers, cartons, glass etc. will be given to recyclers. -E-waste if generated shall be properly disposed as per E-Waste (Management) Rules, 2016
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4.2. OPERATION PHASE

4.2.1. ACTIVITY - LOADING & UNLOADING OF BIOMEDICAL WASTE

Aspects

- Generation of PM, Dust
- Spillage/Leakage of bio-medical waste
- Generation of Noise
- Generation of packaging material
- Generation of odour

Table 79. Activity- Loading and unloading of bio-medical waste

Environmental Components	Impact	Mitigation Measures
Air Environment	-Spillage/leakage of bio-medical waste during loading or unloading may cause irritation in the eyes of the workers and mucous membrane, acute respiratory illness, and may also affect their immune system. -Very less dust will be generated during the loading or unloading activity.	-Workers will be trained properly regarding handling of bio-medical waste and PPE like nose mask and goggles will be provided to the workers. -If required, water will be sprayed at the dust generation point. -Spillage will be managed by proper handling of the waste in the first place.
Water Environment	-Spillage of bio-medical waste, Oil & chemicals, if in any case encounters water body can deteriorate the ground-water & surface water body which in turn may affect the aquatic life also	-If case spillage occurs, storage will be channelized properly to drains and all PPE shall be worn during this time. -The unloading of BMW waste will be done in a marked safe area. All systems and connections shall be maintained and checked regularly so that connections are leak proof. -Containment such as proper slopes connected with the sump shall be provided, so that during spillage if any occurs, the spill can be collected and disposed off properly.

		-In case of spills of toxic chemicals, dry adsorbents/cotton should be used for cleaning instead of water.
Land Use	None	None
Soil Environment	Chemical Degradation of soil	-The tankers, drums etc. would be ISO approved and as per the specifications of internationally approved vendors so as to minimise any spillage, venting of solvent etc. therefore there would be no impact on soil after this precaution is ensured.
Socio-Economic	None	None
Ecology & Biodiversity	-Spillage of waste on soil can inhibit the growth of plants and premature leaves senescence. -Vehicular emission like NO ₂ , NO etc. can inhibit the growth of plants and premature leaves senescence. -Increased PM Level will result deposition of dust on leaves which may cause decrease in Transpiration rate of flora	-The unloading activity will be done with a safe zone defined and in a marked safe area. Hence minimal change of impact on ecology & biodiversity - Green belt will be developed along most of the periphery of the project area as well as along roads. Total 1309 m ² (18% of plot area) shall be developed as green area.
Noise & Vibration	-Unloading of bio-medical waste will not cause much significant impact on noise level of the area, it may only cause physiological effects like annoyance to the workers	-Proper training will be given to the workers for handling raw materials. If required, PPE will be provided to the workers.
Hydrology & Geology	None	None
Solid & Hazardous Waste	Solid waste generated like discarded containers, chemicals and HDPE bags will be generated, which may cause harm if come into contact.	4 kg/day of Biodegradable waste will be Sent to Solid waste site and 2 kg/day of Recyclable Waste will be sold to approved Recycler. -8 Litres of Used oil from machineries/D.G. Set will be carefully stored in HDPE drums in an isolated covered facility. The used oil will be sold to authorised vendors for the treatment of the same. Suitable care will be taken so that spills / leaks of used oil from storage could be avoided. -100 kg/day of Incinerator Ash will be sent to the TSDF site. -40 kg/day of ETP Sludge will be stored in leak proof PVC containers in isolated area on pakka floor with in the premises as per HWM Rules and handed over to authorised treatment

		and disposal facility of Tamil Nadu Pollution Control Board.
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4.2.2. ACTIVITY - TREATMENT PROCESS (INCINERATION AUTOCLAVE, TREATMENT PROCESS)

Aspects

- Water requirement
- Generation of heat
- Generation of hazardous waste
- Energy requirement
- Generation of odour

Table 80. Activity - Treatment Process (Incineration, autoclave and shredding)

Environmental Components	Impact	Mitigation Measures
Air Environment	<p>-The major air pollutants released from DG Set will be CO, NO_x, SO₂ and PM.</p> <p>-The SPM, SO₂, NO_x, Dioxins, Furans and HCl emission from the stacks attached to Incinerators and may cause eye irritation and acute respiratory illness to the people nearby.</p> <p>-Fugitive emission is air pollutants released to the air other than those from stacks. Typically small releases from leaks in plant equipment, handling and transportation of Biomedical Waste, Internal Roads, etc. which will cause irritation in eyes, nose and throat, difficulty breathing and nausea.</p> <p>-Odour will negatively affect the psychological/ aesthetics stability of the nearby population</p>	<p>-To control emissions from incinerators of 500 (2x250) kg/hr, a combined Chimney of 30 m will be provided.</p> <p>-A gas cooler will be provided to drop the temperature of flue gases, followed by flue gas neutralisation system to neutralise the flue gas from SO_x, No_x and HCl through alkali reagent.</p> <p>-The dioxin control system is provided to take care of NO_x, Dioxin & Furans, and odour present in the flue gases.</p> <p>-Further the flue gas will be passed through the stack</p> <p>-For mitigation of impacts of air pollution from incinerator, stack height minimum of 30 m above ground Level shall be provided for the boiler.</p> <p>-For mitigation of impacts of air pollution from D.G. sets, stack height of 6 m above roof level shall be provided for proposed D.G. set of capacity 1 x 125 kVA.</p>

Water Environment	<p>-Utilisation of water may impact the water demand of the vicinity and Improper disposal of waste water generated may affect the quality of nearby surface water body & ground water.</p> <p>-Improper disposal of waste generated may affect the quality of ground-water.</p> <p>Spillage of oil & chemicals, if in any case encountered, can deteriorate the ground-water & surface water body, which in turn may affect life also.</p> <p>-Water tables may be depleted in case ground-water is used for the construction.</p> <p>-If dust emitted gets deposited on the water body can deteriorate the water quality.</p> <p>-The waste water If not properly disposed off, then it can deteriorate the surface water quality of nearby water bodies by increase in the no. of pathogens, BOD, COD, TSS, and making water unfit for consumption. It will also affect aquatic life.</p>	<p>-The water demand of the project will be 20.25 KLD , 9.25 KLD would be fresh water, which will be sourced from the local body. The total waste water generation will be 13 KLD which will be treated in ETP of capacity 20 KLD followed by RO and 11 KLD of waste water will be reused.</p> <p>Treated water of 11 KLD from the ETP of 20 KLD capacity will be reused for Floor & vehicle washing and venturi scrubber.</p> <p>All the treated waste-water will be recycled, no untreated/treated water will be discharged. It will be a zero liquid discharge project.</p> <p>-Collection of effluent will be done properly and safely.</p> <p>-All the standards of effluent given in GSR. 446 (E) dated 13.06.2011 will be maintained.</p>
Land Use	None	None
Soil Environment	<p>Chemical Degradation of soil due to disposal of waste water, solid waste on the soil or spillage of chemicals on soil.</p>	<p>-All the waste will be collected and kept in separate rooms with pucca floors. No disposal of waste will be done on soil.</p> <p>-Procedures for maintenance of equipment would ensure that this risk is minimised.</p> <p>-Sump shall be made and proper channelization of spillage shall be made.</p>
Socio-Economic	None	None
Ecology & Biodiversity	<p>-SO₂, NO_x gaseous emission from treatment process inhibit the growth of plants and promote pre-mature leaves senescence.</p> <p>-Increased dust emission can lead to climate change which eventually will result in a decrease in plant/tree cover.</p>	<p>-Water sprinkling will be done to reduce the dust generation.</p> <p>-Dust suppression systems (water spray) will be done as per requirement.</p> <p>-Ambient air quality will be regularly monitored to ensure that ambient air quality standards and suggested limits will be met at all times.</p>

	<p>-Increased noise will cause disturbance of existing fauna. -Impact on aquatic life of nearby surface water. -Spillage of waste on soil can inhibit the growth of plants and promote premature leaves senescence.</p>	<p>-All measures will be taken to avoid spillage of waste and chemicals on soil.</p>
<p>Noise & Vibration</p>	<p>-During the treatment process, noise and vibration may be generated from the machineries which may cause speech interference, annoyance, hearing impairment, increase in heartbeat/ blood pressure in the workers.</p>	<p>-Machineries of the reputed make and less noise producing will be purchased. -Stationary machineries and equipment will be properly enclosed by enclosures and will be provided with dampeners for minimising noise generated due to vibration of machineries. -It will be re-checked and assured that mufflers systems are installed in engines of machineries which will help in reduction of noise. -Silencers of all the machineries and equipment will be checked and old worn out machineries will be replaced by new and less noisy machineries/equipment. -Sufficient oiling and lubrication will be done to all the parts of the machineries to ensure that minimal noise is generated.</p>
<p>Hydrology & Geology</p>	<p>-Due to spillage/leakage the chances of contamination of surface water as well as ground water increases.</p>	<p>Waste water generated will be treated in ETP. No waste water will be discharged to the surface body or ground-water, all the water will be reused within the project after treatment. -All probable leakage areas such as pipelines, joints and pumps shall be inspected and maintained proactively. Leak Detector(s) installations are recommended. -Spillage will be managed by detection of leaks in the first place from structures or vessels. -Containment such as proper slopes connected with the sump shall be provided so that during spillage if any occurs, the spill can be collected and disposed off properly. -In case of spills of chemicals, dry adsorbents/cotton should be used for cleaning instead of water.</p>

Solid & Hazardous Waste	<p>-Process residue will be generated which are hazardous, which may cause harm if come into contact with skin.</p> <p>-Sludge and any other may cause nuisance if not maintained properly.</p>	<p>-Proper care shall be taken while handling & transportation, PPE will be used.</p> <p>-Process residue will be recycled completely. No process waste/residue will be disposed off..</p>
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4.2.3. ACTIVITY - OPERATION OF MACHINERY & EQUIPMENT (BOILER, DG SET, ETP, INCINERATOR, AUTOCLAVE AND SHREDDER)

Aspects

- Generation of waste gases, PM, SO₂, NO₂, CO, VOC, Dioxin, Furan, CO₂
- Generation of Sludge, used oil.
- Water requirement
- Generation of Noise & vibration
- Generation of waste water
- Requirement of Fuel
- Generation of Ash
- Spillage/leakage
- Generation of Hazardous waste

Table 81. Activity-Operation of machinery & Equipment (boiler, DG sets. ETP, Incinerators, auto-clave and shredder)

Environmental Component	Impact	Mitigation Measures
Air Environment	<p>-Flue gas emission (SO₂, NO₂ & CO₂) will be from a stack attached with a boiler, incinerator, shredder where furnace oil will be used as fuel, and D.G. set in which diesel will be used as fuel and PM will also be generated due to the burning of fuels.</p>	<p>-For mitigation of impacts of air pollution from boilers, stack height minimum of 30 m above ground Level shall be provided for the boiler.</p> <p>-For mitigation of impacts of air pollution from D.G. sets, stack height of 6 m above roof level shall be provided for proposed D.G. set of capacity 1 x 125 kVA.</p> <p>-To control emissions from incinerators of 500 (2x250) kg/hr, a Combined Chimney of 30 m will be provided. A gas cooler will be provided to drop temperature of flue gases, followed by flue gas neutralisation system to neutralise the flue gas from SO_x, NO_x and HCL through alkali reagent. The dioxin control system is provided to take care of NO_x, Dioxin & Furans, and odour present in the flue gases. Further the flue gas will be passed through the Torri therm filtration system to remove sub-micron particles.</p>

“Common Bio-Medical Waste Treatment Facility ” at SF Nos. 131/1A2 & 154/11, Noothalapuram village , Nilakottai Taluk, Dindigul By M/s Dindigul Waste Management Private Limited .

		<p>-Regular maintenance of valves, pipes etc will be done. PPEs will be provided to the workers.</p> <p>-Frequent work area monitoring will be done to ensure fugitive emission is under control.</p>
Water Environment	<p>-Utilization of water may impact the water demand of the vicinity and Improper disposal of waste water generated may affect the quality of nearby surface water body & ground water.</p> <p>-If boiler ash emitted gets deposited on water body can deteriorate the water quality.</p> <p>-The waste water If not properly disposed off, then it can deteriorate the surface water quality of nearby water body by increase in the no. of pathogens, BOD, COD, TSS etc and making water unfit for consumption. It will also affect the aquatic life.</p>	<p>-It will be a zero liquid discharge unit. Waste water generated will be treated in ETP. All the treated water will be used in the process, no untreated/treated water will be discharged. It will be zero liquid discharge project.</p> <p>-Green belt/greenery will be developed along most of the periphery of the project area as well as along roads.</p>
Land Use	None	
Soil Environment	Chemical Degradation of soil due to disposal of waste water, solid waste on the soil.	<p>-Proper care shall be taken for disposal of waste.</p> <p>-Proper channelization of waste water to treatment facilities shall be done.</p> <p>-Sludge shall be stored in a separate room and sent to TSDF.</p> <p>-Sump shall be made and proper channelization of spillage shall be made.</p>
Socio-Economic	None	None
Ecology & Biodiversity	<p>-NO₂, SO_x, and gaseous emission from the boiler, inhibit the growth of plants and pre-mature leaves senescence.</p> <p>-Increased dust and ash emission can lead to climate change which eventually will result in a decrease in plant/tree cover</p> <p>-Ash-filled voids cannot support tree species because of poor root system development which in</p>	<p>All the polluting machinery will be installed with appropriate air pollution control system</p> <p>-Boiler will be fitted with a stack height of 30 m to achieve maximum efficiency of air pollution control system.</p> <p>-DG set will be installed with 6m above roof level for capacity 125 kVA.</p> <p>-No untreated water will be used for the green area.</p>

	<p>turn results in uprooting of trees even by low velocity winds. -Untreated water can deteriorate the plant/tree</p>	
Noise & Vibration	<p>-During the operation of machinery, noise and vibration may be generated from the machineries which may cause speech interference, annoyance, hearing impairment, increase in heartbeat/ blood pressure in the workers.</p>	<p>-Machineries of the reputed make and less noise producing will be purchased. -Stationary machineries and equipment will be properly enclosed by enclosures and will be provided with dampeners for minimising noise generated due to vibration of machineries. -It will be re-checked and assured that mufflers systems are installed in engines of machineries which will help in reduction of noise. -Silencers of all the machineries and equipment will be checked and old worn out machineries will be replaced by new and less noisy machinery/equipment. -Sufficient oiling and lubrication will be done to all the parts of the machineries to ensure that minimal noise is generated. Green belt/greenery will be developed along most of the periphery of the project area as well as along roads.</p>
Hydrology & Geology	<p>Disposal of untreated waste water from boilers, APCS and RO may deteriorate water quality of groundwater and surface water. -Due to spillage/leakage the chances of contamination of surface water as well as ground water increases</p>	<p>-Waste water generated will be treated in ETP followed by RO . No waste water will be discharged to the surface body or groundwater, all the water will be reused within the project after treatment. -All probable leakage areas such as pipelines, joints and pumps shall be inspected and maintained proactively. -In case of spills of chemicals, dry adsorbents/cotton should be used for cleaning instead of water.</p>
Solid & Hazardous Waste	<p>ETP sludge, and used oil will be generated which are hazardous, which may cause harm if come into contact. Sludge and any other may cause nuisance if not maintained properly</p>	<p>-Proper care of waste shall be taken while handling & transportation, PPE will be used. -All ETP sludge of 40 kg/day will be stored in leak proof PVC containers in an isolated area on the pakka floor within the premises as per HWM Rules and handed over to authorized treatment and disposal facility of Tamil Nadu Pollution Control Board.</p>

		Used lubricating oil of 80 litres per month will be sent to the approved recycler.
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4.2.4. ACTIVITY - COLLECTION AND TRANSPORTATION OF BIOMEDICAL WASTE

Aspects

- Vehicular Emission and Dust emission
- Littering of bio-medical waste
- Road congestion & Breakage of roads
- Noise Generation
- Spillage/leakage of biomedical waste

Table 82. Activity- Collection and transportation of of bio-medical waste

Environmental Component	Impact	Mitigation measures
Air Environment	<p>-Gaseous emissions from vehicles used for transportation will affect the respiratory health of staff and nearby population.</p> <p>-Leakage of waste may result in emission of VOCs in the air environment which will cause irritation in eyes, nose and throat, difficulty breathing and nausea.</p> <p>-Dust generation will be high if the movement of vehicles is done on breached roads. Increased dust emission may cause respiratory problems to nearby Population. Increased dust emission may cause respiratory problems to nearby Population.</p>	<p>-Vehicles with valid PUC certificates will be used for transportation.</p> <p>-Plantation all around the periphery will be done.</p> <p>-Proper maintenance of vehicles shall be done periodically to ensure no leakage from the vehicles</p> <p>-Vehicular transportation will be done shift wise in order to reduce the stress on the roads.</p> <p>-Proper maintenance and cleaning of vehicles and tyres shall be done in order to reduce dust generation.</p> <p>-The transportation of the bio-medical waste shall be done in coloured coded bags in covered trucks & tempo.</p>
Water Environment	<p>If dust emitted or spillage/leakage gets deposited on the water body can deteriorate the water quality.</p>	<p>-The transportation of the bio medical waste shall be done in covered trucks in coloured coded bags</p> <p>-Specially designed closed containers Trucks will be employed for transportation from the hospital to site.</p> <p>-Trucks will be fully covered during transportation to the project by road.</p>
Land Use	None	None
Soil Environment	<p>-Chemical degradation of soil would occur due to spill of chemical or other waste on soil.</p>	<p>-Procedures for maintenance of equipment would ensure that this risk is minimised and clean-up response is rapid if any spill occurs.</p> <p>-Solid & Hazardous waste shall be collected separately in drums and handed over to the authorised outside agency.</p>

Socio-Economic	<p>-Dust and emission from movement of vehicles are likely to cause some impacts on the working population within the immediate vicinity of the project site.</p> <p>-Traffic congestion in the area</p> <p>-Accidental leakage of the chemical during transportation can cause fire.</p>	<p>-Flexible dust suppression systems (water spray) will be used as per requirement.</p> <p>-Preventive maintenance will be carried out for vehicles and pollution checks on a periodic basis.</p> <p>-Materials will be fully covered during transportation to the project site by road.</p> <p>-A sheet listing the materials shall be available in the vehicle and the emergency phone numbers shall also be listed.</p> <p>-Workers/drivers will be trained for handling these bio-medical waste.</p> <p>-Proper First Aid facilities shall be provided within the transportation vehicle in case of any accidental release.</p>
Ecology & Biodiversity	<p>-Increased noise due to vehicular transportation will cause disturbance of existing avi-fauna, however, avifauna is not restricted to one place for a long time, thus it will not result in their displacement.</p>	<p>-Vehicles used in the transportation of construction material will have a PUC certificate.</p> <p>-Water sprinkling was done to reduce the dust generation</p> <p>-Dust suppression systems (water spray) shall be done as per requirement at the construction site.</p> <p>-Vehicular movement for transportation of raw material will be carried out only in day-time and will try to avoid unnecessary honking with the help of sign boards.</p>
Noise & Vibration	<p>-Due to transportation of construction materials and machinery for installation high levels of noise may be generated which may cause physiological & psychological effects on workers like annoyance, speech interference, headache, Auditory impact, increase in heartbeat of elderly people.</p> <p>- There will not be much impact due to vibration on project</p>	<p>-Silencers will be checked in the vehicles used for transportation of materials.</p> <p>-No honking zone will be maintained.</p> <p>-Reverse horn in the transportation vehicles will be banned.</p> <p>-Only PUC certified vehicles shall be allowed for transportation</p> <p>-Maintenance of vehicles shall be done on a regular basis.</p> <p>-Plantation within the project site will be done which will dampen the noise.</p>
Hydrology & Geology	<p>Due to spillage of chemical/waste there may be chances of contamination of surface water as well as ground water increases</p>	<p>Measures will be taken to avoid spillage of chemical/waste.</p>
Solid & Hazardous Waste	<p>Accidental litter off of material, may cause potential health impacts.</p>	<p>-All material will be transported in leak proof containers.</p> <p>-100 kg/day incinerator ash will be sent to landfill site with intimation to Tamil Nadu</p>

		Pollution Control Board . 40 kg/day ETP Sludge will be stored in leak proof PVC containers in isolated areas on pakka floor within the premises as per HWM Rules and handed over to authorised treatment and disposal facility of Tamil Nadu Pollution Control Board
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4.2.5. ACTIVITY WORKING & DAILY OF STAFF VISITORS

Aspects

- Solid & e-waste generation
- water requirement & waste water generation

Table 83. Activity- Working & daily activity of staff, visitors

Environmental Components	Impact	Mitigation Measures
Air Environment	-Bio-degradable Waste generation may lead to odour problems if not stored properly.	-Bio-Degradable waste will be in very small quantities and shall be treated in Solid waste site.
Water Environment	-Waste water, if not properly disposed off, then it can deteriorate the surface water quality of nearby water body. -The abstraction of groundwater is not proposed for the project, hence there will be no impact on Groundwater. -Disposal of untreated waste water may deteriorate water quality of surface & ground water by increase in the no. of pathogens, BOD, COD, TSS etc. in surface/ground and thereby affecting aquatic life and making water unfit for consumption.	-The water demand of the project will be 20.25 KLD which will be sourced from local body. The total waste water generation will be 13 KLD which will be treated in ETP of capacity 20 KLD followed by RO and 11 KLD of waste water will be reused in floor & vehicle cleaning and venturi scrubber. -No treated water or untreated water will go outside the unit. The unit will be a zero liquid discharge unit.
Land Use	None	None
Soil Environment	-Impact on soil due to improper disposal of solid waste includes, the leaching from biodegradable waste and effect on flora from spillage of waste on soil.	-All solid waste and hazardous waste will be properly collected, stored in a separate room and disposed off. Biodegradable waste will be treated in the Solid waste site and recyclable waste will be collected and disposed off by approved vendors.

Socio-Economic	<ul style="list-style-type: none"> -Improper storage and disposal of solid waste, may decrease the aesthetic value of complex and lead to increase in risk of disease occurrence of persons. -There may occur foul smell which will cause nuisance in staff. -Direct & indirect employment generation 	<ul style="list-style-type: none"> -All solid waste from the proposed project shall be properly collected, stored and disposed of. All the waste will be given to the approved vendor. -50 no. of labours will be employed for the construction of proposed Project and 40 no. of Manpower during operation phase.
Ecology & Biodiversity	No significant impact	None
Noise & Vibration	No significant impact	None
Hydrology & Geology	<ul style="list-style-type: none"> -Infiltration of silt and sand may occur with improper stormwater harvesting. -Untreated wastewater, if infiltrated into groundwater it may deteriorate water quality of ground water by increase in the no. of pathogens, BOD, COD, TSS etc in ground water and thereby affecting and making water unfit for consumption. 	<ul style="list-style-type: none"> -Storm water channelization shall be made in the project site and the same shall be collected in the tanks. -The domestic waste water will be mixed through other effluent generation from the plant for diluting and then further will be treated in the ETP. Proper closed channelization will be done.
Solid & Hazardous Waste	<ul style="list-style-type: none"> -Improper storage and disposal of Biodegradable waste will enhance the risk of microbial contamination, population. -Improper storage and disposal of Solid Waste waste, will enhance the risk of disease occurrence and cause foul smell. It will attract the vectors. -Improper hazardous chemical disposal if comes in contact with human body may cause skin irritation and could be flammable also sometimes 	<ul style="list-style-type: none"> During the operational phase, 4 kg/day of biodegradable waste will be treated in the Solid waste site proposed within the site and 2 kg/day of recyclable waste will be generated and the same shall be collected and stored in a separate room and shall be given to the approved vendor. -E-waste if generated shall be properly disposed of as per E-Waste (Management) Rules, 2022.

4.3. SUMMARY

4.3.1. AIR ENVIRONMENT

Aspects of project activities which could increase the emission of PM, SO₂, NO_x generation, dust generation which may increase in ground concentration level (GLC), respiratory problems, human death, damage to flora and fauna and aesthetic properties in the environment and increase the level of toxic chemicals to other aspect of environment indirectly. To check such impacts, mitigation measures like water sprinkling at site, proper air pollution control system with stack height as per CPCB. To control emissions from incinerators of 500 (2x250) kg/hr, combined Chimney of 30 m will be provided. A gas cooler will be provided to drop temperature of flue gases, followed by flue gas neutralisation system to neutralise the flue gas from SO_x, Nox and HCL through alkali reagent. The dioxin control system is provided to take care of NO_x, Dioxin & Furans, and odour present in the flue gases. Further the flue gas will be passed through the Torri therm filtration system to remove sub-micron particles. For mitigation of impacts of air pollution from boilers, stack height minimum of 30 m above ground Level shall be provided for the boiler. For mitigation of impacts of air pollution from D.G. sets, stack height of 6 m above roof level shall be provided for proposed D.G. set of capacity 1 x 125 kVA.

To control or prevent fugitive emission regular maintenance of pollution control devices will be carried out. Good housekeeping shall be done & green belt development all along with the boundary wall shall be done.

4.3.2. WATER ENVIRONMENT

The activities which would probably pose a negative impact on the water environment would be the treatment process, operation of machinery & equipment, working & daily activities of staff, visitors, and transportation. The aspects of the activities may be generation of waste water, scarcity of water, depletion of water table and deterioration of water quality which could lead to deterioration of aquatic life, generation of water-borne diseases to nearby populations. To minimise such impacts, waste water in the construction phase will be disposed of to soak pits and waste-water during the operation phase will be treated by ETP followed by RO. The treated wastewater shall be reused within the plant, it shall be a zero liquid discharge project. The total water requirement during the Operation phase will be 20.25 KLD which will be sourced from local body

4.3.3. LAND AND USE

No negative impact on land use is envisaged.

4.3.4. SOIL ENVIRONMENT

The major activities which would negatively impact the soil environment would be loading & unloading of raw material, operation of machinery (Boiler, DG sets, APCS, Incinerators, Autoclave, Shredder, etc.), handling of raw material, transportation of raw material, finished product and waste. The aspects of the activities would be soil erosion, waste generation and spillage of hazardous wastes or chemical on the soil which could lead to permanent damage to land productivity,

destabilisation of landscape, decrease in permeability, damage to fertility of soil, chemical degradation and indirect negative impact on other aspects of environment like Air, Water & Ecology and Biodiversity. To minimise such impacts, mitigation measures like proper treatment and disposal of waste, proper maintenance of equipment and storage for bio-medical, provision and maintenance of plantation areas in the project site and nearby areas. Procedures for maintenance of equipment would ensure that the risk is minimised and clean-up response is rapid if any spill occurs. The tankers, drums etc., would be ISO approved and as per the specifications of internationally approved vendors so as to minimise any spillage, etc. therefore there would be no impact on soil after this precaution is ensured. For any spills, apart from sumps provision of spill kits shall be made available.

4.3.5. SOCIO ECONOMIC

Aspects of project activities which would be dust emission, waste generation and socio-economic conditions in the nearby area which could impact to the extent of annoyance, loss of life respiratory problems to nearby population further, positive impacts include an increase in employment and revenue generation among the population in the nearby area. To minimise negative impacts, mitigation measures like proper air pollution control system will be used, restriction of activities limited to project area and specific duration in daytime only, Proper segregation of waste, good housekeeping, maximise employment to locals, proper treatment and disposal of all wastes generated from the plant would be adopted in the area.

4.3.6. ECOLOGY & BIODIVERSITY

The major activities which would most probably negatively impact the Ecology and Biodiversity in the project area and the surroundings would be site preparation, excavation, manufacturing process, operation of machinery & equipment, transportation, loading & unloading of bio-medical waste. The aspects of the activities would be dust emission, increase in GLC, increase in noise level, soil erosion, noise generation, water contamination, vehicular emission and waste generation which would directly /indirectly impact in decrease in transpiration rate of flora, loss of habitat, decrease in plant/tree cover, disturbance to avi-fauna and other species, premature senescence of floral species and hence decrease in population of local faunal species in the area and the surroundings. To minimise such impacts, mitigation measures like provision of air pollution control equipment, provision and proper maintenance of plantation area, installation of water sprinkling systems and dust suppression systems, provision of noise barriers, maintenance of vehicular movement near the project site and proper disposal and treatment of wastes generated from the project site. Vehicular movement for transportation of raw material will be carried out only in day-time and will try to avoid unnecessary honking with the help of sign boards. Green belt/greenery will be developed along most of the periphery of the project area as well as along roads.

4.3.7. NOISE AND VIBRATION

The major activities which would most probably negatively impact the environment would be operation of machinery and transportation. The aspects of the activities would be an increase in

noise level and increased noise generation which could lead to physiological and psychological problems to workers and nearby population, increased vibration in the nearby areas and an indirect decrease in the biological diversity in the nearby area. To minimise such impacts, mitigation measures like restriction of activities in the limited project area and for daytime only, proper maintenance of equipment and machinery, maintenance of noise barriers, provision of protective devices like earmuffs, compactors, silencers etc., installation of plantation area in the nearby area, provision of No-Honking Zone in the area, maintenance of vehicular and traffic movement etc. would be adapted in the project site.

4.3.8. HYDROLOGY AND GEOLOGY

The major activities which would most probably impact the hydrology and geology would be excavation, manufacturing process, operation of machinery & equipment, working of daily activity of labourers, staff and visitors and transportation. The aspects of the activities are generation of Solid Waste, E-Waste, Waste water generation, spillage/leakage of waste/chemical which would impact in deterioration of water quality (in both Surface Water and Ground-water). To minimise such impacts, mitigation measures proper channelization of waste water and proper disposal, all probable leakage areas such as pipelines, joints and pumps, in case of spills of chemicals, dry adsorbents/cotton shall be used for cleaning instead of water and Proper treatment and disposal of Waste water shall be adapted in the project site.

4.3.9. SOLID AND HAZARDOUS WASTE

The major activities which would most probably impact the environment would be manufacturing process of product, operation of machinery (Boiler, DG set, APCS, Incinerators, Autoclave, Shredder, etc.), handling of raw material, transportation of raw material, finished product and waste and Working and daily activities of labours, staff and workers. The aspects of the activities would be generation of solid, hazardous and recyclable wastes, oil & chemical spillage and accidental leakage which would impact in degradation of quality of waste which would be used for further treatment, harmful emissions and spread to other parameters of environment, nuisance among the workers and nearby population, Improper hazardous chemical disposal if comes in contact with human body may cause skin irritation and could be flammable also, generation of ETP sludge, fly ash from boiler and used oil. To minimise such impacts, mitigation measures like proper collection of waste, sludge will be sent to the TSDF for final disposal and shall be kept in HDPE bags and sent to the TSDF site approved by TNPCC, and discarded containers will be disposed of as per norms applicable.

4.3.10. TRAFFIC

The activities which would probably be responsible for traffic congestion would be transportation of raw material for which trucks and tempo shall be used. Traffic to the different sites during construction/installation will be intensive and heavier than at present in normal operating conditions. The aspect of the activities would be generation of dust from movement of vehicles are likely to cause some impacts on the working population within the immediate vicinity of the project

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site. In turn, it will subject existing roads to more stress. To control the impact, dust suppression systems (water spray) will be used as per requirement at the construction site. Construction materials will be fully covered during transportation to the project site by road. Vehicle flow during shift changes shall be regulated by allowing exits in a phased manner. The Storage of all the liquid raw material shall be in leak proof MS/SS tanks and rest in HDPE bags with proper safety measures while transporting through trucks & tankers. The present road conditions are reasonably good for proposed movement of traffic. Preventive maintenance will be carried out for vehicles and pollution checks on a periodic basis will be mandatory. All the activities will be done for a limited period of time.

5. ANALYSIS of ALTERNATIVE RESOURCES & TECHNOLOGIES

5.1. ALTERNATE SITE CONSIDERED AND SELECTION OF THE SITE

M/s Dindigul Waste Management Pvt. Ltd. intend to install latest state of the art technology duly approved by CPCB for best management of Bio Medical Waste at Survey No: 133/1A2, 154/11 Nothulapuram Village, Taluk - Nilakottai, District- Dindigul, State- Tamil Nadu in an area of 7165 m².

The site was selected on the basis of environmental consideration and other factors listed below:

- Proximity to Bio-medical waste generating units [Hospitals, dispensaries, Health care units etc , so that within 48 hours the BMW will be collected , transported and treated] from the proposed site at Tamil Nadu.
- Good Road Connectivity
- Easy availability of skilled and unskilled labourers for construction of plants and its operation.
- The proposed project has been planned/designed by meeting the criteria guidelines as per
- Revised Guidelines for Common Biomedical Waste Treatment and Disposal Facilities by CPCB dated 21.12.2016.

*** The details of criteria guidelines along with compliance have been listed below-:**

Location Criteria

As far as possible, the CBWTF shall be located near to its area of operation in order to minimise the transportation distance in waste collection, thus enhancing its operational flexibility as well as for ensuring compliance to the time limit for treatment and disposal of bio-medical waste as stipulated under the BMWM Rules (i.e., within 48 hours). The location shall be decided in consultation with the State Pollution Control Board (SPCB)/ Pollution Control Committee (PCC).

The location criteria for development of a CBWTF are as follows:

Table 84. Site Selection criteria

S.No.	Particulars	Details as per Compliance
1	A CBWTF shall preferably be developed in a notified industrial area without any requirement of buffer zone (or)	The proposed site is not within any notified Industrial area.
2	A CBWTF can be located at a place reasonably far away from notified residential and sensitive areas and should have a buffer distance of preferably 500 m so that it shall have minimal impact on these areas. In case of non-availability of such a land, the buffer zone distance from the notified residential area may be reduced to less than 500 m by SPCB/PCC without referring the matter to CPCB by	Complied. The proposed site is far away from the nearest habitation at 0.93 km SSE Thummalapatti. Also, No eco-sensitive area located within 15 km distance from the project. Best available technologies will be adopted in the proposed CBWTF site.

	<p>prescribing additional control measures such as (i) adoption of best available technologies (BAT) by the proponent of CBWTF; (ii) prescribing stringent standards for operation of the CBWTF by the SPCB/PCC; (iii) adoption of zero liquid discharge by the CBWTF and (iv) in case of any complaints from the public, then CBWTF should prove that the facility is not causing any adverse impact on environment and habitation in the vicinity. If SPCB/PCC is not in a position to resolve the issue relating to buffer zone while selecting the site for CBWTFs, in such a case, SPCBs/PCCs may refer the matter to CPCB.</p>	<p>We accept to comply with the standard as stipulated in EC or consent orders. Zero liquid Discharge will be Adopted</p> <p>Noted</p>
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Land Requirement

S. No.	Criteria	Compliance
1	<p>Preferably, a CBWTF shall be set up on a plot size of not less than one acre in all the areas. However, a CBWTF can be developed in adjacent plots but cannot be set up in two or more different plots located in different areas. Separate plots can be permitted only for vehicle parking if located in the close vicinity of the proposed CBWTFs or the existing CBWTFs.</p>	<p>Complied</p> <p>The proposed land is having single plot with the area more than 1 acres i.e. 1.776 acres.</p>
2	<p>In case of upcoming or new CBWTFs (both in municipal limits with population more than 25 lakhs or in rural areas), the land area requirement may be relaxed (but in any case not less than 0.5 acre) by the SPCB/PCC, with additional control measures such as zero liquid discharge, increase in stack height, stringent emission norms, odour control measures or any other measures felt necessary by the prescribed authority on a case-to-case basis, only in consultation with CPCB.</p>	<p>It is proposed in an urban area.</p>

Coverage area of CBWTF

S. No.	Criteria	Compliance
1	<p>A CBWTF located within the respective State/UT shall be allowed to cater healthcare units situated at a radial distance of 75 KM. However, in a coverage area where 10,000 beds are not</p>	<p>Not Applicable</p>

	<p>available within a radial distance of 75 KM, existing CBWTF in the locality (located within the respective State/UT) may be allowed to cater the healthcare units situated up to 150 KM radius w.r.to its location provided the bio-medical waste generated is collected, treated and disposed of within 48 hours as stipulated under the BMWM Rules.</p>	
2	<p>In case, number of beds is exceeding >10,000 beds in a locality (i.e. coverage area of the CBWTF under reference) and the existing treatment capacity is not adequate, in such a case, a new CBWTF may be allowed in such a locality in compliance to various provisions notified under the Environment (Protection) Act, 1986, to cater services only to such additional bed strength of the HCFs located.</p>	<p>Yes, the proposed facility will cover more than 5000 hospital and healthcare units.</p>
3	<p>In case of hilly areas, considering the geography, only one CBWTF with adequate treatment capacity may be developed covering atleast two districts to cater treatment services to the HCFs located in the respective Districts. The selection and allocation of site etc. should be done as per the criteria suggested under these guidelines. The treatment charges to be prescribed by the respective SPCB/PCC in consultation with the State Advisory Committee to be constituted under the BMWM Rules by the respective State Government or UT Administration.</p>	<p>Not Applicable</p>

5.2. ALTERNATE TECHNOLOGY OVER CONVENTIONAL SYSTEM

Conventional System: conventionally the non-incineration technologies were used for the treatment of biomedical waste. The treated waste was disposed off in a regular solid waste landfill.

Improved Technology: In proposed unit modern & latest state of the art technology for treatment & disposal of biomedical waste generated by healthcare facilities shall be used as discussed below:

- In the proposed unit the Incinerators with Rotary kiln & Static bed will be used. A Rotary kiln is a device used to raise materials to a high temperature (calibrations) in a continuous process. The kiln is a cylindrical vessel, inclined slightly to the horizontal, which is rotated slowly about

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its axis. The material to be processed is fed into the upper end of the cylinder. As the kiln rotates, material gradually moves down towards the lower end, and may undergo a certain amount of stirring and mixing. Thus, in Rotary kiln there occurs no problem of manual raking.

- The proper metering shall reduce the over-usage of wastage of water.

5.3. ENERGY SAVING MEASURES

1. Daylight provision shall be made in industry by using openable windows (use of sunlight in lieu of conventional power).
2. LEDs & Solar lights shall be provided.
3. Energy efficient motors shall be used for water pumping and ETP.
4. Transformer shall be having efficiencies as per ECBC Norms.
5. Adhering to light power densities (LPD) as per ECBC Norms.
6. Power factor shall be maintained 1 Mcq of higher to reduce electrical power distribution losses in installation.

6. ENVIRONMENTAL MONITORING PROGRAMME

An Environment Monitoring Plan is prepared for installation as well as the operation phase. It provides a delivery mechanism to address the adverse environmental impacts of a project during its execution, to enhance project benefits, and to introduce standards of good practice to be adopted for all project works. An environmental monitoring program is important as it provides useful information and helps to:

- Assist in detecting the development of any unwanted environmental situation, and thus, provides opportunities for adopting appropriate control measures.
- Define the responsibilities of the project proponents, contractors and environmental monitors and provide means of effectively communicating environmental issues among them.
- Define monitoring mechanism and identify monitoring parameters.
- Evaluate the performance and effectiveness of mitigation measures proposed in the Environment Management Plan (EMP) and suggest improvements in management plan, if required.
- Identify training requirements at various levels.

6.1. DETAILS OF MONITORING TO JUDGE EFFECTIVENESS OF MEASURES

To check the efficiency of the system with proposed modifications a regular monitoring programme has been drawn. The program has been outlined for the construction and operation phase. The details of which are given below:

6.1.1. CONSTRUCTION PHASE

Table 85. Environmental Monitoring Plan for construction phase

Sl. No	Type of Monitoring	Frequency of Monitoring	Parameter	Location	Number Per Year	Unit rate (Rs)	Cost (Rs)	Responsibility
1	Ambient Air Quality	Six Monthly	Particulate Matter (PM _{2.5}) Particulate Matter (PM ₁₀) Sulphur Dioxide (SO ₂) Nitrogen Oxides (NO ₂)	Four Locations in and around the project site	4	2	6	
2	Stack	Six Monthly	Particulate Matter, Sulphur Dioxide (SO ₂), Nitrogen Oxides (NO _x)	DG sets of 1x 125 kVA	4	2	6	

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3	Water Quality for drinking water	Six Monthly	All parameters mentioned in IS:10500	One drinking water sample	2	1	2	
4	Water Quality for Construction purpose	Six Monthly	All parameters mentioned in IS:456	One construction water sample	2	1	2	
5	Ambient Noise Level	Six Monthly	Day and Night noise level	Two locations	4	2	6	
6	Noise Level	Six Monthly	Leq Day & Night-	DG set of 1x 125 kVA	2	1	2	
7	Soil Quality	Six Monthly	All parameters to check soil Fertility	Four Locations in and around the project site	8	4	32	
Approx. Cost. 56 /- per year					26	13	56	

6.1.2. OPERATION PHASE

Table 86. Environmental Monitoring Plan for operation phase

Sr. No.	Type of Monitoring	Frequency of Monitoring	Parameter	Location	Number Per Year	Unit rate (Rs)	Cost (Rs)	Responsibility
1	Ambient Air Quality	Quarterly, online monitoring stations shall be installed	Particulate Matter (PM _{2.5}), Particulate Matter (PM ₁₀), Sulphur Dioxide (SO ₂), Nitrogen Oxides (NO ₂), Carbon Monoxide (CO)	Four Locations in and around the project site	12	6	72	
2	Work Area-air monitoring	Quarterly	HCl, Dioxins & Furans	Plant & machinery area	12	6	72	
3	Stack Monitoring	Quarterly, online monitoring stations	Particulate Matter,	Boiler Stack	12	6	72	

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		shall be installed	Sulphur Dioxide (SO ₂), Nitrogen Oxides (NO ₂), for Incinerators, boiler & DG Sets Hg, HCl, Dioxins & Furans for Incinerators	DG sets of 1×125 kVA and Incinerators Stack				
4	Water Quality for drinking water	Quarterly, online monitoring stations shall be installed	All parameters mentioned in IS:10500	One drinking water sample	4	2	8	
5	Effluent Treatment Plant or other treatment	Quarterly	pH, BOD, COD, TDS, TSS, Chloride, Sulphate, Total Hardness, Oil and Grease, Zinc.	Inlet and Outlet of ETP & RO	12	6	72	
6	Ambient Noise Level	Quarterly	Day and Night level	Two locations	8	4	32	
7	Work area-Noise monitoring	Quarterly	Leq Day & Night	Boiler, Plant & machinery area (Incinerators, Autoclave & Shredder) One monitoring at every place	16	8	128	
8	DG Room Set	Quarterly	Leq Day & Night	DG sets of 125 ×kVA	4	2	8	

9	Soil Quality	Quarterly	All parameters to check soil Fertility	Four Locations in and around the project site	16	8	128	
10	Green belt & plantation monitoring	Monthly	Manual	Within the facility area	12	6	72	
11	Odour Control monitoring	Weekly	Manual	Within the facility area	52	26	1352	
12	Solid Waste Generation Monitoring / Record Keeping	To be updated daily record books	Records of generation, handling, storage, transportation and disposal of other solid, aqueous and organic hazardous wastes as required by hazardous waste authorization	Within the facility area	daily	1	1	
Approx. Cost. 2,016 /- per Year					160	81	2,016	

6.1.3. WORK ZONE MONITORING

The occupier or operator of the common bio-medical waste treatment facility will install a continuous emission monitoring system for the parameters as stipulated by the Tamil Nadu Pollution Control Board in authorisation and transmit the data in real time to the servers at Tamil Nadu Pollution Control Board . Work zone monitoring shall be carried out by the HSE department every month for gaseous pollutants (Dioxins & Furans). Records will be kept. Location for sampling shall be identified. Samples will be analysed for Dioxins & Furans from an approved laboratory.

6.1.4. SUBMISSION OF SIX MONTHLY COMPLIANCE

As per the standard environment clearance conditions, six monthly compliance of the conditions mentioned in the Environmental Clearance letter has to be submitted to various concerned officials of MOEF, SPCB and Regional office of CPCB. These compliance have to be submitted in the

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months of June and December for the periods April to September and October to March respectively every year for construction phase until the construction is completed and operation phase for the life of the project.

6.1.5. ENVIRONMENTAL AUDIT

Annual Environment Audit shall be conducted to check the compliance of environmental conditions. Form V statement and report shall be submitted to MoEF&CC R.O. and Tamil Nadu Pollution Control Board

7. ADDITIONAL STUDIES

7.1. PUBLIC CONSULTATION

As per OM F.No. J-11011/321/2016-IA-II(I) dated 27th April 2018 public hearing is applicable for the project due to falling out of the industrial area.

7.2. RISK ASSESSMENT

Risk is a potential that a chosen action or activity will lead to a loss of human or property.

Risk assessment is a step for Risk Management. Risk assessment is determination of qualitative and quantitative value of risk related to a situation or hazard.

Hazard is a situation that poses a level of threat to life, health or environment.

Disaster is a natural or man-made hazard resulting in an event of substantial extent causing significant physical damage or destruction, loss of life or drastic change in environment.

Risk assessment involves the following:

- Hazard Identification
- Vulnerability Analysis
- Risk Analysis
- Emergency Plan

7.3. HAZARD IDENTIFICATION

Proposed BMWTF would collect and dispose off infectious bio-medical waste through shredding, autoclaving and Incineration. The Project is proposed Common Bio-medical waste treatment facility & there may be following types of hazards associated with the operation of the unit:

7.3.1. NATURAL HAZARD

- Earthquake
- Flooding
- Drain near-1 0.24 Km NW

7.3.2. MAN MADE HAZARD

Fire & explosion

- Explosive material
- Short circuiting
- Boiler Chemical & Fuel storage – a. Toxicity & b. Flammable
- Hazardous
- Incinerators
- Autoclave

- Shredder

Chemical & Hazardous raw material

- Chemical & Fuel storage – a. Toxicity & b.Flammable
- Hazardous Raw Material storage- Health Hazard due to Infection
- Incineration Waste, Sharps

Electrical

- Electrical room
- Non insulated wires

Mechanical/ Accident

- Equipment area
- Raw material Handling
- Transportation

Thermal

- Boiler
- Incinerators

7.4. VULNERABILITY ABILITY

The vulnerable analysis is done on all the hazards as below:

Table 87. Vulnerability Analysis

Sl. No	HAZARD IDENTIFICATION	Severity (1-5)	Likelihood (1-5)	Severity x Likelihood (1-25) (Hazards scoring 1-9 are less serious hazards & 9-25 are very serious hazards & require risk assessment)	During Construction & Installation Phase	During Operation Phase
Natural hazard						
1	Earthquake	5	1	5	For immediate areas of construction	For the complete Unit
2	Flood	5	1	5	For immediate areas of construction	For the complete Unit
Man-made hazard						
3	Collection, transportation, Handling of waste at the facility (unloading)	4	1	4	For all working areas	Collection area, unloading area

4	Fire & explosion	5	3	15	For all working areas	Fuel storage area Office area Incinerators Electrical Room
5	Chemical & Hazardous Raw Material	3	2	6	Storage area	Chemical & Hazardous Raw Material area Process area DG set area
6	Electrical	3	2	6	For all working areas	For all the machinery used. Electrical room
7	Mechanical / Accident	4	4	16	Machineries	Equipment's area Material, Handling area, Transportation
8	Thermal	3	2	6	Overall area	Incinerators Boiler area

7.5. RISK ANALYSIS

The risk is the likelihood of harmful effects big or small due to hazard, together with severity of harm suffered. Risk also depends on the number of people exposed to hazards.

Risk analysis provides severity of harm from particular type of hazard

7.5.1. EARTHQUAKE

The project is located in Seismic Zone III where earthquakes can occur in the range of 4.0-7.0 Richter scale.

7.5.2. FLOODING

The project site is covered with seasonal drain.

7.5.3. FIRE AND EXPLOSION

Fire is mainly caused due to carelessness or accidents. Since it is a Common Bio-medical waste treatment, fire can occur due to exposure of fuels/ flammable substances or electrical spark. The fire can also occur in the boiler area and electrical room.

7.5.4. CHEMICAL AND HAZARDOUS RAW MATERIAL

All the fuel or disinfectants used in the process have a risk of leakage during handling, storage and transportation. The Hazardous Raw Material shall also possess Health Hazard due to Infection.

7.5.5. ELECTRICAL

The electrical current can pass to the floor & metals due to inadequate insulation or accidentally. Electric spark can generate due to short circuiting in the electrical room.

7.5.6. MECHANICAL/ ACCIDENT

Mechanical hazard or Accident can occur during the material handling, process machinery & transportation. Mechanical hazards are created by powered operation of equipment or tools.

7.5.7. THERMAL:

Thermal heat can be generated from the process machinery like Incinerators, boilers etc.. Thermal hazards are objects or substances that transfer energy as heat.

7.6. ON SITE EMERGENCY PLANNING

An onsite emergency is caused by an accident or hazard that takes place within the plan area and the effects are confined to the plant area.

The onsite emergency plan consists of the following key elements:

- Planning as per hazard analysis
- Preventive measures
- Emergency response procedure
- Recovery procedure

Planning

1. Mapping of hazard vulnerable area

2. A Disaster Management cell will be put into place. It has the following members to share the responsibility

- Site Controller (Administrator of complex)
- Incident Controller (Asst. Administrator)
- Personal Manager
- Communication Officer
- Fire Officer
- Security Officer
- Engineering In-charge
- Fire pump attendant
- First Aid Team

7.6.1. PREVENTIVE MEASURES

Earthquake:

The project is situated in the Seismic zone-III area. Special attention has been given to the structural design of foundation, elements of masonry, timber, plain concrete, reinforced concrete, pre-stressed

concrete, and structural steel. All applicable guidelines have been followed in this regard to ensure the safety of the building.

Flooding:

To avoid flooding or water logging in the area due to the existing nearby canal & lake, proper designing of drainage systems for storm water shall be done. All the rainwater will be diverted to rain water storm water drain and extra water will be diverted in the storm line of the area.

Fire and Life Safety/ Fire Fighting System

1. Smoking must be prohibited.
2. Vehicle access should be strictly controlled.
3. Fuel tanks, packaged materials shall be kept in separate rooms.
4. Ventilation must be sufficient to cope with the maximum expected vapour levels in the building.
5. Storage tank vents to the atmosphere should be sized for fire-heated emergency vapour release.
6. Electrical equipment must be explosion-proof to meet national electrical code requirements.
7. Dry chemical extinguishers should be accessible for small fires. An adequate supply of hand-held and wheeled types should be available.
8. Hydrants should be strategically placed with adequate hoses.
9. Small spills should be remediated with sand, earth, or other non-combustible absorbent material, and the area then flushed with water. Larger spills should be diluted with water and diked for later disposal.
10. Trained firefighting teams shall be deployed in the project area.
11. Provision of fire hooters, siren and annunciators at strategic locations within the project site.
12. Firefighting such as portable & mobile extinguishers shall be installed at various fire prone areas.

Precaution in Case of Fire

For proposed Common Bio-medical waste treatment Facility, all practicable measures will be taken to prevent outbreak of fire and its spread, both internally and externally, to provide and maintain: -

- a) Safe means of escape for all person in the event of a fire, and
- b) The necessary equipment and facilities for extinguishing fire.

Effective measures shall be taken to ensure that all the workers are familiar with the means of escape in case of fire and shall be adequately trained in the routine to be followed in such cases.

Fire Fighting Personal Protective Equipment

All types of personal protective equipment i.e. helmet, goggles, hand gloves etc. shall be provided to the employees. Besides, PPE like hand gloves of cotton, nylon, leather, rubber, asbestos, safety belts, aprons rubber & cotton, goggles, safety shoes etc. shall be kept in the plant areas.

Chemical:

The only chemical used in the treatment is Sodium Hypochlorite (NaOCl) , which is used as a disinfectant in Autoclaving. Strength hypochlorite is often diluted prior to being injected into a

water stream, in order to provide proper mixing and disinfection. When an insufficient amount of dilution water is used the hypochlorite can cause the pH to rise. If the dilution water is hard water, the rise in pH will result in calcium carbonate precipitation which will coat the inside of piping, valves and pumps. This scale deposit will tend to be greatest in areas of high turbulence. In order to prevent scaling, use soft water. Besides it fuel HSD/Furnace oil shall be used in Incinerators, Boiler & D.G. Sets, thus require necessary safety measures.

BMW & Chemical Handling:

- Instructions shall be given to not pressurise, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames.
- Workers should wash their hands thoroughly after handling.
- Fuels/chemicals shall be used only in a well-ventilated area.
- Workers shall use spark-proof tools and explosion proof equipment.
- Workers shall avoid contact with eyes, skin, and clothing.
- Container shall be kept tightly closed.
- Workers shall avoid contact with heat, sparks and flame.
- Operator training as well as written operating instructions, safety rules and check lists shall be provided.

Sources of Exposure: Human exposure to Bio-Medical wastes , chemicals/fuels can occur mainly via absorption, contact with the eyes, inhalation or ingestion.

First Aid Measures taken:

1. In case Bio-Medical wastes /chemicals come in contact with the skin, contaminated clothing shall be removed. Affected area shall be washed with soap and water for 15 minutes. Medical attention shall be sought, if irritation occurs.
2. In the case of Bio-Medical wastes/ chemicals that come in contact with the eyes, eyes shall be flushed immediately with gently running water for a minimum of 15 minutes, ensuring all surfaces and crevices shall be flushed by lifting lower and upper lids. Medical attention shall be obtained.
3. In case of inhalation of chemical vapours, individuals shall be removed to fresh air, but only if it is safe to do so. Asphyxiation from vapours may require artificial respiration. Due to the possibility of delayed onset of more serious illness, it is important to obtain medical attention.
4. Ingestion of chemicals is life threatening. Onset of symptoms may be delayed for 18 to 24 hours after ingestion. Vomiting shall not be induced. The affected individual shall be transported to medical attention. The individual shall remain under close medical care and observation for several days.

Chemical Storage:

- Bio-Medical wastes , Chemicals/Fuel shall be kept away from heat, sparks, and flame. Shall be kept away from sources of ignition stored in a tightly closed container.
- Chemicals shall be stored in a cool, dry, well-ventilated area away from incompatible substances.

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- Storage & handling area shall be readily accessible with safety showers, fire extinguishers and other fire-fighting equipment, water hydrants with spray nozzle and other emergency equipment such as chemical proof suits and respiratory apparatus.
- The flammable materials shall be stored in a separate safety storage room. Shall be kept away from heat. Shall be kept away from sources of ignition. Containers shall be kept tightly closed and in a cool, well-ventilated place.
- Operating procedures shall be in place with appropriate training.

Spills / Leaks: Spills shall be absorbed with inert material (e.g. vermiculite, sand or earth), then placed in a suitable container. All sources of ignition shall be removed and a spark-proof tool used. Ventilation shall be provided and a vapour suppressing foam used to reduce vapours.

Hazardous Substances & Chemicals

List of Hazardous material, storage, hazard & its control:

Following is the list of Hazardous material, their storage, possible hazard & its control measures proposed in the plant:

Table 88. List of hazardous material storage, hazard & its control

S. No.	Name of the Hazardous substance	Place of storage	State and operating pressure & Temp.	Type of hazards possible	Control measures provided
1	Yellow Category waste (Human anatomical waste, animal waste, soiled waste, etc.)	Red storage room (plant area)	Ambient Condition	Fire, Infection	1) Fire Extinguisher (CO ₂ , DCP) 2) PPE 3) Sand Bucket 4) Emergency provision for FireBrigade from an outside source. 5) PPE shall be provided.
2	Red category waste (microbiology & Biotechnology waste, tubing, catheters, intravenous sets etc.)	Yellow storage room (plant Area)	Ambient Condition	Fire, Infection	1) Fire Extinguisher (CO ₂ , DCP) 2) PPE 3) sand Bucket 4) Emergency Provision for Fire Brigade from outside source 5) PPE shall be provided
3	Diesel	D.G. Room & Process Room	Ambient Condition	Fire	1) Fire Extinguisher (Foam) 2) Sand Buckets

Major accidental Release measures & measures for storage & handling

- The chemical/fuel shall be stored in a separate safety storage room, shall be kept away from sources of ignition.
- Proper ventilation should be maintained.
- Proper medical facility arrangement shall be provided in case of any accidental release.
- In case of leak or spill, the area of leak or spill shall be ventilated. Unnecessary and Unprotected people shall be kept away from the area of spill. Appropriate personal protective equipment shall be worn.
- Suitable containers for reclamation or disposal, using a method that does not generate dust shall be used. Acids shall not be contacted. Containers shall not be handled with bare hands.

Collection, development and dissemination of information

- Prior to working with these chemicals, workers should be trained on its proper handling & storage.
- Precautions and First Aid shall be labelled.
- Emergency plan shall be prepared and mock drill of the on-site emergency should be conducted
- Inspection of the CBWTF shall be done at least once a year and annually status report on compliance with the Rules shall be submitted.

Electrical:

The electrical current can pass to the floor & metals due to inadequate insulation or accidentally. Electric spark can generate due to short circuiting in the electrical room.

Mechanical:

Mechanical hazards are created by powered operation of equipment or tools.

Mechanical hazards can occur at:

1. Process machinery (Boiler, Incinerators & Autoclave)
2. DG set room
3. Vehicular Movement

Following preventive measures shall be taken:

1. Periodic replacement of critical components of the machine shall be done.
2. Proper training to operators of machines like Boiler, Incinerators & Autoclave shall be provided.
3. Safe distance demarcating on heavy machines like cranes (during construction) shall be maintained.
4. Signs of danger at the hazard places shall be placed.

Table 89. List of process hazards & preventive measures

S. No.	Name of Plant	Hazardous Process and Operation	Materials In The Process / Operation With Their Quantity	Name of The Vessel And Its Location	Operating Parameter s	Type Hazards Possible	Control Measures Provided
1	Incineration plant	Incineration	Yellow category waste	Primary chamber and secondary chamber, Incineration area	Temperature- 850 °C –primary chamber and 1050 °C –secondary chamber	Fire, Explosion, Burn, odour, toxic gases	1] Fully Automatic 2] Emergency Local Stop 3] Fire Extinguisher (CO ₂) 4] PPE 5] Emergency provision for Fire Brigade from an outside source.
2	Autoclave	Sterilisation	Red category waste	Autoclave	Temp. around 135 °C & 2.2 kg./sq.cm pressure	Fire, Health Hazard	1] Fully Automatic Computer based automation 2] Emergency Local Stop 3] PPE

Thermal:

Thermal hazards are objects or substances that transfer energy as heat.

Pesticide manufacturing industry can have following points of thermal hazard:

- Incinerators

The thermal hazard can cause burn of skin; following preventive measures can be taken:

- Boiler section shall be properly insulated and safe distance & guard are provided.
- Operators in the thermal hazard area shall be provided with protective gear like gloves, goggles etc. while working around Boiler & Incinerators.
- For emergency first aid room shall be maintained.

7.7. EMERGENCY RESPONSE PROCEDURE

Even after all the preventive measures for any emergency following infrastructure has been provided:

1. There shall be an Emergency Control Room.
2. Assembly area for Industry shall be demarcated.
3. Communication system shall be installed which includes an intercom and public address system.

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4. Fire alarms shall be installed at vulnerable places.
5. The safe zones (at the time of emergency) shall be displayed at different locations.
6. First Aid facilities shall be made available at the Control room.

In case of emergency following action shall be taken:

1. The emergency shall be declared in case of following:
 - Fire alarm buzzing (Fire hazard)
 - Vibration/Earthquake feeling (Earthquake)
 - Water logging above 30 cm (Flood)
 - Any unusual smell of gas or suffocating feeling (Chemical leakage)
 - Security alarm from main gate. (Security risk/Terrorism)
2. On declaration of emergency, communication shall be made to workers for any type of emergency.
3. All the workers of the affected area shall be moved to a safe zone.
4. The control measures shall be done as per the emergency action plan for each type of hazard.
5. All the members of the disaster management cell shall take charge of their respective duties.
6. Outside help like fire tender, police ambulance etc. shall be called by site controller or Incident controller.

7.7.1. RECOVERY PROCEDURE

The recovery procedure shall depend on the type of emergency. Recovery procedure shall be followed by the engineering section to restore the essential services. The PLI (Public Liability Insurance) shall be done as a part of an off/on site emergency plan.

7.7.2. OFF SITE EMERGENCY MANAGEMENT PLAN

If an accident takes place in an industry/ unit & its impacts are felt outside its premises, the situation is called an “Off Site Emergency”. To meet such Emergencies, an Off-site Emergency Plan shall be prepared.

Cause of off-site emergency

In a Common Biomedical Waste Treatment Facility, the chemical & raw material storage room & handling area & transportation of the raw material may cause off- site emergency to occur.

The main objectives of the off-site emergency plan are: -

- To save lives and injuries
- To prevent or reduce property losses and
- To provide for quick resumption of normal situation or operation

7.8. PREVENTIVE MEASURES

7.8.1. DURING TRANSPORTATION

Transportation system with proposal of safety measures & appropriate waste handling system

There will be use of approx. 10 vehicles daily for transportation of bio-medical waste. These vehicles are for collection of bio medical waste from various medical establishments for 24 Hrs. The Vehicles shall be designed as per following CPCB norms:

- Separate cabins for driver/staff and the bio medical waste. There shall be provision of bulkhead between the driver’s cabin and the vehicle body, which shall be designed to retain the load if the vehicle is involved in a collision.
- The base of the waste cabin shall be leak proof and is easy to wash and disinfect.
- The inner surface of the waste cabin shall be made of smooth surface to minimise water retention.
- The vehicles shall be properly labelled with the symbol of Biohazard as per schedule III of the Rules and display the name, address and telephone number of the Company.
- The waste cabin shall have provision for sufficient opening from the rear side so that Biomedical Waste can be easily loaded and unloaded.
- The vehicles shall be provided with the first aid kit to handle emergency situations.
- Empty plastic bags, suitable protective clothing, cleaning equipment, tools, and disinfectant, together with special kits for dealing with liquid spills, shall be carried in a separate compartment in the vehicle.
- Vehicles or containers used for the transportation of biomedical waste shall not be used for the transportation of any other material. They shall be kept locked at all times, except when loading and unloading.

During Storage and Handling

Following measures shall be adopted during storage & handling

- A written procedure to handle and report needle stick injuries and other waste-handling incidents. Injuries caused by needle sticks and sharp instruments will be documented, reviewed, and changes implemented to prevent similar incidents in the future;
- The threshold limit for the storage of the chemical at any point of time shall not exceed.
- To prevent and control risk and damage, all the raw material shall be stored in leak proof poly bags at a secured and contained location with proper safety measures.
- Handling is shall be done as per NIOSH guidelines
- There shall be no drainage lines or water bodies near the raw material storage & chemical or fuel storage room to avoid contamination of water up to long distances

Emergency Response Procedures

Under the ‘Manufacture, Storage and Import of Hazardous Chemicals Rules ‘preparation of ‘Off-site Emergency Plan’ is covered in Rule No.14. The duty of preparing and keeping up to date the ‘Off-site Emergency Plan’ as per this rule is placed on the District Emergency Authority. Also, occupiers are charged with the responsibility of providing the above authority with such information, relating to the industrial activity under their control, as they may require for preparing the off-site emergency plan.

As per the rules, the main component of the Off-Site Emergency Plan is coordination with the District Authority. The District Authority (i.e. District Collector, Factory Inspector etc.) in conjunction with the company & nearby industries under mutual aid scheme and relevant emergency services should have an Off-site emergency plan considering the following:

- Incidents at the site including fires and/or explosions would likely cause concern among the local population. People shall be advised to stay away from the area, and relevant actions shall be followed.
- In addition to the company's own Emergency control centre, the "local" external agencies shall also be involved in the formulation of procedures for off-site incidents and in response to any incident; Other external agencies that shall also be involved in response to any incidents are:
 - Traffic Police;
 - Fire services;
 - Health Authority;
 - Govt. Safety Authority; etc.
- Efficient off-site incident planning also involves interaction on a regular basis among various organisations. To ensure that every procedure put in place shall run efficiently and effectively, exercise (mock drills) involving all the relevant organisations will be carried out. These shall be monitored and assessed with procedures updated to reflect knowledge gained;

7.8.2. ROLES AND RESPONSIBILITIES

The roles of the various parties that may be involved in the implementation of an off-site plan are described below:

A) ROLE OF THE POLICE

- Protecting life and property and controlling traffic movements.
- Controlling bystanders, evacuating the public, identifying the dead and dealing with casualties and informing relatives of dead or injured.

B) ROLE OF THE FIRE AUTHORITIES

- The control of a fire is normally the responsibility of the senior fire brigade officer who would take over the handling of the fire from the site incident controller on arrival at the site.
- Fire authorities having major hazard works in their area should have familiarised themselves with the location on site of all stores of flammable materials, water and foam supply points and fire-fighting equipment.

C) ROLE OF THE HEALTH AUTHORITIES

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- Health authorities, including doctors, surgeons, hospitals, ambulances and so on, have a vital part to play following a major accident and they should form an integral part of any emergency plan.

D) ROLES OF THE GOVERNMENT SAFETY AUTHORITY

- In the event of an accident, local arrangements regarding the role of the factory inspector shall apply.
- In the aftermath, factory inspectors may wish to ensure that the affected areas are rehabilitated safely.

Chemical Accidents (Emergency Planning, Preparedness and Response) Rules, 1996 prescribes for the constitution of the State Crisis Group as apex body at the State Level to deal with major chemical accidents and to provide expert guidance for handling major chemical accidents and for the constitution of District and Local Crisis Groups.

A. Functions of the State Crisis Group

- To review all district off-site emergency plans in the State with a view to examine its adequacy in accordance with the Manufacture, Storage and Import of Hazardous Chemical, Rules and forward a report to the Central Crisis Group once every three months;
- To assist the State Government in the planning, preparedness and mitigation of major chemical accidents at a site in the State;
- To continuously monitor the post-accident situation arising out of a major chemical accident in the State and forward a report to the Central Crisis Group;
- To review the progress report submitted by the District Crisis Groups;

B. Functions of the District Crisis Group

- To assist the preparation of the district off-site emergency plan;
- To review all the on-site emergency plans prepared by the occupier of Major Accident Hazards installation for the preparation of the district off-site emergency plan;
- To assist the district administration in the management of chemical accidents at a site lying within the district;
- To ensure continuous information flow from the district to the Centre and State Crisis Group regarding accident situation and mitigation efforts;
- To forward a report of the chemical accident to the State Crisis Group; and Conduct mock-drill of a chemical accident at a site each year.

C. Functions of the Local Crisis Group

- To prepare local emergency plan for the industrial pocket;
- To ensure dovetailing of the local emergency plan with the district off-site emergency plan;
- To train personnel involved in chemical accident management;
- To conduct at least one full scale mock-drill of a chemical accident at a site every six month and forward a report to the District Crisis Group; and
- To respond to all public inquiries on the subject.

7.8.3. RECOVERY PROCEDURE

The recovery procedure depends on the type of emergency. Recovery plans based on different emergencies are prepared. Recovery procedure shall be followed by the engineering section to restore the essential services. The PLI (Public Liability Insurance) shall be done as a part of off/on site emergency plan.

7.8.4. EMERGENCY CONTROL TEAM

7.8.4.1. KEY PERSONNEL

The key personnel involved in Emergency (On site & Off site) are given below:

1. Emergency Controller – Plant Head
2. Incident Controller
3. Area In-charge
4. Safety Head/officers - EHS Manager
5. Security Supervisor
6. Utilities Manager
7. Fire fighter
8. Evacuation members [Emergency Response Team (ERT) Members]
9. First Aid provider
10. Rescue members

7.8.4.2. CHAIN OF COMMAND DURING EMERGENCY

The organisational chart for coordination within the industry as well as the external agencies is given below:

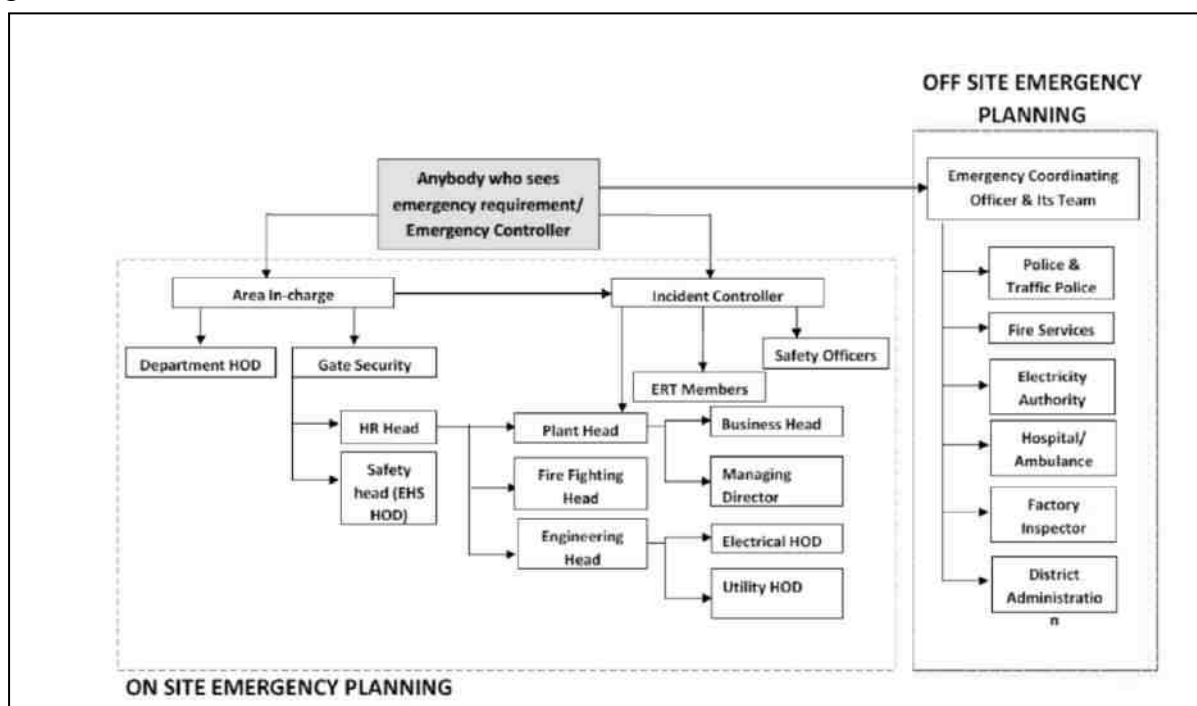


Figure 36. On site emergency planning

7.9. OCCUPATIONAL HEALTH AND SAFETY

Workers handling and disposing of biomedical waste are at potential risk of exposure to infection from sharps related accidents or when containers of waste burst, open and leak, or spills of certain waste materials occur. Exposure to a needle or other sharp object contaminated with the blood of an infectious person presents the greatest potential risk for transmission of HBV, HIV, and other blood borne pathogens to the health-care worker and waste handler.

Action plan for the implementation of OHS standards as per OSHAS shall be followed as given below:

- Occupational health surveillance programmes shall be done six monthly & and their records shall be maintained.
- Companies shall take reasonable steps to reduce the risk of exposure to infection by establishing written policies and procedures based upon the most currently accepted clinical and occupational health and safety information in consultation with workers, handling and disposing of biomedical waste. These policies and procedures shall be reviewed and updated regularly, with compliance to their requirements verified as necessary.
- Regular assessment of waste management procedures shall be done to assure compliance with applicable standards.
- A written procedure to handle and report needle stick injuries and other waste-handling incidents shall be there. Injuries caused by needle sticks and sharp instruments shall be documented, reviewed, and changes implemented to prevent similar incidents in the future;
- Emphasis should be on the need for point of generation segregation so that waste shall be placed within an appropriate waste container.
- Type and quality of waste containers shall be reviewed regularly, if necessary it will be upgraded to more suitable container;
- Handling practices shall be reviewed regularly to determine problems of inappropriate handling. If so, the handling techniques shall be modified. At project site in case of emergency First Aid facility shall be provided.
- Health check-up camps shall be organised on a regular basis at company dispensary / nearby locations.
- Prior to working with bio-medical, workers shall be trained on its proper handling & storage.
- Proper medical facility arrangements shall be provided in case of any accidental release.
- ESI facility shall be made available.
- Proper fire-fighting measures like buckets & portable fire extinguishers shall be provided at strategic locations.
- Emergency plans shall be prepared and mock drills of the on-site emergency shall be conducted.
- Employers and employees shall be made aware of the hazardous properties of materials in their workplaces, and the degree of hazard each poses.
- Inspection of the treatment facility shall be done at least once a year and annual status report on compliance with the Rules shall be submitted.

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- It shall be made sure that waste haulers and handlers shall always be properly clothed and wear personal protective equipment so that harmful agents, whether physical, chemical, or infectious, are prevented from gaining access to open wounds, cuts, or by absorption through the skin. Personal protective equipment may include cut proof gloves, gowns, safety glasses, protective footwear, etc..
- A course of Hepatitis B (HBV) vaccine shall be offered to all employees dealing with handling and disposing of biomedical waste who are at risk of exposure to human blood, blood products, or body secretions.
- A safety officer / environmental officer shall be recruited and lead all the safety issues related to man, machine & materials.
- Exterior refuge or safe areas shall be located away from the site of the emergency and which provides sufficient space to accommodate the employees.
- Public Liability Insurance Act, 1991 shall be followed.

7.9.1. HEALTH AND SAFETY MEASURES

- Occupational health surveillance programmes shall be done six monthly & and their records shall be maintained.
- Regular Health check-ups shall be organised for the staff working in the unit (at the time of induction and at least once in a year)
- Training to all its health care workers and others involved in handling of Bio medical waste at the time of induction and thereafter shall be provided at least once every year.
- Personal Protective Equipment shall be provided to the workers dealing with Biomedical waste. Safety gadgets such as Gloves, Mask, Apron, Gumboots shall be strictly used in the waste storage & treatment rooms.
- Immunisation for Hepatitis B & tetanus shall be provided to the workers.
- Label Precautions for infectious waste and First Aid facility shall be provided.
- ESI facilities shall be made available.
- Emergency plans shall be prepared and mock drills of the on-site emergency shall be conducted.
- Proper fire fighting measures like buckets & portable fire extinguishers shall be provided at strategic locations.
- Inspection of the industrial activity shall be done at least once in a year and an annual status report on the compliance with the Rules shall be submitted.
- A safety officer / environmental officer shall be recruited and lead all the safety issues related to man, machine & materials.
- Public Liability Insurance Act, 1991 shall be followed

7.9.2. Personal Protective Equipment

The level of risk of exposure to particular chemical/hazardous material shall dictate the appropriate level of personal protective equipment (PPE) required such as side shielded safety spectacles and

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appropriate gloves, footwear, face shields, respiratory protection, fire-resistant clothing, or chemical suits.

Respirators: A complete respiratory protection program shall be instituted. It includes evaluations of workers’ abilities to perform tasks while wearing CPC, Regular training of personnel, Fit testing, Periodic environmental monitoring, Regular maintenance, inspection, and cleaning.

Clothing: Workers shall wear appropriate protective clothing to prevent skin exposure.

Skin Protection: Workers shall wear solvent resistant gloves and clothing.

Eye Protection: Workers shall wear splash proof chemical goggles and face shield when working with liquid, unless full face piece respiratory protection is worn.

Eyewash facility and a safety shower: Common workplaces shall be equipped with an Eyewash facility and a safety shower.

7.9.3. BUDGET FOR OCCUPATIONAL HEALTH & SAFETY

Table 90. Budget for occupational health and safety

S. No	Description	Amount (Rupees in Lacs)
1	Workers shall be subjected to primary health check-up before they are employed to ascertain their health conditions. Thereafter, Regular Medical check-up & First Aid facility shall be organized for workers to evaluate the adverse impact if any on these persons due to the proposed activity. Occupational health surveillance programme shall be done six monthly. A safety officer / environmental officer shall be recruited.	7
2	Infrastructure facilities such as sanitation, fuel, restroom, canteen etc. shall be provided to the labour force during construction as well as to the casual workers including truck drivers during the operation phase.	5
3	Workers shall be provided with masks, gloves, goggles & ear muffs for safe working	4
4	Covered transportation of vehicles.	4
5	Insurance for worker & Tie up with ESI Hospital	7
Total		27

7.9.4. BUDGET OF PUBLIC HEALTH AND SAFETY

Table 91. Budget for public health and safety

S. No.	Impact	Mitigation	Amount (In Lacs)
1	Health and Safety	Health Check-up camps shall be organised. Support to the primary Health centre. Public awareness system for management & handling of waste.	5

7.9.5. WORK ZONE MONITORING

Work zone monitoring shall be carried out by the HSE department every month for gaseous pollutants and dust. Records shall be kept in standard Form as per Factories Rules. Locations for sampling shall be identified. Samples shall be analysed for Airborne concentration of hazardous chemicals in ppm.

7.9.6. SAFETY IN WORK ENVIRONMENT

WORKER HEALTH CHECKUP PLAN

Company shall be conducting pre-employment and post-employment medical tests for its employees besides various educational and awareness programs on health and safety. A full-time medical assistance centre shall be always available to its employees to carry out any first aid.

Pre-Employment Tests: Any employee who joins the Plant goes under company prescribed pre-employment medical examination tests from an MBBS qualified doctor. The medical fitness reports shall be required to be submitted on or before joining the organisation. If some new employee reports for his/her joining without a Medical Examination and fitness report; he/she shall not be allowed to join until the Medical Examination and fitness report is produced to the HR department. Such incidents shall also be reported to the HR Head.

Annual / Bi-annual Medical Tests: Annual / Bi-annual Medical tests shall be conducted in the months of January and July respectively. All those employees who shall be exposed to hazardous raw materials / processes, shall be examined twice a year. Presently, the following departments are involved in hazardous process and covered for medical examination:

- (i) Production
- (ii) EHS
- (iii) Quality Control
- (iv) Mechanical
- (v) Electrical
- (vi) Instrumentation
- (vii) Packing

Apart from the employees of the above-mentioned departments, employees of other departments shall also be covered for medical examination if they are also exposed to hazardous processes due to any reason. The cost of pre-employment and during employment medical examination shall be borne by the company.

Following is the list of Medical Tests/occupational health surveillance programs for employees in the future after expansion.

LIST OF MEDICAL TESTS

Environment, Health and Safety (EHS) Management Plan

Table 92. List of Medical Tests

S.no	Medical Test		
	Pre-Employment Medical Tests	Post-Employment Medical Tests	
		Annual Medical Tests (January- February every year)	Bi-Annual Medical Tests (July-August)
1	Physical Examination: Chest Examination Weight Height Pulse B.P.	Physical Examination: Chest Examination Weight Height Pulse B.P.	Physical Examination Chest Examination Weight Height Pulse B.P.
2	-Urine Routine Examination -Physical Examination -Macroscopic Examination	-Urine Routine Examination -Physical Examination -Macroscopic Examination	N.A.
3	Haematology -Haemoglobin -TLC -DLC -Polymorphs -Lymphocytes -Eosinophils -Monocytes -ESR (Wintrobe)	haematology -Haemoglobin -TLC -DLC -Polymorphs -Lymphocytes -Eosinophils -Monocytes -ESR (Wintrobe)	N.A
4	Liver Function Tests (LFT)(For those workers only directly exposed to chemicals)	Liver Function Tests (LFT) (For those workers only directly exposed to chemicals)	N.A.
5	Chest X-pay P.A. View	Chest X-pay P.A. View	N.A
6	Vision test for near & far	Vision test for near & far	Vision test for near & far
7	Blood Sugar	Blood Sugar	N.A.
8	ECG	ECG	N.A.
9	Blood Group	Blood Group	N.A.
10	Ultrasound (Abdomen)	N.A	N.A.
11	Spirometry Test	Spirometry Test	N.A.

Management Policy

The company has a written policy for the safety, Health and Environment Management. Through this policy, the company management commits itself to the following objectives.

- Meet all the relevant laws, regulations and international agreements
- Conduct its activities safely, protecting the health of all employees and the products users

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- Reduce the adverse environmental impacts to a practicable minimum at an acceptable cost to the company and society
- Encourage continuous improvement in safety, health and environment performance.

8. PROJECT BENEFITS

8.1. ENVIRONMENTAL BENEFITS

- Organised methods for Bio-medical Waste Treatment i.e. Incineration, autoclaving & shredding shall be adopted. A complete bio medical waste disposal solution using the best technology methods shall be provided.
- As per the Gazette No. G.S.R. 343(E) dated 28th March 2016, Bio-Medical Waste Management Rules, 2016 issued by the central government, bio-medical waste treatment facility is a part of hospital hygiene and maintenance activities and With the proposed Common Biomedical Waste Treatment facility Dindigul District shall get a cleaner and healthier environment.
- It shall be an environmentally sustainable project.

8.2. FINANCIAL BENEFITS

- The project shall create direct and indirect employment for local people for which skilled and unskilled manpower will be needed. About 50 people shall be deployed temporarily during construction/installation of the project and about 40 people shall be employed during the operational stage of the project.
- The waste product obtained from shredder shall be sold to authorised recyclers which shall be reused.

8.3. SOCIAL BENEFITS

- M/s Dindigul waste Management Pvt. Ltd. shall provide services to healthcare units.
- Installation of individual treatment facilities by small healthcare establishments requires comparatively high capital investment. In addition, it requires separate manpower and infrastructure development for the proper operations and maintenance of treatment systems. The Centralised system of waste management is the best method in terms of cost reduction and minimises legal and ethical hassles of health care staff authority
- It shall augment organised common **Biomedical Waste Treatment in the Districts.**

9. ENVIRONMENTAL COST BENEFITS ANALYSIS

As per EIA Notification 2006, Chapter 9 i.e. Environmental Cost Benefit Analysis to be prepared if recommended at the Scoping Stage.

However, during the Scoping Stage, no such conditions are mentioned in the TOR letter.

10. ENVIRONMENT MANAGEMENT PLAN

The Environment Management Plan (EMP) is a site-specific plan developed to ensure that the project is implemented in an environmentally sustainable manner where all stakeholders including the project proponents, contractors and subcontractors, including consultants, understand the potential environmental risks arising from the proposed project and take appropriate actions to properly manage that risk. Adequate environment management measures need to be incorporated during the entire planning, installation and operating stages of the project to minimise any adverse environmental impact and assure sustainable development of the area.

10.1. ENVIRONMENT MANAGEMENT DURING INSTALLATION/ CONSTRUCTION PHASE

Table 93. Environment Management Plan during construction phase

S. No.	Parameters	Mitigation Measures
1	Air Environment	<p>Air quality around the project will be marginally impacted during the installation stage but since there is no nearby habitat or residence or any other installations within 500 m radius , the impact will be much less in terms of its effect on the environment.</p> <p>Water sprinkling shall be done at the location where dust generation is anticipated.</p> <p>No excavation of soil shall be carried out without adequate dust mitigation measures in place.</p> <p>No loose soil or sand or Construction & Demolition Waste or any other construction material that causes dust shall be left uncovered. Sprinkling shall be done every hour by a fixed sprinkling system.</p> <p>Construction material and waste shall be stored only within earmarked area and road side storage of construction material and waste shall be prohibited</p> <p>Only covered vehicles carrying construction material and machinery and waste shall be permitted.</p> <p>To minimise the occupational health hazard, proper masks shall be provided to the workers who are engaged in dust generation activity.</p>
2	Water	<p>During the installation phase, 1 KLD of domestic sewage will be generated and disposed of to soak pits via septic tanks.</p> <p>During the installation period, a total 1.25 KLD of water will be required for domestic purposes and the same will be taken from local body supply</p> <p>Runoff from the site shall not be allowed to stand (water logging), same shall be channelized to the nearby drain.</p>

3	Noise	<p>During the installation stage, expected noise levels shall be in the range of 85-100 dB(A), which will decrease with increase in distance. Hence all the activities shall be carried out during the day time.</p> <p>There will be some noise generation due to movement of vehicles carrying materials during installation phase and as this is only a temporary phenomenon it can be managed by properly regulating the movement of vehicular traffic so that the ambient air quality with respect to noise is not adversely affected. To prevent any occupational hazard earmuffs/earplugs shall be given to the workers working around or operating plant/ machinery emitting high noise levels. Use of plants or machinery shall be strictly prohibited during night hours. Careful planning of machinery operation and scheduling of operation shall be done to minimise such impact.</p>
4	Solid & Hazardous Waste	<p>During the construction/installation, whatever quantity of construction waste is generated shall be stacked and disposed off at the designated disposal site and care shall be taken to ensure that temporary stacking and transportation shall not cause any disturbance to the surrounding environment.</p> <p>Muck and slurry generated will be used as backfilling material to raise soil levels in nearby areas.</p> <p>Approx. 6 kg/day of solid waste will be generated and disposed off at the Solid Waste Disposal Site.</p> <p>At the site, it will be handled manually and by tractor trolley. All proper safety measures shall be adopted by the workers handling the waste. All the material will be handled at the pacca floor and no contaminated material/waste will be discharged in open.</p>

10.2. ENVIRONMENT MANAGEMENT DURING OPERATION PHASE

10.2.1. AIR ENVIRONMENT

Table 94. Source of air pollution and proposed APCMS

Source of Air Pollution	Proposed APCM
D.G. Set back up (1*125 kVA)	Stack height of 6 m above roof level
Incinerator (500 (2x250) kg/hr)	Combined Chimney of 30 m. A gas cooler will be provided to drop temperature of flue gases, followed by flue gas neutralisation system to neutralise the flue gas from SO _x , No _x and HCL through alkali reagent. The dioxin control system is provided to take care of NO _x , Dioxin & Furans, and odour present in the flue gases. Further the flue gas will be passed through

	the Torri therm filtration system to remove sub-micron particles.
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10.2.1.1. MEASURES ADOPTED TO MITIGATE THE AIR EMISSIONS

- ❖ Proper ventilation shall be maintained.
- ❖ Plantation work for green belt development shall be developed as per CPCB guidelines.
- ❖ Ambient air quality shall be regularly monitored to ensure that ambient air quality standards and suggested limits are met at all times.

10.2.1.2. STACK EMISSION

- **Incinerator:** To control emissions from incinerators of 500 (2*250 kg/hr), Ceramic Filter Bag House shall be Provided. Combined Chimney of 30 m will be provided from the incineration process.
- **DG Set:** For mitigation of impacts of air pollution from D.G. sets, stack height of 6 m above roof level shall be provided for proposed D.G. set of capacity 1x 125 kVA.

10.2.1.3. ODOUR CONTROL

1. As per BMW Rules the waste should be treated within 48 hrs of its generation.
2. Daily washing of waste collecting containers, vehicle compartment and floor of store room.
3. Closed cabin vehicles shall be used for the collection and transportation of bio-medical wastes.
4. Masks shall be provided to workers to avoid health issues due to odour.
5. Hygienic conditions shall be maintained.
6. Green Belt/Plantation shall be maintained across the project site to check odour within the premises.
7. Dilution of odorant by odour counteraction or neutralisation by spraying Ecosorb (organic and biodegradable chemical) around odour generation areas at regular intervals.
8. Area shall be properly ventilated.

10.2.1.4. IMPACT OF THE TRANSPORTATION OF BIO MEDICAL WASTE & VEHICULAR POLLUTION CONTROL & ITS MANAGEMENT

For transportation of bio medical waste, trucks shall be used. Traffic to the different sites during construction/installation shall be intensive and heavier than at present in normal operating conditions. Dust emission from movement of vehicles is likely to cause some impacts on the working population within the immediate vicinity of the project site. In turn, it shall subject existing roads to more stress. To control the impact, dust suppression systems (water spray) shall be used as per requirement at the construction site. Construction materials shall be fully covered during transportation to the project site by road. Vehicle flow during shift changes shall be regulated by

allowing exits in a phased manner. The present road conditions are reasonably good for proposed movement of traffic. Preventive maintenance shall be carried out for vehicles and pollution checks on a periodic basis will be mandatory.

10.2.2. WATER ENVIRONMENT

10.2.2.1. WATER CONSUMPTION AND WASTEWATER DISCHARGE

Source: From nearest Local body

The total water requirement for the project will be 20.25 KLD out of which 9.25 KLD will be fresh water. The water will be sourced from tanker supply and borewell.

Table 95. Water management

Water Usage	Water Requirement (KLD)	Waste Water (KLD)
Domestic	1.25	(1 KLD will send to Septic Tank and Soak Pit)
Floor & Vehicle Washing	6.5	6.50
Venturi Scrubber	6.5	6.50
Autoclave Steam	2	0.00
Gardening	4	Nil
Total	20.25	13.00

10.2.2.2. SCHEME OF WASTEWATER MANAGEMENT

The wastewater passes through the oil and grease tank to remove excess oil from the wastewater. The waste water after removal of oil and grease will be collected in an equalisation tank to hold the wastewater for some predetermined time in a continuously mixed basin to produce a uniform wastewater. The wastewater is then subjected to Flocculation tank. In a flocculation tank, the water is stirred or otherwise moved around so that the particles move around, bump into other particles. Chemicals (most commonly "alum"/ polyelectrolyte) are often added to the water going into a flocculation tank to help aid particle formation. The next step in the process is to separate the solid sludge with the wastewater hence the wastewater will be transferred to Tube settlers which capture the settle-able fine flock that escapes the clarification zone beneath the tube settlers and allows the larger flock to travel to the tank bottom in a more settle-able form. The Tube-settler's channel collects solid into a compact mass which promotes the solids to slide down the tube channel to sludge drying beds and the water content will go into the carbon filter to remove contaminants and impurities, utilising chemical adsorption. After giving UV treatment the treated water obtained shall be reused.

Water Conservation measures

Following measures shall be adopted for water conservation:

1. **Reduction:** The first step is reduction of water consumption, with strict measurement and control of consumption. So, minimum water will be used for floor & vehicle washing.

2. **Re-use:** Treated water from the ETP will be reused in floor & vehicle washing & Gardening.

Scheme of ETP

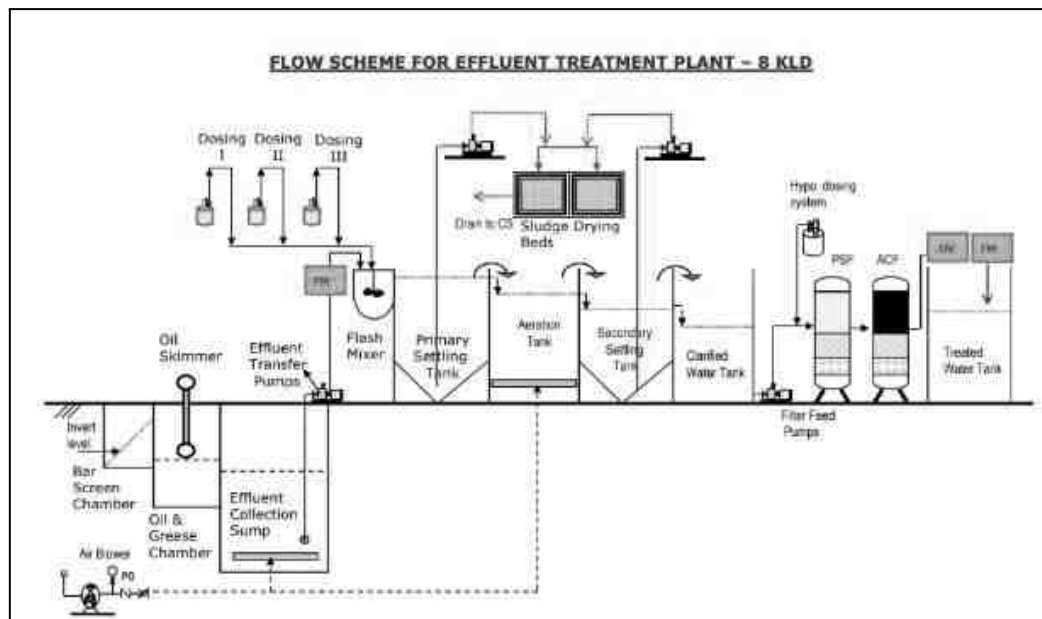


Figure 35. Scheme of ETP

Scheme of ETP

- **Primary Treatment** – Free Oil Separation (Oil & Grease Trap)- The oil & grease trap tank is free oil removal equipment oil .Effluent is fed to the Oil & grease trap tank. Due to the density difference between the oil & water, oil is separated from water using stokes principle. Oil being lighter than water floats. Hence to skim off the floating oil, a slotted pipe oil skimmer has been provided. Oil via slotted pipe oil skimmer is collected in the oil collection drum & disposed of.
- **Equalisation Tank** - The equalisation tank is designed to equalise BOD/COD loading to the next treatment stage. It is designed with a 24 hour residence time and with mixing by coarse bubble aeration.
- **Mixing & Flocculation Units** - The equipment provided for these include the agitator (FM) in the Mixing tank (MT) and the Flocculator (FLCC) in Flocculator tank (FLCCT). Alum (as coagulant) and Polyelectrolyte (as flocculant) are selected to enable coagulation with high speed mixing and destabilising the particle and then to start floc-formation with long chain structure in the flocculation tank with gentle mixing. 20 minutes residence time is provided in the flocculation tank for particles to become heavy before entering into the lamella clarifier thereafter.
- **Tertiary Treatment**– The wastewater is then polished by removal of suspended particles in a multi- grade sand filter (MGF) and residual refractory organic materials if any in activated carbon filters (ACF). The COD is adsorbed in the active centres of the granular activated carbon. The system is designed so that the carbon can be removed as easily as possible and in a staged manner so that the plant copes hydraulically whilst an adsorber is being changed.

- **UV+Oxidation:** The effluent will be provided with the Advanced Oxidation treatment like per ozonation (i.e. UV/O₃) to polish water and remove all COD. AOPs are processes which result in in-situ generation of hydroxyl radicals (OH) which are most powerful and 109 times faster than Ozonation which has been used for quite some time in wastewater treatment (Parsons, 1997). AOPs are collectively referred to all those processes which ultimately generated OH radicals. These include, Fenton’s Process, UV/ Fenton’s Process, Per-oxidation, Photolysis of Hydrogen Peroxide, Electrochemical AOPs, Ultrasound AOPs and Heterogeneous Photocatalysis (Oturán and Aaron, 2014).

10.2.2.3. CHARACTERISTICS OF INLET & OUTLET

Table 96. Characteristics of Inlet and Outlet of waste water from ETP

S. No.	Parameter	INLET OF ETP	OUTLET OF ETP Tertiary Treatment
1.	pH	6.53	6.5- 8.5
2.	BOD	300 mg/l	<10 mg/l
3.	COD	450mg/l	<100 mg/l
4.	TSS	350	< 30 mg/l
5.	Oil & Grease	5 mg/l	Nil

10.2.3. RAIN WATER HARVESTING SCHEME

As it is a Bio Medical Waste Treatment Unit, therefore rainwater from the rooftop will be channelized to the storm water drainage network of the industrial area. Other stormwater will be channelized to industrial drain outside the place.

10.2.4. WASTE GENERATION AND MANAGEMENT

10.2.4.1. DOMESTIC SOLID WASTE

During Construction Phase:-

Total 7.5 kg/day of solid waste will be generated from 50 no. of workers out of which 4.5 kg/day will be biodegradable waste which will be sent to Solid Waste site and 3 kg/day will be Recyclable waste which will be sent to approved recycler.

During Operation Phase:-

6 kg/day total solid waste will be generated by 40 No. of construction workers out of which 4.0 kg/day will be biodegradable waste which will be sent to Solid Waste site and 2.0 kg/day will be non-biodegradable waste which will be sent to approved recycler.

Table 97. Solid waste Management

S. No	Category of waste	Quantity of waste generation	Disposal method
1	Biodegradable Waste	4	Sent to solid waste site
2	Recyclable Waste	2	To approved Recycler
	Total	6 kg/day	

10.2.4.2. PROCESS WASTE

Table 98. Process Waste Management

S. No.	Process Waste	Quantity of generation, kg/day.	Method of disposal
1.	Waste from Autoclave	41.6 kg/day	Autoclaved Plastic & rubber etc. will be sent to Shredder & then from the shredder it will be sent to authorised recyclers.
		70 kg/day	Sharps will be treated in autoclave. After autoclaving, sharps will be encapsulated. Glass bottles shall be sold to recyclers after chemical disinfection.

10.2.4.3. HAZARDOUS WASTE

Table 99. Hazardous Waste Management

S. No.	Hazardous waste	Quantity of generation	Method of disposal
1.	Used Oil	8.0 LTRS/ month	Used oil from machineries/D.G. Set will be carefully stored in HDPE drums in an isolated covered facility. The used oil will be given to authorised vendors for the treatment of the same. Suitable care will be taken so that spills / leaks of used oil from storage could be avoided.
2	Incinerator Ash	100 kg/day	Send to TSDF site
3	ETP Sludge	40 kg/day	It will be stored in leak proof PVC containers in isolated area on pakka floor with in the premises as per HWM Rules and handed over to authorised treatment and disposal facility of Tamil Nadu Pollution Control Board

10.2.4.4. WASTE COLLECTION/ HANDLING/ TREATMENT/ DISPOSAL FOR COVID - 19 WASTE

1. COVID-19 Isolation Wards:

- Healthcare facilities having isolation wards for COVID-19 patients need to follow these steps for ensure safe handling and disposal of biomedical waste generated during treatment:
- Keep separate colour coded bins/bags containers in wards and maintain proper segregation of waste as per BMWM Rules,2016 and amended CPCB guidelines for implementation of BMW Management Rules.
- As a precaution double layered bags (using 2 bags) should be used for collection of waste from COVID-19 isolation wards so as to ensure adequate strength and no-leaks.
- Collect and store biomedical waste separately prior to handling over the same CBWTF. Use a dedicated collection bin labelled as “COVID-19” waste and keep separately in temporary storage prior to handling over to authorised staff of CBWTF. Biomedical waste collected in such isolation wards can also be lifted directly from the ward into the CBWTF collection van.
- In addition to mandatory labelling, bags/containers used for collecting biomedical waste from COVID-19 wards, should be labelled as “COVID-19 Waste”. This marking would enable CBWTF to identify priority treatment and disposal immediately upon receipt.
- General waste not having contamination should be disposed off as Solid Waste as per SWM Rules, 2016.
- Maintain a separate record of waste generated from COVID-19 isolation wards.
- Use dedicated trolleys and collection bins in COVID-19 isolation wards. A label “COVID-19 Waste” to be pasted on these items also.
- The (inner and outer) surface of containers/bins/trolleys used for storage of COVID-19 waste should be disinfected with 1% sodium hypochlorite solution.
- Report opening or operation of COVID-19 ward to SPCBs.
- Depute dedicated sanitation workers separately for BMW and general solid waste so that waste can be collected and transferred timely to temporary waste storage areas.

2. Duties of Common Biomedical Waste Treatment Facility (CBWTF):

- Report to SPCBs/PCCs about receiving of waste from COVID-19 isolation wards/Quarantine camps/quarantined homes/COVID-19 testing centres.
- Operators of CBWTF shall ensure regular sanitization of workers involved in handling and collection of biomedical waste.
- Workers shall be provided with adequate PPEs including three layers masks, splash proof aprons/gowns, nitrile gloves, gumboots and safety goggles.
- Vehicles should be sanitised with sodium hypochlorite or any appropriate chemical disinfectant after every trip.
- COVID-19 waste should be disposed off immediately upon receipt at the facility.

“Common Bio-Medical Waste Treatment Facility ” at SF Nos. 131/1A2 & 154/11, Noothalapuram village , Nilakottai Taluk, Dindigul By M/s Dindigul Waste Management Private Limited .

- In case it is required to treat and dispose of more quantities of biomedical waste generated from COVID-19 treatment, CBWTF may operate their facilities for extra hours, by giving information to SPCBs/PCCs.
- Operators of CBWTF shall maintain separate records for collection, treatment and disposal of COVID-19 waste.
- Do not allow any worker showing symptoms of illness to work at the facility. May provide adequate leave to such workers and by protecting their salary.

10.2.5. NOISE MANAGEMENT

To reduce Ambient Noise level the following measures will be adopted -

- Equipment shall be of standard make and will be equipped with a silencer. The equipment shall be in good working conditions, properly lubricated and shall be maintained to keep noise within permissible limits.
- High noise zones shall be marked and earplugs will be given to workmen near noise producing equipment.
- Proper shifting arrangement shall be made to prevent over exposure to noise and vibration. Cabin will be fitted with a glass window constructed for the workmen for protection against the noise.
- Tall trees with heavy foliage shall be planted along the boundary of the factory, which will act as a natural barrier to propagating noise.
- Speed limits shall be enforced on vehicles.
- Use of horns / sirens shall be prohibited.
- Use of loud speakers shall be complied with the regulations set forth by CPCB.
- Noise monitoring shall also be carried out to check the compliance with prevailing rules.

10.2.6. PARKING PROVISION

There shall be use of approx. 10 vehicles daily for transportation purposes. These vehicles are for collection of bio medical waste from various medical establishments. There is enough space available within the premises to park these vehicles.

Thus, parking of 40 vehicles can be done within the facility premises.

10.2.7. PLANTATION AND GREEN BELT DEVELOPMENT

Green belt planning shall be done as per guidelines laid by CPCB. With ecological perspectives for the proposed project taking into consideration and availability of space and other aspects. This shall help in increasing the aesthetic effect of the environment. Green belt/greenery shall be developed along most of the periphery of the project area as well as along roads. Total 1309 m² (18% of plot area) shall be developed as green area. Any sapling that does not survive shall be replaced. Ornamental trees shall also be planted to improve the aesthetic looks of the project area. The following characteristics have been taken into consideration while selecting plant species for green belt development and tree plantation.

- They shall be fast growing and tall trees.
- They shall be perennial and evergreen.
- They shall have thick canopy cover.
- They shall have a large leaf area index.

Since tree trunks are devoid of foliage, scrub should form there to give coverage to the trunks. The trees shall maintain regional ecological balance and conform to soil and hydrological conditions. Indigenous species would be preferred. Before planting trees, seedlings, saplings, grass species, shrubs, soil preparation, soil amendments etc. are to be undertaken well in advance. For proper survival and healthy growth of plant species a nursery shall also be maintained at the site. It is ensured that proper density of plants is maintained at site. Post plantation care is also necessary and maintained in a planned and scientific manner.

Trees proposed:

Total Green Area: 1309 m² (18% of plot area)

Number of Trees which can be planted= 327 Nos.’

Additional plantation taking into consideration survival rate is 70 % 470 trees

Suggested Species to be planted:

Table 100. Proposed species to be planted

S.No	Botanical Name	Common Name	Number
1	<i>Aegle marmelos</i>	Vilvam	23
2	<i>Adenanthera pavonina</i>	Manjadi	21
3	<i>Lannea coromandelica</i>	Odham	25
4	<i>Albizia amara</i>	Usila	32
5	<i>Bauhinia purpurea</i>	Mantharai	26
6	<i>Ficus racemosa</i>	Athi	52
7	<i>Azadirachta indica</i>	Neem	45
8	<i>Calophyllum inophyllum</i>	Punnai	75
9	<i>Millettia pinnata</i>	Pungam	55
10	<i>Neolamarckia cadamba</i>	Kadambu	45
11	<i>Pisum sativum</i>	Pissanpiati	15
12	<i>Madhuca longifolia</i>	Illupai	35
13	<i>Gymnema sylvestre</i>	Narumunnai	21

“Common Bio-Medical Waste Treatment Facility ” at SF Nos. 131/1A2 & 154/11, Noothalapuram village , Nilakottai Taluk, Dindigul By M/s Dindigul Waste Management Private Limited .

Total	470
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Coordinates of Green belt area

Table 101. Coordinates of the Green belt

Coordinates	Latitude	Longitude	Elevation
A	10°12'30.27"N	77°49'1.12"E	266
B	10°12'29.78"N	77°49'2.54"E	267
C	10°12'27.11"N	77°49'1.75"E	266
D	10°12'26.86"N	77°49'2.57"E	266
E	10°12'24.91"N	77°49'1.91"E	264
F	10°12'25.36"N	77°49'0.38"E	264
G	10°12'27.28"N	77°49'0.98"E	266

10.3. BUDGET OF EMP

Table 102. Budget of EMP

SNo.	Particulars	Capital Expenditure (Rs. In Lacs)	Recurring Expenditure (Rs. In Lacs/year)
1	Air management	25.00	14.50
2	Solid Waste management	2.00	1.00
3	Wastewater management	25.00	7.50
4	Landscaping / Green Belt	3.00	1.50
5	HWM Storage	1.50	0.75
6	Social Activities *	16.00	-
7	Health & Sanitation	-	4
	Total	Rs. 72.5 Lacs	Rs 29.25 Lacs/year

10.4. ENVIRONMENT MANAGEMENT CELL

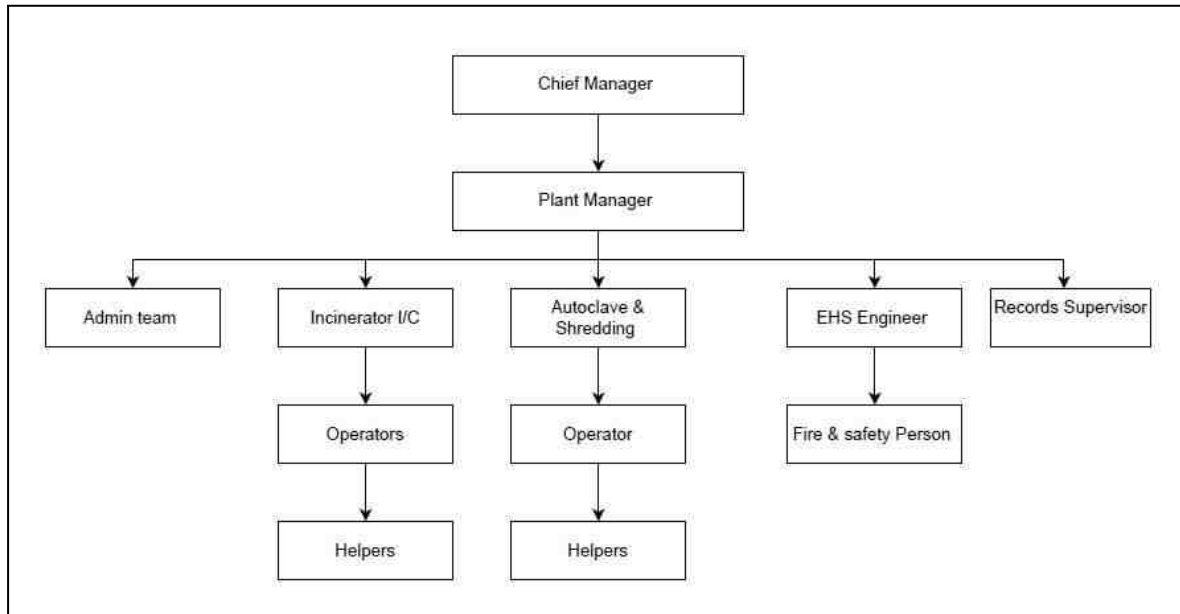


Figure 36. Environment Management Cell

11. SUMMARY AND CONCLUSION

INTRODUCTION

“Common Bio-Medical Waste Treatment Facility ” at SF Nos. 131/1A2 & 154/11, Noothalapuram village , Nilakottai Taluk, Dindigul By M/s Dindigul Waste Management Private Limited .

M/s Dindigul waste Management Pvt. Ltd. proposes a “Common Bio-Medical Waste Treatment Facility” at Survey No: 133/1A2, 154/11 Nothulapuram Village, Taluk - Nilakottai, District-Dindigul, State- Tamil Nadu with capacity of Incinerators (2 No.s), an Autoclave: 1 no. 1275 L/batch, shredder (100+100) kg/hr (2 No.s). As per laid down procedure, the application for ToR was considered in the SEAC TN appraisal meeting held on 12.01.2023 TOR was issued vide letter no. **SEIAA-TN/F.No.9628/SEAC/TOR-1338/2023** Dated **10.02.2023**,. As per As per OM F.No. J-11011/321/2016-IA-II(I) dated 27th April 2018 public hearing is applicable for the project due to falling out of the industrial area.

M/s. Dindigul waste Management Pvt. Ltd. has proposed a “Common Bio-Medical Waste Treatment Facility” at Survey No: 133/1A2, 154/11 Nothulapuram Village, Taluk - Nilakottai, District- Dindigul, State- Tamil Nadu in a site area of about 7165 m² (1.776 acre). The Facility intends to handle Biomedical Waste up to 19 TPD (Incineration: 11 TPD, Autoclave - 6 TPD & other bio medical waste: 2TPD).

Project Details

Table 103. Project Details

Particulars	Unit	Proposed Details
Total land area	m ²	7165 (0.7165 Ha)
Total Quantity of BMW collected, treated	TPD (tons per day)	19 TPD Incineration: 11 TPD Autoclave : 6 TPD Other bio medical waste - 2 TPD
Incineration capacity	kg/hr	500, 2*250 kg/hr
Autoclave capacity	kg/batch	300 kg/batch
Plastic Shredder	kg/hr	2*200 kg/hr
Total water consumption	KLD	20.25
Fresh water requirement	KLD	7
Source of Water	-	Through Tankers and Borewell
Waste water generation	KLD	13
Power requirement	kW	65
Power Source	-	(TANGEDCO) Tamil Nadu Generation Distribution Corporation Limited
DG sets back up	kVA	1 x 125
Manpower	No.	40
Vehicles for transportation	No.	10
Capacity of ETP	KLD	12
Fuel	ltr/hr	D.G. – HSD - 8Lt /hr; Incineration- HSD -24 Lt/hrs
Total cost of the project	Rs (In Crores)	4.45

Environmental Consultant : M/s Perfect Enviro Solutions Pvt. Ltd.

Land Area Details

Table 104. Land area details

S.No.	Description	Area (m ²)	Percentage
1	Ground Coverage	1,162.8	16.23
2	Green Area	1,309	18.27
3	Parking Area	312	4.35
4	Road and open area	3,349.44	46.75
5	Future Activity	1,031.43	14.40
Total		7165	100

Plant Capacity

Table 105. Plant capacity

S. No.	Particulars	unit
1	Total capacity of Plant	19.0 tons/day (Incineration- 11 TPD; Autoclave- 6 TPD, other Bio medical waste - 2 TPD)
2	Incineration Capacity	500 (2*250kg/hr)
3	Autoclave Capacity	300 kg/ batch
4	Shredder Capacity	2*200 kg/hr

Plant Machinery

Table 106. Plant machinery

List of plant & machinery	Capacity/Type
Incinerator	Brand- ENSYS INDIA , No.- 2 Capacity- 250 kg/day Fuel- Diesel Type of Burner- Monolock fully automatic burner
Autoclave	Model- HORIZONTAL HPHV STEAM STERILIZER AUTOCLAVE 1275 LTRS Capacity- 300 kg/batch Type of waste to sterilize- Autoclavable (Red & White category) Working Temperature- 121/134°C Door- Radial Arm Type Vacuum Pump with motor- A 2 H.P
Shredder	2*250 kg/hr
DG sets	1 DG set of 125 kVA
ETP with chemical treatment system	20 KLD

Environment Setting

Environmental Consultant : M/s Perfect Enviro Solutions Pvt. Ltd.

Study Period

Monitoring was carried out in the Pre-Monsoon season from July- September 2022. The results have been summarised below:

Ambient Air:

Core Zone:

- The mean value of PM₁₀ at two core zone locations ranges from (53.2- 54.8 µg/m³) & PM_{2.5} ranges from (25.2 - 26 µg/m³), SO₂ ranges from (8.5-8.8 µg/m³), NO₂ ranges from (28.8- 29.7 µg/m³) & CO (0.6-0.6 mg/m³)
- As per the Air Quality Index by CPCB, the air quality of the core zone is found to be Satisfactory during the sampling period - July 2022 to September 2022

The Buffer zone:

- The mean value of PM₁₀ ranges from (61.90- 77.85 µg/m³), PM_{2.5} ranges from (28.42- 29.20µg/m³), SO₂ ranges from (12.33-15.8 µg/m³), NO₂ ranges from (32- 33.22µg/m³), CO ranges from (0.64 - 0.66mg/m³) As per the Air Quality Index by CPCB the air quality of the buffer zone is found to be Satisfactory during the period -July 2022 - September 2022

Noise:

Core Zone: N1 & N2:

Industrial Area N1 & N2: The ambient noise level during day time at the proposed project site varies from **55.7** to **55.9** which is within the standard limit of industrial area **dB(75)** . During the night the noise level at the project site ranges from **45.8** to **45.9** which are within the standard limit of industrial area **dB (70)**.

Buffer Zone:

Residential Area N3 to N8: The ambient noise level during day time at the proposed project site varies from **56.2** to **58.2** which is slightly higher than permissible limit **dB (55)** in residential area .During the night the noise level at the project site ranges from **47.1** to **48.3** slightly higher than permissible limit **dB(45)**.

Commercial Area N9 to N10:The ambient noise level during day time at the proposed project site varies from **63.2** to **73.5** which is within permissible limit **dB (65)** commercial area .During the night the noise level at the project site ranges from **56.2** to **67.9** slightly higher than permissible limit **dB(55)**.

Water Environment

The Groundwater quality at location GW1, GW2, GW3, GW4, GW5, GW6, GW7 and GW8 shows that

“Common Bio-Medical Waste Treatment Facility ” at SF Nos. 131/1A2 & 154/11, Noothalapuram village , Nilakottai Taluk, Dindigul By M/s Dindigul Waste Management Private Limited .

- ❖ The concentration of Total Dissolved solid (TDS-mg/l) at GW1, GW2, GW3, GW4, GW5, GW6, GW7 and GW8 ranges between 233 - 1060 mg/l that is higher than the drinking water standards (IS:10500). Slightly high total dissolved solids have minimal impact on human health but according to BIS, the TDS level between 500- 2000 ppm is not considered fit for drinking water.
- ❖ The concentration of Chloride ranges between 43 mg/l- 223.9mg/l.
- ❖ The total hardness of sites ranges between 116 mg/l – 368 mg/l
- ❖ Calcium in ranges between 22.4 mg/l- 76.8 mg/l,
- ❖ Magnesium in ranges between 14.6 mg/l- 42.8 mg/l;
- ❖ Alkalinity ranges between 70.6 mg/l- 212.5mg/l

The Surface water quality shows that :

- ❖ The baseline quality of water based on the results of the surface water quality monitoring within the study area, it is observed that Quality of SW 1, SW2,SW3,SW4,SW5,SW6 meets the requirement of Class B and Class C,hence it is used as outdoor bathing and drinking water.

Soil Environment:

Core zone: Soil is predominantly sandy loam with slightly alkaline pH of 7.9. Traditionally soil in an area is classified based on mode of deposition. The reddish brown soil in the zone has an Organic matter content of 0.41%. The available nutrient content ranges from 3.1 mg/kg for Sulphur to 119 for Nitrogen, while sodium and potassium content were 23.0 mg/kg and 9.8 mg/kg. The soil is low on fertility due to lower available nitrogen and potassium content.

Buffer Zone: The soil in this zone is found in black as well as brown colour. pH value ranges from 7.11 to 8.11. Amount of primary nutrients like Organic matter ranges between 0.23 to 2.96 %, the Available Nitrogen ranges between 54.6 mg/kg to 84.5 mg/kg, the Available Phosphorus 8.4 mg/kg to 14.6 mg/kg, Available Potassium 9.8 mg/kg to 26.4 mg/kg. Primary nutrient profile shows that soil is average fertile due to the availability of low amounts of nitrogen, available potassium

Socio-economic Environment

Traffic Density

Traffic density will increase however since the entire employees will stagger in 3 shift operation the incremental number of vehicles will be reduced by the total incremental this is equal 40. Since the project is located over the NH-45 width 7.5 m there will be no adverse impact on the quality of Service.

There shall be use of approx. 10 vehicles daily for transportation purposes. These vehicles are for collection of bio medical waste from various medical establishments. There is enough space available within the premises to park these vehicles.

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Thus, parking of 40 vehicles can be done within the facility premises.

Hence there will be no traffic concession due to incremental traffic or loss of quality of service due to incremental traffic..

ANTICIPATED IMPACT AND MITIGATION AND ENVIRONMENT MANAGEMENT PLAN

Ambient Air

During the installation phase, impacts on ambient air would be mainly due to dust emissions and movement of vehicles. However, these impacts would be short term in nature and limited only to the construction period. Dust suppression systems (water spray) will be used. Construction materials shall be fully covered during transportation to the project site by road.

During the operational phase, air Pollution control devices will be installed for final flue gasses trapping. The unit will further bring down the pollution level in emission within specified limits set out by the Pollution Control Board. Low Sulphur content fuel will be used in incineration to reduce SO₂ emission. To control emissions from 2 incinerators of capacity 250 kg/hr, Combined Chimney of 30 m will be provided. For mitigation of impacts of air pollution from boiler, stack height minimum of 30 m above ground Level. Stack monitoring shall be done on a regular basis for NO_x, SO₂ and PM parameters. For mitigation of impacts of air pollution, stack height of 6 m above roof level shall be provided for proposed D.G. sets of capacity 1 x 125 kVA.

Fugitive Emission & Odour Control

For transportation of biomedical waste, it is expected that 10 vehicles shall be used. To control the impact, dust suppression systems (water spray) will be used as per requirement at the site. Total 1309 m² (18.27 %) shall be developed as green area.

All reactor vents shall be equipped with condensers to trap emissions. Daily washing of waste collecting containers, vehicle compartment and floor of the storeroom. Closed cabin vehicles shall be used for the collection and transportation of bio-medical wastes. Mask shall be provided to workers to avoid health issues due to odour. Hygienic conditions shall be maintained. Area will be properly ventilated.

Water Environment

During the installation phase, waste water generated from the site will be disposed of to soak pit via septic tank. No ground water will be used for construction purposes. Water required for construction work will be tanker through nearby STP treated water.

During the operation phase, The total water requirement will be 20.25 KLD out of which fresh water requirement will be 9.25 KLD. The water will be required mainly for Domestic, floor washing & vehicular container washing & chemical disinfection, Boiler & Gardening as per details below. The amount of waste water generated out of the proposed CBMWTF is 13 KLD which shall be treated in 20 KLD ETP. It will be a Zero liquid discharge facility.

Land / Soil

Environmental Consultant : M/s Perfact Enviro Solutions Pvt. Ltd.

Presently, the land is vacant. The land area has been given to M/s Dindigul Waste Management Pvt. Ltd. The excavated soil from excavation will be used for backfilling and excess will be sent to the landfill site.

During the operational phase, procedures for the maintenance of equipment would ensure that this risk is minimised and clean-up response is rapid if any spill occurs.

During spillage if any occurs, the spill will be collected and disposed off properly. In case of spills of chemicals, dry adsorbents/cotton should be used for cleaning instead of water. Spillage will be managed by detection of leaks in the first place from structures or vessels.

Noise Levels

Some amount of noise will be generated from vehicular movement in the installation/construction. Greenbelt developed at the periphery of the project site will act as a barrier to noise. Machines having high standards shall be deployed so that minimum levels of noise & vibrations are produced during the construction work with excavators having vibration isolators. Silencers provided in the machines to modulate the noise generated by machines will be regularly checked for its effectiveness. For noise pollution control, the D.G. sets will be kept in acoustically treated rooms though the DG sets are used as standby only. Noise generating units like machinery area, canteen etc. are well insulated with enclosed doors. Earmuffs will be used while in high noise areas. Stationary machineries and equipment will be properly enclosed by enclosures and will be provided with dampeners for minimising noise generated due to vibration of machineries

Solid Waste

During the construction/installation, whatever quantity of construction waste will be generated shall be stacked and disposed off at the designated disposal site and care shall be taken to ensure that temporary stacking and transportation shall not cause any disturbance to the surrounding environment. Approx. 6 kg/day of solid waste will be generated from the proposed project.

During Operation Phase, All the biodegradable waste (4 kg/day) will be sent to Solid Waste site and non-biodegradable waste (2 kg/day) will be sent to approved recycler. Used oil (schedule 5.1) from machineries / D.G. Set will be carefully stored in HDPE drums in an isolated covered facility. The used oil will be sold to authorised vendors for the treatment of the same. Suitable care will be taken so that spills / leaks of used oil from storage could be avoided.

41.6 kg/day of Autoclaved Plastic & rubber etc. will be sent to Shredder & then from shredder it will be sent to authorised recyclers. 70 kg/day of Sharps will be treated in autoclave. After autoclaving, sharps will be encapsulated. Glass bottles shall be sold to recyclers after chemical disinfection.

ETP Sludge of approx. 40 kg/day shall be generated from ETP. It will be stored in leak proof PVC containers in isolated areas on the pakka floor within the premises as per HWM Rules and handed

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over to authorised treatment and disposal facility of Tamil Nadu Pollution Control Board. Ash generated from the Incinerators will be disposed off in the Municipal landfill.

Flora and fauna

Green belt/greenery shall be developed along most of the periphery of the project area as well as along the roads. Green area in the plot will be 1309 sqm., which is 18% of the total plot area. 470 no. of trees are proposed to be planted at the project site.

Socio-economic environment

Employment opportunities will be generated for the local population during the construction/installation phase. Approx. 50 labours shall be deployed during the installation phase. During Operation phase, development of roads, transportation, communication and related infrastructure in the region. Positive impacts on present status of livelihood in the area. There will be an employment of approximately 40 skilled & unskilled personnel.

RISK ASSESSMENT

The project is situated in the Seismic zone-III area. Special attention has been given to the structural design of foundation, elements of masonry, timber, plain concrete, reinforced concrete, pre-stressed concrete, and structural steel. All applicable guidelines have been followed in this regard to ensure the safety of the building. To avoid flooding or water logging in the area due to the existing nearby canal & lake, proper designing of drainage systems for storm water shall be done. As it is a Bio Medical Waste Treatment Unit, therefore rainwater from rooftop will be channelized to the surrounding area/ fields. Other stormwater will be channelized to drain outside the facility.

General safety measures

- Occupational health surveillance programmes shall be done six monthly & and their records shall be maintained.
- Companies shall take reasonable steps to reduce the risk of exposure to infection by establishing written policies and procedures based upon the currently accepted clinical and occupational health and safety information in consultation with workers, handling and disposing of biomedical waste. These policies and procedures shall be reviewed and updated regularly, with compliance to their requirements verified as necessary.
- Regular assessment of waste management procedures shall be done to assure compliance with applicable standards
- A written procedure to handle and report needle stick injuries and other waste-handling incidents shall be there. Injuries caused by needle sticks and sharp instruments shall be documented, reviewed, and changes implemented to prevent similar incidents in the future;
- Emphasis shall be on the need for point of generation segregation so that waste shall be placed within an appropriate waste container.
- Type and quality of waste containers will be reviewed regularly, if necessary it shall be upgraded to more suitable container;

“Common Bio-Medical Waste Treatment Facility ” at SF Nos. 131/1A2 & 154/11, Noothalapuram village , Nilakottai Taluk, Dindigul By M/s Dindigul Waste Management Private Limited .

- Handling practices shall be reviewed regularly to determine problems of inappropriate handling. If so, modify the handling techniques. At the project site in case of emergency First Aid facility shall be provided.
- Health check-up camps shall be organised on a regular basis at company dispensary / nearby locations.
- Prior to working with bio-medical, workers shall be trained on its proper handling & storage.
- The workers shall be educated & trained for MSDS & handling of chemicals.
- Proper medical facility arrangements shall be provided in case of any accidental release.
- ESI facility shall be made available.
- Proper fire-fighting measures like buckets & portable fire extinguishers shall be provided at strategic locations.

PROJECT BENEFITS

- M/s Dindigul waste Management Pvt. Ltd. shall provide services to more than 5000 healthcare units.
- Installation of individual treatment facilities by small healthcare establishments requires comparatively high capital investment. In addition, it requires separate manpower and infrastructure development for the proper operations and maintenance of treatment systems. The Centralised system of waste management is the best method in terms of cost reduction and minimises legal and ethical hassles of health care staff authority
- It shall attract people to develop organised Common Biomedical Waste Treatment.
- Organised methods for Bio-medical Waste Treatment i.e. Incineration, autoclaving & shredding shall be adopted. A complete bio medical waste disposal solution using the best technology methods shall be provided.
- The project shall create direct and indirect employment for local people for which skilled and unskilled manpower shall be needed. About 50 people shall be deployed temporarily during construction/installation of the project and about 40 people shall be employed during the operational stage of the project.
- It shall be an environmentally sustainable project.
- The waste product obtained from shredder shall be sold to authorised recyclers which shall be reused.

COST OF EMP

Table 107. Cost of EMP

S.No	Recurring Expenditure	Amount (Rs. In Lacs/Year)
1	Air management	12.50
2	Solid Waste management	1.00
3	Wastewater management	7.50
4	Landscaping / Green Belt	1.50

Environmental Consultant : M/s Perfect Enviro Solutions Pvt. Ltd.

“Common Bio-Medical Waste Treatment Facility ” at SF Nos. 131/1A2 & 154/11, Noothalapuram village , Nilakottai Taluk, Dindigul By M/s Dindigul Waste Management Private Limited .

5	HWM Storage	0.75
6	Social Activities	3.00
7	Health & Sanitation	4.00
8	Misc.	10.00
Total		40.25

CONCLUSIONS

Thus, it can be concluded on a positive note that after the implementation of the mitigation measures and Environmental Management Plan, the operation of the project will have no major impact on the environment.

12. DISCLOSURE OF THE CONSULTANTS

Declaration by EIA Coordinator(s) & Experts Contributing to the EIA “Common Bio-Medical Waste Treatment Facility ” at Survey No. 16, saththiram East Street, Near PM,Modi Pharmacy, Nilakottai, Dindigul By M/s Dindigul Waste Management Private Limited .

I hereby declare that I was involved in the following EIA Report submitted to the **SEIAA -TN** as **EIA Coordinator**. I further certify that the **data** given in this report is **true** and **correct** to the best of my knowledge.

Environmental Consultant : M/s Perfect Enviro Solutions Pvt. Ltd.

“Common Bio-Medical Waste Treatment Facility ” at SF Nos. 131/1A2 & 154/11, Noothalapuram village , Nilakottai Taluk, Dindigul By M/s Dindigul Waste Management Private Limited .

EIA Coordinator: Mrs. Akta Chugh

Assistant to EC: Mrs. Shweta Rajput

Period of Involvement: July -till date

Office Address: Perfect Enviro Solutions Pvt. Ltd.
5th floor, NN Mall, Mangalam Palace,
Sector – 3, Rohini, New Delhi – 110085

List of Functional Area Experts (Category B)

Table 108. List of Functional Area Experts

S. No.	Functional Areas	Name of Expert/s
1.	LU	Rajneesh Maurya
2.	AQ	Nipun Bhargava
3.	AP	GMK
4.	WP	GMK
5.	EB	Dr Seema Shrivastava
6.	SE	Manoj Pant
7.	NV	GMK
8.	HG	Rajneesh Maurya
9.	Geo	Rajneesh Maurya
10.	SC	Rachna Dogra
11.	RH	GMK
12.	SHW	Rachna Dogra

Functional area associates:

Table 109. List of Functional Area Associates

S.No	Functional areas	Name of FAA
1	EB	Deepika Arora
2	BMW	Rachna Dogra

Accreditation Letter



**National Accreditation Board
for Education and Training**

(Member - International Accreditation Forum & Pacific Accreditation Cooperation)



March 02, 2023

QCI/NABET/ENV/ACO/23/2692

Perfact Enviro solutions Pvt Ltd
5th floor, NN Mall, Delhi-110085

Sub.: Extension of Validity of Accreditation till June 01, 2023 – regarding
Ref.. Certificate no NABET/EIA/1922/SA 0143

Dear Sir/Madam

This has reference to the accreditation of your organization under QCI-NABET EIA Scheme, the validity Perfact Enviro solutions Pvt Ltd, is hereby extended till June 01, 2023 or completion of the assessment process, whichever is earlier.

The above extension is subject to the submitted documents/required information with respect to your application and timely submission and closure of NC/Obs during the process of assessment.

You are requested not to use this letter after the expiry of the above-stated date.

With best regards.

(A K Jha)
Sr. Director, NABET

NABET

Enclosure 3- Land Paper/ License



தமிழ்நாடு தமிழ்நாடு TAMILNADU

X 470257



செ. நாகராஜன்	வண். -
சு. துள் கிர்பனையாளர்	நாள் 11.7.22
வண். எண். 1746	ரூபாய் 5000/-
வண். எண். - (தமிழ்நாடு)	

மாநகரமடக்கி
நிலக்கோட்டை

ரூபாய்.89,000/-க்கு கிரையப் பத்திரம்
சொத்தின் மதிப்பு ரூபாய்.89,000/-

2022-ம் வருடம் ஜூலை மாதம் 11-ம் தேதிக்கு,
தமிழ் சுபகிருது வருடம் ஆனி மாதம் 27-ம் தேதியில்

திண்டுக்கல் மாவட்டம், நிலக்கோட்டை வட்டம், நிலக்கோட்டை
டவுன், No.16, Sathiram East Street, Dindigul Waste Management
Private Limited-க்காக Permanent Account Number Pan card
AAJCD0494# CIN No U37200TN2022 PTC 149562 மேற்படி
நிறுவனத்தின் நிர்வாக குழுவின் மேலாண்மை இயக்குநரும்,

எழுதிக்கொடுப்பவர்

A. L. R. சிவசுந்தரன்

எழுதிவாங்குபவர்

Dindigul Waste Management Private
Limited-க்காக

புத்தகம் 2022 ம் வருடத்தியுட்பட்டும் குவணம்
21 துள்கவளக்காண்டி
1 துள்
ப. சிவசுந்தரன்

P. V. R.





தமிழ்நாடு தமிழ்நாடு TAMILNADU

BA 979624



சு.ம. நாகராஜன்	எண்.
மு. துள் விற்பனையாளர்	நாள் : 11.7.22
ம. கமலாட்சி - (தமிழ்நாடு)	ரூபாய் 1000/-

சு.ம. நாகராஜன்
நிலக்கோட்டை

//..2..//

திண்டுக்கல் மாவட்டம், நிலக்கோட்டை வட்டம், நிலக்கோட்டை
Lவன், பெரியகாளியம்மன் கோவில் தெரு என்ற முகவரியில்
வசிக்கும் பட்டம் அவர்களின் மனைவியும் ஆதார் எண் 6843 9073
4198 உள்ளவருமான விஜயலெட்சுமி (மேற்படி கம்பெனியின்
நிறுவனத்திற்காக) (செல்நம்பர்: 9345027454)

எழுதிக்கொடுப்பவர்

A சார்பு

எழுதிவாங்குபவர்

Dindigul Waste Management Private
Limited-க்காக

J. V. V.

1 புத்தகம் 2022-ம் வருடத்திய 30-ம் ஆவணம்
21 தாள்களைக் கொண்டது.
2 தாள்
8 பதிவு அலுவலர்



//..3..//

திண்டுக்கல் மாவட்டம், நிலக்கோட்டைவட்டம், நூத்துலாபுரம் கிராமம், உட்கடை S.தும்மலப்பட்டி, என்ற முகவரியில் குடியிருக்கும் அழகர் என்ற அழகர்சாமிநாயக்கர் அவர்கள் குமாரரும் ஆதார் எண் **6718 4579 9805** உள்ளவருமான A.மாரிமுத்து ஆகிய நான் எழுதிக் கொடுத்த சுத்தக் கிரையபத்திரம்.

என்னவென்றால், கீழ்க்கண்ட சொத்தை பொறுத்தும், வேறு சொத்துக்களைப் பொறுத்தும் என்னுடைய சுயசம்பாத்திய சேமிப்பின் மூலம் கடந்த **18.08.2004**-ம் தேதிய நிலக்கோட்டை சார்பதிவாளர் அலுவலக **1** புத்தகம் **1451/2004**-ம் எண்ணாக பதிவு செய்யப்பட்ட கிரையப்பத்திரம் **-1** மேலும் கடந்த **17.03.2009**-ம் தேதிய நிலக்கோட்டை சார்பதிவாளர் அலுவலக **1** புத்தகம் **934/2009**-ம் எண்ணாக பதிவு செய்யப்பட்ட தானசெட்டில்மெண்ட் பத்திரம் **-2** ஆகிய இரண்டு கிரையப் பத்திரங்களின்படி எனக்கு பாத்தியப்பட்டும், நூத்துலாபுரம் கிராமப்புல அரசு ரெவின்யூ ரெக்கார்டுகளில் **3692, 2726**-நிர் கூட்டுப்பட்டாக்கள் ஏற்பட்டும், நாளது தேதி முதல் நான் கீழ்க்கண்ட சொத்தை சர்வ சுதந்திர பாத்தியங்களுடன் ஆண்டனுபவித்து வருகிறதுமான கீழ்க்கண்டுள்ள சொத்தையும், அதன் சம்மந்தப்பட்ட யாவற்று பாத்தியங்களையும் சேர்த்து நான் மேற்படி நிறுவனத்திற்காக கிரையம் செய்து கொடுப்பதாக பேசி நாளது தேதியில் என் குடும்பச் செலவிற்காகவும், வியாபார அபிவிருத்தி

எழுதிக்கொடுப்பவர்

A.மாரிமுத்து

எழுதிவாங்குபவர்

Dindigul Waste Management Private
Limited-க்காக

P.V.N

1	புத்தகம் 2004-ம் வருடத்திய 3093ம் குவணம்
2	தாள்களைக்கொண்டது
3	எண்
	8 பதிவு அலுவலர்



//..4..//

காரியங்களுக்காகவும் நான் தங்களிடம் மேற்படி கிரையத் தொகையான ரூ.89,000/- ரூபாய் எண்பத்தி ஒன்பதாயிரத்தையும் மேற்படி Dindigul Waste Management Private Limited- நிர்வாகம் சார்பாக தங்களுடைய ஐசிஐசிஐ-வங்கி- வத்தலக்குண்டு கிளை- கணக்கு எண் 176205011905-ல் இருந்து என்னுடைய கணரா வங்கி- நிலக்கோட்டை கிளை- கணக்கு எண் 3001108057625-ன் பரிமாற்றித்தின் மூலம் எனக்கு வரவாகி விட்டபடியால் நாளது தேதி முதல் தாங்கள் கீழ்க்கண்ட சொத்தையும், அதன் சம்மந்தப்பட்ட சகல பாத்தியங்களையும் சேர்த்து Dindigul Waste Management Private Limited-நிர்வாகம் ஆண்டனுபவித்து கொள்வீர்களாகவும்,

கீழ்க்கண்ட சொத்தைப் பொறுத்து எவ்வித வில்லங்க விவகாரங்களும் இல்லையென்றும், பின்னீடு வில்லங்க விவகாரங்கள் இருந்து வெளிப்பட்டால் அதை நான் என் சொந்தப் பொறுப்பிலும், என் இதர வேறு ஐவேசிலிருந்தும் முன்னின்று தீர்த்து கொடுப்பேனாகவும்,

கீழ்க்கண்ட சொத்தைப் பொறுத்து மேற்படி Dindigul Waste Management Private Limited-நிறுவனத்தின் பெயரில் ரெவின்யூ ரெக்கார்டுகளில் பட்டா மாறுதல் செய்து கொள்ள நான் சம்மதிக்கிறேன்.

எழுதிக்கொடுப்புவர்
A. மாரிசூது

எழுதிவாங்குபவர்
Dindigul Waste Management Private
Limited-க்காக

P. V. R.

1	புத்தகம் 2022ம் வருடத்திய 3513ம் குவணம்
21	தாள்களைக் கொண்டது
4	தாள்
	பதிவு அலுவலர்



//..5..//

கீழ்க்கண்ட சொத்தை இன்றே மேற்படி Dindigul Waste Management Private Limited-நிறுவனத்தின் வசமே நான் ஒப்படைத்தும் விட்டபடியால் கீழ்க்கண்ட சொத்தைப் பொருத்து எனக்கோ, பின்னீடு என் வாரிசுதாரர்களுக்கோ எவ்வித பாத்தியமும், பின்துயர்ச்சியும் கிடையாது.

இதற்கு ஆதரவாக மேலே சொல்லப்பட்டுள்ள எனது பெயரில் உள்ள கிரையப்பத்திரம் மற்றும் தானசெட்டில்மெண்ட் பத்திர ஒரிஜினலையும், தங்கள் வசம் ஒப்படைத்துவிட்டேன். மேலும் மேலே சொல்லப்பட்டுள்ள கணிணி பட்டா நகலை இத்துடன் இணைத்துள்ளேன்.

கிரைய சொத்து விபரம்

ஆவண எண் 1451/2004-ன் படி உள்ள சொத்து.

1. திண்டுக்கல் ரிடி, நிலக்கோட்டை சார்பதிவகம், நிலக்கோட்டை வட்டம், நூத்துலாபுரம் கிராமப்புலத்தில் 127-நிர பட்டாவில் கண்ட புஞ்சை சர்வே எண் 133/1-ல் ஹெக்டேர் 0.01.23-க்கு ஏக்கர் 3 சென்ட் 4-ல் மேல்புரம் ஏக்கர் 1 சென்ட் 44-ல் கீழ்புரம் சென்ட் 72 அளவுள்ள புஞ்சை நிலத்திற்கு நான்குமால் விபரம்.

எழுதிக் கொடுப்பவர்
A மாரிமுத்தி

எழுதிவாங்குபவர்
Dindigul Waste Management Private
Limited-க்காக

P.v.r.

1 புத்தகம் 9022-ம் வருடத்திய 3ஆம் துவண்டி
21 தளக்கவளக்கிண்பட்டது.
5 தளம்
பதிவு அலுவலர்



//..6..//

- கிழக்கு - கண்ணழகன் நிலம்
மேற்கு - கண்ணழகன் நிலம்
வடக்கு - கண்ணழகன், ராமு மற்றும் அழகர்சாமி
வகையறா நிலம்
தெற்கு - கிழமேல் வண்டிப்பாதை

இந்த நான்குமாலுக்குள் மேற்படி சென்ட்-72 அளவுள்ள புஞ்சை நிலமும் இதுவும். (மேற்படி சொத்தானது தற்கால ரீ சர்வேப்படி 2726-நிர் கூட்டுப்பட்டாவில் கண்ட புஞ்சை சர்வே எண் 133/1A-ல் ஹெக்டேர் 0.61.5-ல் ஒரு பகுதியாக உள்ளது).

ஆவண எண் 934/2009-ன் படி உள்ள சொத்து.

2. மேற்படி நூத்துலாபுரம் கிராமபுலத்தில் பழைய 29-நிர் பட்டாவிற்கு 3692-நிர் கூட்டுப்பட்டாவில் கண்ட புஞ்சை சர்வே எண் 154/11-ல் ஹெக்டேர் 0.42.5-க்கு ஏக்கர் 1 சென்ட் 4-அளவுள்ள நிலத்திற்கு நான்குமால் விபரம்.

- கிழக்கு - கண்ணழகன் நிலம்
மேற்கு - அழகர்சாமி வகையறா மற்றும்
கண்ணழகன் நிலம்
வடக்கு - கண்ணழகன் நிலம்
தெற்கு - கண்ணழகன் மற்றும் மாரிமுத்து நிலம்

எழுதிக்கொடுப்பவர்

A. ம. ராஜ்

எழுதிவாங்குபவர்

Dindigul Waste Management Private
Limited-க்காக

D. V. R.

1 புத்தகம் 2022 ம் வருடத்தியுட்பட ஆவணம்
2 தாள்களைக் கொண்டது.
6 தாள்
பதிவு அலுவலர்



//..8..//

1968-ம் வருடத்திய சென்னை முத்திரைச்சட்டம் விதி 3(1)
பத்திரங்களின் குறைவு மதிப்பீடு தடுப்புவிதிகள்(ன்) கீழ்தரும்
ஸ்டேட்மெண்ட்

கிராமம் : நூத்துலாபுரம்

வ. எண்	சர்வே எண்	விஸ்தீரணம் ஹெக் ஏ - செ	சொத்தின் தன்மை	நடைமுறை நிலவரப்படி எழுதிக் கொடுப்பவர்களின் மதிப்பீடு ரூபாய்
1	2	3	4	5
1.	133/1A	0 - 72	புஞ்சை நிலம்	36,400.00
2.	155/11	1 - 4	புஞ்சை நிலம்	52,600.00
ஆக மொத்த மதிப்பு				89,000.00

எழுதிக்கொடுப்பவர்
A. சாமிமுத்து

எழுதிவாங்குபவர்
Dindigul Waste Management Private
Limited-க்காக

P. V. R.

1 புத்தகம் 2022-ம் வருடத்திய 2023-ம் ஆவணம்
21 தாள்களைக் கொண்டது.
8 தாள்
பதிவு அலுவலர்



நிலக்கோட்டைபுத்தகம்-1/3093/2022

1888ம் ஆண்டு இந்திய முத்திரைச் சட்டம் 4வது பிரிவின் கீழான சான்று


2022ம் ஆண்டு வரிசை எண் 1544

பெரியகாளியம்மன் கோவில் தெரு, நிலக்கோட்டை, திண்டுக்கல், தமிழ்நாடு, இந்தியா, ஐயைல் வசிக்கும் திருமதி விஜயகலையா என்பவரிடமிருந்து ₹ 235/- ரூபாய் இருபது மூன்று முப்பது மட்டும் இந்த ஆணைத்திற்காக இந்திய முத்திரைச் சட்டம் 41வது பிரிவின் 1டி குறைவாயிருந்த முத்திரைக் கட்டணம் வசூலிக்கப்பட்டது என நான் இதன் மூலம் சான்றளிக்கிறேன்.

சார்பதிவாளர் : நிலக்கோட்டை
நாள்: 11/07/2022

சார்பதிவாளர் மற்றும் இந்திய முத்திரைச் சட்டம் பிரிவு
41ன் 1டி ஆட்சியர்

2022 ஆம் ஆண்டு ஜூலை மாதம் 11ம் தேதி பி.பி. 04.30 மணிளையில் நிலக்கோட்டை சார்பதிவாளர் அலுவலகத்தில் தாக்கல் செய்து கட்டணம் ₹ 4,335/- செலுத்தியவர்

<p>இடது பெருவிரல்</p> 	<p>P. V. R.</p> <p>கேடுதல் விவரங்கள் ஆவண வாசகத்தில் உள்ளது</p>	
<p>எழுதிக் கொடுத்ததாக ஒப்புக் கொண்டவர் இடது பெருவிரல்</p> 	<p>A. P. N. Prathap</p> <p>"சம்மதத்துடன் கூடிய ஆதார் அங்கீகாரம்" என்ற வழி இந்த நபரின் அடையாளம் விரல் நேசை மூலம் ஆதார் ஆணையத்துடன் சரிபார்க்கப்பட்டது. ஒப்பீட்டு எண் : UKC:09908905937085665442d9e0d34e95aa47b50 (Details from UIDAI : A.Marimuthu S/O Alagarsamy, 04-03-1973, xxxxxxxx9805)</p>	
<p>எழுதி வாங்கியதாக ஒப்புக் கொண்டவர் இடது பெருவிரல்</p> 	<p>P. V. R.</p> <p>"சம்மதத்துடன் கூடிய ஆதார் அங்கீகாரம்" என்ற வழி இந்த நபரின் அடையாளம் விரல் நேசை மூலம் ஆதார் ஆணையத்துடன் சரிபார்க்கப்பட்டது. ஒப்பீட்டு எண் : UKC:32185588bcd6856ab7481d894e85dd77b6528 (Details from UIDAI : P. Vijayalakshmi W/O: Pattam Chetti)</p>	

1 புத்தகம் 2022ம் வருடத்திய 3093ம் ஆவணம்
21 தாள்களைக் கொண்டது.
7 தாள்
8
பதிவு அலுவலர்



நிலக்கோட்டைப்புத்தகம்-1/3093/2022

	15-05-1984, xxxxxxxx4153)	
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2022 ஆம் ஆண்டு ஜூலை மாதம் 11ம் நாள்



சாசுல நாத் இர
சார்பதிவாளர்
நிலக்கோட்டை

நிலக்கோட்டைப்புத்தகம்-1/3093/2022 எண்ணாகப் பதிவு செய்யப்பட்டது.

நாள்: 11/07/2022
நிலக்கோட்டை


சாசுல நாத் இர
சார்பதிவாளர்



1	புத்தகம் 2022 ம் வருடத்திய 3093 ம் ஆவணம்
21	தாள்களைக் கொண்டது.
10	தாள்
	 பதிவு அலுவலர்





தமிழக அரசு

வருவாய்த் துறை

நில உரிமை விபரங்கள் : இ. எண் 10(1) பிரிவு

மாவட்டம் : திண்டுக்கல்

வட்டம் : நிலக்கோட்டை

வருவாய் கிராமம் : நூத்துலாபுரம்

பட்டா எண் : 3692

உரிமையாளர்கள் பெயர்

1. மாசிநாயக்கர் மகன் அழகர்சாமி -
2. அழகர்சாமி மகன் மாசிமுத்து -

புல எண்	உட்பிரிவு	புன்செய்		நன்செய்		மற்றவை		குறிப்புரைகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக்ட - ஏர்	ரூ - பை	ஹெக்ட - ஏர்	ரூ - பை	ஹெக்ட - ஏர்	ரூ - பை	
154	11	0 - 42.50	0.90	--	--	--	--	2022/0103 /13/187514--- -- 23-02-2022
		0 - 42.50	0.90					

குறிப்பு2 :



1. மேற்கண்ட தகவல் / சான்றிதழ் தகவல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தரங்கள் <https://eservices.tn.gov.in> என்ற இணைய தளத்தில் 13/12/026/03692 /40640 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
2. இத் தகவல்கள் 11-07-2022 அன்று 02:30:42 PM நேரத்தில் அச்சடிக்கப்பட்டது.
3. கைப்பேசி கேமராவின் 2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்

புத்தகம் 2022 ம் வருடத்திய 2023 ம் ஆவணம்
 21 தாள்களைக் கொண்டது.
 11 தாள்
 பதிவு அலுவலர்





தமிழக அரசு

வருவாய்த் துறை

நில உரிமை விபரங்கள் : இ. எண் 10(1) பிரிவு

மாவட்டம் : திண்டுக்கல்

வட்டம் : நிலக்கோட்டை

வருவாய் விராமம் : நூத்துலாபுரம்

பட்டா எண் : 2726

உரிமையாளர்கள் பெயர்

- | | | | | |
|----|-------------------|------|----------------|---|
| 1. | அழகர்சாமிநாயக்கர் | மகன் | மாசி(ஏ)செய்யல் | - |
| 2. | அழகர்சாமிநாயக்கர் | மகன் | மாசிமுத்து | - |
| 3. | சித்தன்கவுண்டர் | மகன் | கண்ணாயுதம் | - |

புல எண்	உட்பிரிவு	புலமொ		நம்மொ		மற்றவை		குறிப்புகள்
		பரப்பு	நீர்வை	பரப்பு	நீர்வை	பரப்பு	நீர்வை	
		ஹெக்டர் - ஏர்	சூ - மை	ஹெக்டர் - ஏர்	சூ - மை	ஹெக்டர் - ஏர்	சூ - மை	
133	1A	0 - 61.50	1.70	--	--	--	--	RTA1075/15--8AS01/1421 -- 09-03-2012
		0 - 61.50	1.70					

குறிப்பு2 :



1. மேற்கண்ட தகவல் / சார்ஜிதர் தகவல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தரக்கூடிய <https://eservices.tn.gov.in> என்ற இணைய தளத்தில் 13/12/026/02726 /30687 என்ற குறிப்பு எண்ணை உள்நீடு செய்து உறுதி செய்துகொள்ளவும்.
2. இத் தகவல்கள் 11-07-2022 அன்று 02:30:02 PM நேரத்தில் அச்சடிக்கப்பட்டது.
3. மகப்பேசி கேமராவின் 2D barcode படிப்பதன் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்

1 புத்தகம் 2 மூலம் வருவாய்த் துறைக்கு அனுப்பும் ஆவணம்
 21 தாள்களைக் கொண்டது.
 12 தாள்
 பதிவு அலுவலர்



11-07-2022, 14:33



GOVERNMENT OF INDIA
MINISTRY OF CORPORATE AFFAIRS
Central Registration Centre

Certificate of Incorporation

[Pursuant to sub-section (2) of section 7 and sub-section (1) of section 8 of the Companies Act, 2013 (18 of 2013) and rule 18 of the Companies (Incorporation) Rules, 2014]

I hereby certify that DINDIGUL WASTE MANAGEMENT PRIVATE LIMITED is incorporated on this Second day of February Two thousand twenty-two under the Companies Act, 2013 (18 of 2013) and that the company is limited by shares.

The Corporate Identity Number of the company is U37200TN2022PTC149562.

The Permanent Account Number (PAN) of the company is AAJCD0494R *

The Tax Deduction and Collection Account Number (TAN) of the company is MRID02010B *

Given under my hand at Manesar this Second day of February Two thousand twenty-two .

DI MINISTRY OF CORPORATE AFFAIRS 10

Digital Signature Certificate
SHIVARAJ C RANJERI
ASST. REGISTRAR OF COMPANIES
For and on behalf of the Jurisdictional Registrar of Companies
Registrar of Companies
Central Registration Centre

Disclaimer: This certificate only evidences incorporation of the company on the basis of documents and declarations of the applicant(s). This certificate is neither a license nor permission to conduct business or solicit deposits or funds from public. Permission of sector regulator is necessary wherever required. Registration status and other details of the company can be verified on www.mca.gov.in

Mailing Address as per record available in Registrar of Companies office:

DINDIGUL WASTE MANAGEMENT PRIVATE LIMITED
No 16 SATHIRAM EAST STREET, NILAKOTTAI TALUK, DINDIGUL,
Dindigul, Tamil Nadu, India, 624208

as issued by the Income Tax Department

1	புத்தகம் 2022-ம் வருடத்திய 392 ம் சீவனம்
21	தாள்களைக் கிடைக்காது.
13	தாள்
	பதிவு அலுவலர்

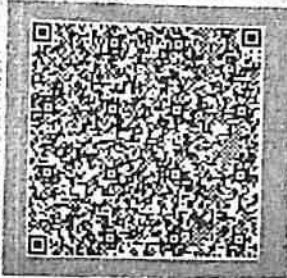




ई-स्थायी लेखा संख्या कार्ड
e - Permanent Account Number (e-PAN) Card
AAJCD0494R

नाम / Name
DINDIGUL WASTE MANAGEMENT PRIVATE LIMITED

निगमन/गठन की तारीख
Date of Incorporation / Formation
02/02/2022



Signature Not Verified

Digitally signed by
Income Tax Dept.
Date: 2022.02.02 10:07:16
GMT+05:30

- ✓ Permanent Account Number (PAN) facilitate Income Tax Department linking of various documents, including payment of taxes, assessment, tax demand tax arrears, matching of information and easy maintenance & retrieval of electronic information etc. relating to a taxpayer. स्थायी लेखा संख्या (पैन) एक कठोरता से संबंधित विभिन्न दस्तावेजों को जोड़ने में आयकर विभाग को सहायक होता है, जिसमें करों के भुगतान, आकलन, कर भोग, टैक्स बकाया, सूचना के मिलान और इलेक्ट्रॉनिक जानकारी का आसान रखरखाव व बहाली आदि भी शामिल है।
- ✓ Quoting of PAN is now mandatory for several transactions specified under Income Tax Act, 1961 (Refer Rule 114B of Income Tax Rules, 1962) आयकर अधिनियम, 1961 के तहत निर्दिष्ट कई लेनदेन के लिए स्थायी लेखा संख्या (पैन) का उद्धरण अब अनिवार्य है (आयकर नियम, 1962 के नियम 114B, का संदर्भ लें)
- ✓ Possessing or using more than one PAN is against the law & may attract penalty of upto Rs. 10,000. एक से अधिक स्थायी लेखा संख्या (पैन) का रखना या उपयोग करना, कानून के विरुद्ध है और इसके लिए 10,000 रुपये तक का दंड लगाया जा सकता है।
- ✓ The PAN Card enclosed contains Enhanced QR Code which is readable by a specific Android Mobile App. Keyword to search this specific Mobile App on Google Play Store is "Enhanced QR Code Reader for PAN Card". संपन्न पैन कार्ड में एनहांस क्यूआर कोड शामिल है जो एक विशिष्ट एंड्रॉइड मोबाइल ऐप द्वारा पठनीय है। Google Play Store पर इस विशिष्ट मोबाइल ऐप को खोजने के लिए कीवर्ड "Enhanced QR Code Reader for PAN Card" है।

Cut

आयकर विभाग
INCOME TAX DEPARTMENT

भारत सरकार
GOVT. OF INDIA

स्थायी लेखा संख्या कार्ड
Permanent Account Number Card
AAJCD0494R

नाम / Name
DINDIGUL WASTE MANAGEMENT
PRIVATE LIMITED

निगमन/गठन की तारीख
Date of Incorporation / Formation
02/02/2022



इस कार्ड के खोने/पाने पर कृपया सूचित करें/वेतन:
आयकर पैन सेवा इकाई, एन टैक्स यूनिट
5 वीं मंजिल, मन्त्री स्टैलिंग,
प्लॉट नं. 341, सर्वे नं. 997/8,
मॉडल कॉलोनी, नज़्द बंगला चौक के पास,
पुणे - 411 016.

If this card is lost / someone's lost card is found,
please inform / return to :

Income Tax PAN Services Unit, NSDL
5th Floor, Mantri Stelling,
Plot No. 341, Survey No. 997/8,
Model Colony, Near Deep Bungalow Chowk,
Pune - 411 016.

Tel: 91-20-2721 8080, Fax: 91-20-2721 8081
e-mail: hnuinfo@nsdl.co.in

Electronically issued and Digitally signed ePAN is a valid mode of issue of Permanent Account Number (PAN) post amendments in clause (c) in the Explanation occurring after sub-section (8) of Section 139A of Income Tax Act, 1961 and sub-rule (5) of Rule 114 of the Income Tax Rules, 1962. For more details, click here.

1 புத்தகம் 2022-ம் வருடத்திய 3013 ம் சூவணம்
21 தள்ளுதலாக் கிடைக்காண்டது.
14 தள்ளு
பதிவு அலுவலர்



Payment Summary

Payment of INR 89,000.00 to landJul22

Reference ID: 862676211

To Account: landJul22

From Account: DINDIGUL WASTE
MANAGEMENT PRIVATE
LIMITED

Amount: INR 89,000.00

Payment Date(dd/MM/yyyy): 11/07/2022

Remarks: registration

Network: NEFT

Manual Release Required: No

Transaction Status: Success

1	புத்தகம் 2022 ம் வருடத்தின்படி 3 ம் ஆவணம்
21	தாள்களைக் கிடைக்காது.
15	தளம்
	பதிவு அலுவலர்



Certified True Copy Of The Resolution Passed At The Meeting Of The Board Of Directors Of
DINDIGUL WASTE MANAGEMENT PRIVATE LIMITED Held At The Registered Office Of The
Company At No16 Sathiram East Street Nilakottai Taluk Dindigul - 624 208
On 06.07.2022 at 10.00 AM

Resolution No : 3

Pursuant to the provisions of section 196 of the Companies Act, 2013, the Company is required to appoint a Managing Director who is also a Key Managerial Personnel. Considering this **SMT. VIJAYALAKSHMI** is proposed to be appointed as a Managing Director of the Company to hold office for a period of Three years commencing from 06/07/2022 and ending on 07/07/2025.

The Directors to consider and pass the following resolution.

For Dindigul Waste Management Pvt Ltd

VIJAYALA Digitally signed by
VIJAYALAKSHMI
KSHMI Date: 2022.07.06
22:42:04 +05'30'

VIJAYALAKSHMI - MD

[DIN 09488861]

1 புத்தகம் 2022-23-ம் வருடத்திற்கு 30% மீட்டிங் ஆவணம்
21 தாள்களைக் கிடைக்காது.
17 தாள்கள்
8
பதிவு அலுவலர்



NOTICE is hereby given that the First Body Meeting of our Company will be held at our Registered Office No16 Sathiram East Street Nilakottai Taluk Dindigul - 624 208 On 06.07.2022 at 10.00 AM

Proposed Resolution

"Resolved that pursuant to Sections 196, 197 and 203 read with other applicable provisions and Schedule V of the Companies Act, 2013 and the provisions of Articles of Association of the Company and Companies (Appointment and Remuneration of Managerial Personnel) Rules, 2014, and subject to the approval of shareholders in the next meeting, the consent of the Board of Directors of the Company be and is hereby accorded for the appointment of **SMT. VIJAYALAKSHMI** as a Managing Director of the Company for a period of five years commencing from 06/07/2022 and ending on 07/07/2025, on the terms and conditions contained in the agreement.

Resolved further that SMT. VIJAYALAKSHMI in the capacity of Managing Director will be entrusted with among others the powers, authorities, functions, duties, responsibilities by Board of Directors of the Company, from time to time.

Resolved further that the Board of Directors be and is hereby authorised to do all such acts, deeds and things as may be necessary, proper and expedient for the purpose of giving effect to this resolution."

1 புத்தகம் 2022-ம் வருடத்திய 3093ம் சுவணம்
21 தாள்களைக் கொண்டது.
18 தாள்
8
பதிவு அலுவலர்



Minutes – Gist of Discussion

The Board after considering the proposal for appointment of Managing Director, unanimously/ by a majority, subject to shareholders' approval, approve the appointment of **SMT. VIJAYALAKSHMI** as a Director of the Company to hold office for a period of five years commencing from 06/07/2022 and ending on 07/07/2025.

For Dindigul Waste Management Pvt Ltd

PANDY
SHANMUGASUN
DARAM

Digitally signed by PANDY
SHANMUGASUNDARAM
Date: 2022.07.06 22:43:18
+05'30'

Pandy Shanmugasundaram

Director [DIN 09488860]

For Dindigul Waste Management Pvt Ltd

VJAYAL
AKSHMI

Digitally signed
by
VIJAYALAKSHMI
Date: 2022.07.06
22:42:35 +05'30'

Vijayalakshmi

Director [DIN 09488861]

1 புத்தகம் 2022-ம் வருடத்திய 393-ம் ஆவணம்
21 தாள்களைக் கிடைத்தது.
19 தாள்
பதிவு அலுவலர்

6718 4579 9805
 VED: 9170 6463 2920 6421
 எனது ஆதார் எனது அடையாளம்

இந்திய அரசாங்கம்
 Government of India

புகைப்படம்
 A. Marimuthu
 பிறந்த நாள்/DOB: 04/03/1973
 பால/MALE

6718 4579 9805
 VED: 9170 6463 2920 6421

எனது ஆதார் எனது அடையாளம்

A MARIMUTHU

Unique Identification Authority of India

Address:
 50 Alagarpetty,
 375 S. Th. Road, Nilakkottai, Sivakasi District
 POST: NORTH CHACHANAM, Dindigul
 Tamil Nadu - 624211

6718 4579 9805
 VED: 9170 6463 2920 6421

இந்திய அரசாங்கம்
 Government of India

புகைப்படம்
 P Vijayalakshmi
 பிறந்த நாள்/DOB: 15/05/1984
 பால/Female

6843 9073 4198

ஆதார் - சாதாரண மனிதனின் அதிகாரம்

P.V.V.

Unique Identification Authority of India

Address: W/O. Pattam
 Chetti, 14/25A, TELUNGAR
 STREET, NILAKKOTTAI,
 Nilakkottai(ho), Nilakkottai,
 Dindigul, Nilakkottai, Tamil
 Nadu, 624208

6843 9073 4198

1800 300 1347 help@uidai.gov.in www.uidai.gov.in

புத்தகம் 2022-ம் வருடத்திய 2022-ம் ஆவணம்
 21 தாள்களைக் கிடைக்காண்டது.
 20 தாள்கள்
 பதிவு அலுவலர்





பதிவுத்துறை

இரசீது - ஆவணப்பதிவு

இரசீது எண் : 4391/2022

ஆவண எண் : R/ நிலக்கோட்டை/ புத்தகம்-1/ 3093 / 2022

திருமதி விஜயலெட்சுமி அவர்களிடமிருந்து ₹ 4,565 (ரூபாய் நான்காயிரத்து ஐந்துநூற்று அறுபத்தைந்து மட்டும்) இணைய வழி REG202207112478379 ₹ 4465, REG202207112484862 ₹ 100 கீழ்க்கண்ட விவரப்படி பெற்றுக் கொள்ளப்பட்டது

வ.எண்	விவரம்	தொகை (₹)
1	முத்திரைத்தீர்வை (முத்திரைச் சட்டம் பிரிவு 41ன் 1B)	230
2	பதிவுக் கட்டணம்	3,560
3	கணினிக் கட்டணம்	275
4	உட்பிரிவுக் கட்டணம்	400
5	குறுந்தகடுக் கட்டணம்	100
	செலுத்தப்பட்ட மொத்தத் தொகை	4,565

குறிப்பு: இந்த அசல் ஆவணம் உடனடியாக பக்க சான்று இடப்பட்டு ஒளி வருடல் செய்யப்பட்டு திரும்ப வழங்கப்படும். ஆகவே அசல் ஆவணத்தைத் திரும்பப் பெற தகுதி பெற்ற திரு / திருமதி டிசல்வி திருமதி விஜயலெட்சுமி இது தொடர்பாக குறுஞ்செய்தி பெற்றவுடன் அசல் ரசீதை அளித்து அசல் ஆவணத்தை திரும்ப பெற்றுக்கொள்ளலாம். இதில் ஏதேனும் இடர்பாடுகள் இருப்பின் கட்டணமில்லா தொலைபேசி எண் 1800-102-5174 - ஐ தொடர்பு கொள்ளவும்.

நிலக்கோட்டை அலுவலகம்

நாள் 11/07/2022

பதிவு அலுவலர் கையொப்பம்
சுயாதீனவாளி

உருவாக்கப்பட்ட ஆவண வரைவு ஆவணக் கருக்கலிவழி
நிலக்கோட்டை.

பயனர் பெயர்	முழுப் பெயர்	கைப்பேசி எண்	உருவாக்கப்பட்ட நாள்
MURUGAPANDIMURALI (குடிமக்கள்)	Murugapandi Murali	6369545745	11-07-22 01:55:45 PM

1. அசல் ஆவணத்தைத் திரும்பப் பெறும்போது உரிய நபரின் விரல் ரேகை பெறப்படுகிறதா என உறுதிசெய்து கொள்ளவும்

2. ஆவணதாரர்கள் தங்களின் சரியான கைப்பேசி எண்ணைப் பதிவுக்கு தாக்கலாகும் ஆவணத்தில் தெரிவித்தால் ஆவணம்சொத்தின் நிலை குறித்த குறுஞ்செய்தியை பெறலாம்

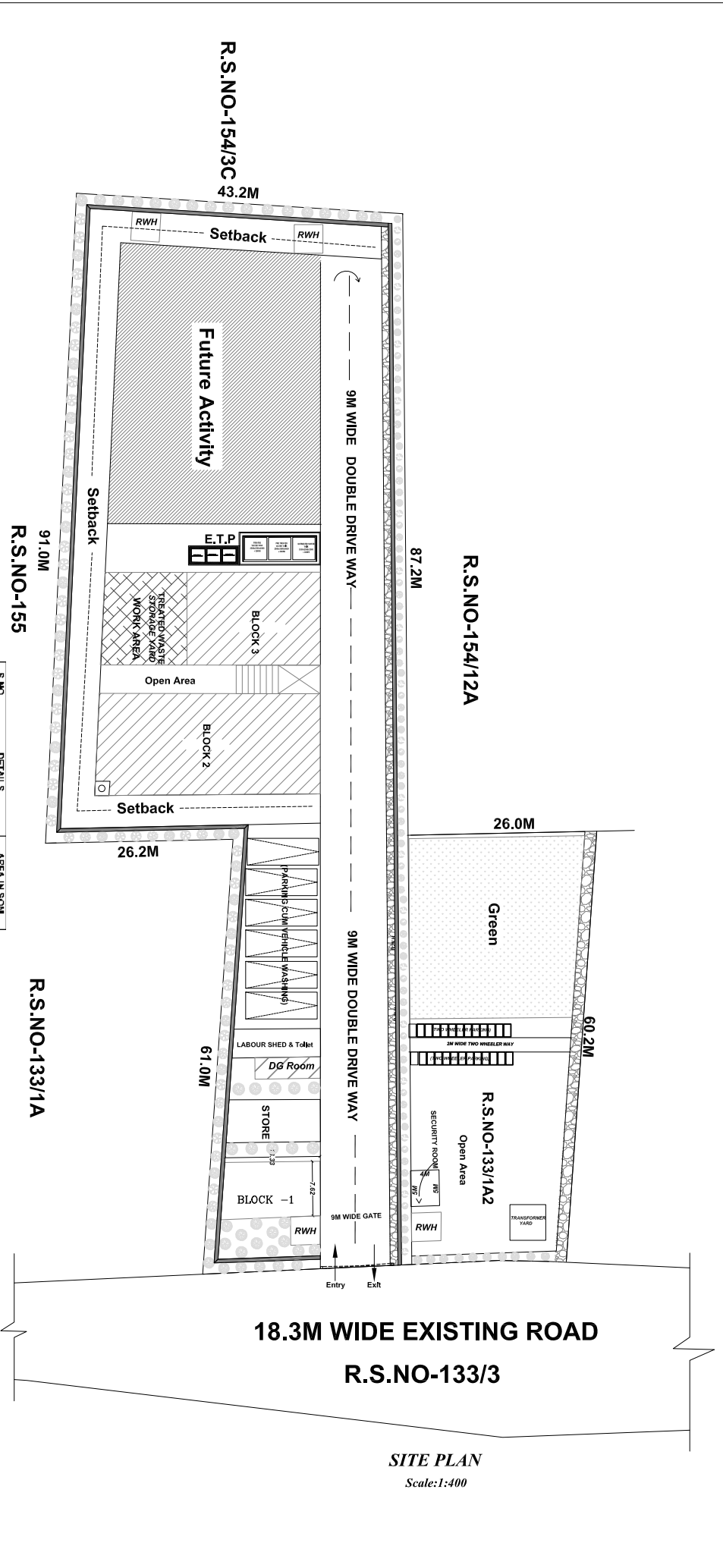
3. ஆவணத்தை குறித்த காலத்தில் திரும்பப் பெற்றுக்கொள்ளத் தவறும் பட்சத்தில் பாதுகாப்பு கட்டணம் வசூலிக்கப்படும்.

4. மட்டா மாற்றம் தேவைப்படும் ஆவணங்களுக்கு மட்டா மாற்றம் செய்யக் கோரும் படிவம் இவ்வலுவலகத்தில் இருந்து இணையதளம் வழியாகவே வருவாய்த்துறைக்கு அனுப்பப்பட்டுள்ளது அதன் ஒப்புக்கை சீட்டை தங்களின் அசல் ஆவணத்தைத் திரும்பப் பெறும்போது கேட்டுப் பெற்றுக்கொள்ளவும்.

<https://www.tn.gov.in> என்ற இணைய தளம் மூலம் வழங்கப்படும் சேவைகள்

- கட்டணமின்றி வில்லங்க விவரம் தரவிறக்கம் செய்யும் வசதி
- சார் பதிவாளர் அலுவலகம் நேரில் வராமல் இணையதளம் மூலம் சான்றிட்ட நகல்கள், வில்லங்க சான்று விபரங்கள் விண்ணப்பித்து மின்னஞ்சல் மூலம் சான்று பெறும் வசதி
- இணையதளம் மூலம் பொது மக்களை ஆவணம் உருவாக்கும் வசதி
- இணையதளம் மூலம் வழிகாட்டி மதிப்பை அறிவும் வசதி, கட்டிட மதிப்பை கணக்கிடும் வசதி
- இணையதளம் மூலம் முத்திரைத் தீர்வை, பதிவுக் கட்டணம் உள்ளிட்ட கட்டணங்கள் செலுத்தும் வசதி
- பொதுமக்கள் நடை சார்ந்த சுற்றுச்சூழல் அராஜகங்கள் பதிவுத்துறையின் இணையதளத்தில் பார்வையிடும் வசதி

Enclosure 4 - Layout Plan



SITE PLAN
Scale: 1:400

S.NO.	DETAILS	AREA IN SQM	% OF TOTAL PLOT AREA
1	Ground Coverage	1170	17%
2	Green Area	1309	19%
3	Parking Area	305.13	5%
4	Road & Open Area	3349.44	47%
6	Future Activity	1031.43	13%
7	Total Area	7456	100%

S.NO.	DETAILS	AREA IN SQM
1	Treated Waste Storage Area	192.32
2	E.T.P	11.92
3	DG Room	77.88
4	R/W	32.98
5	Security Room	20
	Total	304.51

Block	DETAILS	AREA IN SQM
Block 1	ADMIN	
Block 2	INCINERATOR SHED	
Block 3	AUTOCLAVE SHED	

ALL DIMENSIONS ARE IN METRE	
SCALE :	1:200
DATE :	09.01.2023
DRAWN	DRG TITLE: CBWTF at Mikotai, by Dindigul Waste Management Pvt Ltd
CHECKED	
APPROVED	DRG NO. PS/STP/CBWTF/LAYOUT/01/2022

Enclosure 5 - Terms of Reference



THIRU. DEEPAK S. BILGI, I.F.S.
MEMBER SECRETARY

STATE LEVEL ENVIRONMENT IMPACT
ASSESSMENT AUTHORITY-TAMILNADU

3rd Floor, Panagal Maaligai,
No.1, Jeenis Road, Saidapet,
Chennai - 600 015.

Phone No. 044-24359973

Fax No. 044-24359975

TERMS OF REFERENCE (ToR)

Lr No.SEIAA-TN/F.No.9628/SEAC/ToR-1338/2023 Dated: 10.02.2023

To

The Director,
M/s. Dindigul Waste Management Private Limited,
No.16, Sathiram East Street,
Nilakottai Taluk, Dindigul - 624 208.

Sir,

Sub: SEIAA, TN – Proposed Common Bio-Medical Waste Treatment Facility (CBMWTF) at S.F.Nos. 133/1A2, 154/11 of Noothulapuram Village, Nilakottai Taluk, Dindigul District, Tamil Nadu by M/s. Dindigul Waste Management Private Limited – Category “B1” & Schedule Item No. 7(d)(a)-“Bio-Medical Waste Treatment Facilities” of EIA Notification, 2006 – Issue of Terms of References (ToR) with Public Hearing – Regarding

- Ref:** 1. Online Proposal No. SIA/TN/INFRA2/406688/2022 dated 22.11.2022.
2. Your application for Terms of Reference dated: 08.12.2022.
3. Minutes of the 346th SEAC meeting held on 12.01.2023.
4. Minutes of the 591st SEIAA meeting held on 10.02.2023.

XXXXXX

The proponent, M/s. Dindigul Waste Management Private Limited has submitted application for Terms of References (ToR) on 08.12.2022, in Form-I, Pre-Feasibility report and draft ToR for the Proposed Common Bio-Medical Waste Treatment Facility (CBMWTF) at S.F.Nos. 133/1A2, 154/11 of Noothulapuram Village, Nilakottai Taluk, Dindigul District, Tamil Nadu under Category “B1” & Schedule Item No. 7(d)(a)-“Bio-Medical Waste Treatment Facilities”.


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Remarks by SEAC:

Proposed common bio-medical waste treatment facility (CBMWTF) at S.F.Nos. 133/1A2, 154/11, Noothulapuram Village, Nilakottai Taluk, Dindigul District, Tamil Nadu by M/s. Dindigul Waste Management Private Limited - For Terms of Reference.

The proposal was placed in 346th SEAC meeting held on 12.1.2023. The details of the project furnished by the proponent are given in the website (parivesh.nic.in).

The SEAC noted the following:

1. The Project Proponent, M/s. Dindigul Waste Management Private Limited has applied for Terms for Reference for the proposed common bio-medical waste treatment facility (CBMWTF) at S.F.Nos. 133/1A2, 154/11, Noothulapuram Village, Nilakottai Taluk, Dindigul District, Tamil Nadu.
2. The project/activity is covered under Category "B1" of Item 7(d)(a) "Common Bio-Medical Waste Treatment Facility" of the Schedule to the EIA Notification, 2006.
3. The incineration capacity -11TPD & Autoclave capacity – 6 TPA.

Based on the presentation made by the proponent, SEAC **recommended to grant of Terms of Reference (TOR) with Public Hearing**, subject to the following TORs, in addition to the standard terms of reference for EIA study for non-coal mining projects and details issued by the MOEF & CC to be included in EIA/EMP Report:

1. Details of alternate site shall be provided in the EIA Report and the PP shall select the site in terms of the Bio Medial Waste Management Rules 2016.
2. The implication on Flora & fauna shall be included in the EIA report.
3. Commitment letter obtained from local body for fresh water supply.
4. Enumerate the structures located within 100, 200 & 300m from the project site shall be included in the EIA report.
5. Detailed design specification of incinerator shall be included.
6. Soil testing should be carried out at various depths in the proposed site as the PP stated that the same site was used before for deep burial of bio-medical waste.
7. Details of various state of art of technology available for this filed and justification for selection of a particular technology.
8. Details of permanent structures available within 2km from the project site shall be provided in the EIA.


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9. Commitment letter from competent authority for the supply of fresh water.
10. Land requirement for the facility including its break up for various purposes, its availability and optimization.
11. Details of proposed layout clearly demarcating various activities such as security, Waste Storage Rooms, Waste Treatment Equipment Rooms/Areas, Treated Waste Storage Room, Pollution Control Devices like APCS and ETP, ash storage/disposal area, vehicle washing areas, and others such as admin area, worker's room, health centers, greenbelt, etc.
12. Details on collection and transportation of Bio Medical Waste from health care establishment. No. of vehicles and feature of vehicles, etc.
13. Details of waste storage facilities/rooms.
14. Details of the treatment equipment's capacity.
15. Details of the incineration system – a statement on the compliance to CPCB guidelines for common bio medical waste incinerators in respect of waste feed cut-offs, operating parameters of combustion chambers, flue gas cleaning, ash handling, etc.
16. Details on fuel requirement for incineration.
17. Details on fuel gas emissions discharge through stack and proposed pollution control technologies.
18. Details on residue/ash generation and management.
19. Details of waste heat utilization, if any.
20. Details on wastewater management.
21. Details of the proposed overall safety and health protection measures.
22. Details on source of water and power to the facility.
23. Details of the existing access road(s)/walkways to the designed operations in the site and its layout.
24. Location of the incineration facility and nearest habitats with distances from the facility to be demarcated on a toposheet (1: 50000 scale).
25. Landuse map based on satellite imagery including location specific sensitivities such as national parks / wildlife sanctuary, villages, industries, etc.
26. Topography details.
27. Surface water quality of nearby water bodies.
28. Details on proposed groundwater monitoring wells, locations, frequency of monitoring, parameters, etc.



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29. Action plan for the greenbelt development in accordance to CPCB guidelines.
30. Details on pollution control technologies and online monitoring equipment.
31. Details on monitoring of pollutants at source – performance of the incinerator, including operating hours, fuel consumption, operating parameters (Combustion chamber – temperature, pressure, Stack temperature, total particulate matter, HCl, NOx as per Bio Medial Waste (Management & Handling) Rules 1998.
32. Stack and fugitive emissions may be monitored for SPM, HCL & NO2 as per Bio Medial Waste (Management & Handling) Rules 2016.
33. Specific programme to monitor safety and health protection of workers.
34. Details of administrative and technical organizational structure.
35. Details of the emergency preparedness plan and on-site & off-site disaster management plan. Submit details of a comprehensive Disaster Management Plan including emergency evacuation during natural and man-made disaster.
36. The EIA/EMP shall conform to the 'Revised Guidelines for Common Bio-medical Waste Treatment and Disposal Facilities' issued by the Central Pollution Control Board.
37. PP shall strive to generate a minimum of 25% of energy consumption by way of solar energy.
38. As part of CER, PP shall examine the possibility of providing electric crematoriums Ramanathapuram and Paramakudi municipalities.
39. Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project will be given.
40. The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP will be clearly spelt out.

Remarks by SEIAA:

The proposal was placed in the 591st Authority meeting held on 10.02.2023. The authority noted that the subject was appraised in 346th SEAC meeting held on 12.01.2023. After detailed discussion the Authority decided to accept the recommendations of SEAC and grant Terms of Reference (ToR) with Public Hearing for undertaking the Environment Impact Assessment Study and preparation of Environment Management Plan subject to the ToRs as recommended by SEAC & subject specific standard ToR in addition to the following ToRs.

1. As per the MoEF& CC office memorandum F.No.22-65/2017-IA.III dated: 30.09.2020 and 20.10.2020 the proponent shall address the concerns raised during the public consultation and all the activities proposed shall be part of the Environment Management Plan.


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2. The Environmental Impact Assessment shall study in detail the carbon emission and also suggest the measures to mitigate carbon emission including development of carbon sinks and temperature reduction including control of other emission and climate mitigation activities.
3. The Environmental Impact Assessment should study the biodiversity, the natural ecosystem, the soil micro flora, fauna and soil seed banks and suggest measures to maintain the natural Ecosystem.
4. The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components and microbial components.
5. The Environmental Impact Assessment should study impact on standing trees and the trees should be numbered.
6. The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and hydrological cycles.
7. The Environmental Impact Assessment should study impact on climate change, GHG emissions, temperature rise, pollution and above soil & below soil carbon stock.
8. The Environmental Impact Assessment shall include study of impact of the proposed activity on protected areas, Reserve Forests, National Parks, Corridors and Wildlife pathways.
9. The project proponent shall furnish the details of trees in the project site with all trees numbered and protected.
10. The project proponent shall furnish a detailed study on the impact of proposed activity with mitigation measures on the nearby environmental fragile areas.
11. The project proponent shall furnish the detailed study on health with regard to respiratory distress due to allergens on workers and nearby villagers.
12. The project proponent shall furnish the impact on dust pollution on the nearby habitation and livelihoods.
13. The project proponent shall furnish the Risk assessment plan, EMP and Disaster management plan which should be prepared after thorough study.
14. The GPS co-ordinates for the boundaries at the green belt proposed & proposed project site shall be furnished separately.
15. Air quality modelling study shall be conducted for the CPCB primary air pollutants specified by considering the impact on the proposed plant to the nearby villages.
16. The details of quantity of steam to be generated, fuel and equipment to be used shall be furnished.


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17. The proponent shall ensure that the activities do not cause any damage to water environment, air quality and are carbon neutral.
18. The proponent shall ensure that the activities undertaken do not result in carbon emission and temperature rise in the area.
19. The activities shall not in any no way cause emissions and build-up of Green House Gases. Action plan shall be furnished for eco-friendly actions that support sustainable management of the natural resources within and outside the plant premises.
20. Details regarding the implementation of 4R (Recycle/reduce/reuse/recover) principle in the plant shall be furnished.
21. The Proponent shall furnish the baseline data for the environmental and ecological parameters with regard to surface water/ground water quality, air quality, soil quality & flora/fauna.
22. Measures proposed for prevention of odour emanating from solid waste processing plant and STP.
23. The Environmental Impact Assessment shall include Study on the energy conservation measures conforming to energy conservation norms prescribed by the Bureau of Energy Efficiency.
24. Impact of the proposed activity on soil, water and air envisaged shall be studied and mitigation measures proposed shall be detailed.

STANDARD TERMS OF REFERENCE (ToR) FOR EIA/EMP REPORT FOR PROJECTS/ACTIVITIES REQUIRING ENVIRONMENT CLEARANCE

7(d): STANDARD TERMS OF REFERENCE FOR CONDUCTING ENVIRONMENT IMPACT ASSESSMENT STUDY

- 1) Reasons for selecting the site with details of alternate sites examined/rejected/selected on merit with comparative statement and reason/basis for selection. The examination should justify site suitability in terms of environmental damages, resources sustainability associated with selected site as compared to rejected sites. The analysis should include parameters considered along with weightage criteria for short-listing selected site.
- 2) Submit the details of the road/rail connectivity along with the likely impacts and mitigative measures
- 3) Submit the present land use and permission required for any conversion such as forest,


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agriculture etc

- 4) Examine the details of transportation of Hazardous wastes, and its safety in handling.
- 5) Examine and submit the details of on line pollutant monitoring.
- 6) Examine the details of monitoring of Dioxin and Furon.
- 7) MoU for disposal of ash through the TSDF.
- 8) MoU for disposal of scrubbing waste water through CETP.
- 9) Examine and submit details of monitoring of water quality around the landfill site.
- 10) Examine and submit details of the odour control measures.
- 11) Examine and submit details of impact on water body and mitigative measures during rainy season.
- 12) Environmental Management Plan should be accompanied with Environmental Monitoring Plan and environmental cost and benefit assessment. Regular monitoring shall be carried out for odour control.
- 13) Water quality around the landfill site shall be monitored regularly to examine the impact on the ground water.
- 14) The storage and handling of hazardous wastes shall be as per the Hazardous Waste Management Rules.
- 15) Submit details of a comprehensive Disaster Management Plan including emergency evacuation during natural and man-made disaster.
- 16) Public hearing to be conducted for the project in accordance with provisions of Environmental Impact Assessment Notification, 2006 and the issues raised by the public should be addressed in the Environmental Management Plan. The Public Hearing should be conducted based on the ToR letter issued by the Ministry and not on the basis of Minutes of the Meeting available on the web-site.
- 17) A detailed draft EIA/EMP report should be prepared in accordance with the above additional TOR and should be submitted to the Ministry in accordance with the Notification.
- 18) Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.
- 19) The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out.
- 20) Any further clarification on carrying out the above studies including anticipated impacts due to the project and mitigative measure, project proponent can refer to the model ToR available on


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Ministry website "<http://moef.nic.in/Manual/Incinerator>"

The Executive summary of the EIA/EMP report in about 8-10 pages should be prepared incorporating the information on following points:

1. Project name and location (Village, District, State, and industrial Estate (If applicable).
2. Products and capacities. If expansion proposal then existing products with capacities and reference to earlier EC.
3. Requirement of land, raw material, water, power, fuel, with source of supply(Quantitative)
4. Process description in brief specifically indicating the gaseous emission, liquid effluent and solid and hazardous wastes.
5. Measures for mitigating the impact on the environment and mode of discharge or disposal.
6. Capital cost of the project, estimated time of completion.
7. Site selected for the project- Nature of land-Agricultural(Single/double crop), barren, Govt/Private land, status of its acquisition, nearby (in 2-3 km), water body,, population, with in 10km other industries, forest, eco-sensitive zones, accessibility,(note-I case of industrial estate this information may not be necessary)
8. Baseline environmental data-air quality, surface and ground water quality, soil characteristic, flora and fauna, socio-economic condition of the nearby population
9. Identification of hazards in handling, processing and storage of hazardous material and safety system provided to mitigate the risk.
10. Likely impact of the project, on air, water, land, flora-fanua and nearby population
11. Emergency preparedness plan in case of natural or in plant emergencies.
12. Issues raised during public hearing (If applicable) and response given
13. CSR plan with proposed expenditure.
14. Occupational Health Measures.
15. Post project monitoring plan.

Besides the above, the below mentioned general points should also be followed:

1. The EIA document shall be printed on both sides, as far as possible.
2. All documents should be properly indexed, page numbered.
3. Period/date of data collection should be clearly indicated.
4. Authenticated English translation of all material provided in Regional languages.


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5. The letter/application for EC should quote the MoEF & CC File No. and also attach a copy of the letter prescribing the ToR.
6. The copy of the letter received from the Ministry on the ToR prescribed for the project should be attached as an annexure to the final EIA-EMP Report.
7. The final EIA-EMP report submitted to the Ministry must incorporate the issues mentioned in ToR. The index of the final EIA-EMP report, must indicate the specific chapter and page no. of the EIA-EMP Report where the specific ToR prescribed by the Ministry have been incorporated. Questionnaire related to the project (posted on MoEF&CC website) with all sections duly filled in shall also be submitted at the time of applying for EC.
8. Grant of ToR does not mean grant of EC.
9. The status of accreditation of the EIA consultant with NABET/QCI shall be specifically mentioned. The consultant shall certify that his accreditation is for the sector for which this EIA is prepared.
10. On the front page of EIA/EMP reports, the name of the consultant/consultancy firm along with their complete details including their accreditation, if any shall be indicated. The consultant while submitting the EIA/EMP report shall give an undertaking to the effect that the prescribed ToRs (ToR proposed by the project proponent and additional ToR given by the MoEF & CC) have been complied with and the data submitted is factually correct (Refer MoEF & CC Office memorandum dated 4th August, 2009).
11. While submitting the EIA/EMP reports, the name of the experts associated with/involved in the preparation of these reports and the laboratories through which the samples have been got analysed should be stated in the report. It shall clearly be indicated whether these laboratories are approved under the Environment (Protection) Act, 1986 and the rules made there under (Please refer MoEF&CC Office Memorandum dated 4th August, 2009). The project leader of the EIA study shall also be mentioned.
12. All the ToR points as presented before the State Expert Appraisal Committee (SEAC) shall be covered.
13. The project proponent shall submit the detailed final EIA/EMP prepared as per ToR to the Ministry for considering the proposal for environmental clearance within 3 years as per the MoEF & CC O.M. No.J-11013/41/2006-IA-11(1) (P) dated 08.10.2014.
14. The consultants involved in preparation of EIA/EMP report after accreditation with Quality Council of India/National Accreditation Board of Education and Training (QCI/NABET)


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- would need to include a certificate in this regard in the EIA/EMP reports prepared by them and data provided by other Organization(s)/ Laboratories including their status of approvals etc. vide Notification of the MoEF & CC dated 19.07.2013.
15. The prescribed ToR would be valid for a period of three years for submission of the EIA/EMP Reports.
 16. A note confirming compliance of the ToR, with cross referencing of the relevant section/ pages of the EIA report should be provided.
 17. All documents may be properly referenced with index, page numbers and continuous page numbering.
 18. Copy of permission related to Port facility, Desalination plant, wind mill/solar power plant from competent Authority.
 19. Where data are presented in the report especially in tables, the period in which the data were collected and the sources should be indicated.
 20. While preparing the EIA report, the instructions for the proponents and instructions for the consultants issued by MoEF & CC vide O.M. J-11013/41/2006-IA.II(I) dated 4th August, 2009, which are available on the website of the Ministry should also be followed.
 21. The consultants involved in the preparation of EIA/EMP report after accreditations with quality Council of India (QC1)/National Accreditation Board of Education and Training (NABET) would need to include a certificate in this regard in the EIA/EMP reports prepared by them and data provided by other organization/Laboratories including their status of approvals etc. In this regard circular no. F.No. J-/11013/77/2004-IA-II(I) dated 2nd December, 2009, 18th March 2010, 28th May 2010, 28th June 2010, 31st December 2010 & 30th September 2011 posted on the Ministry's website <http://www.moef.nic.in/> may be referred


After preparing the EIA (As per the generic structure prescribed in Appendix-III of the EIA Notification, 2006) covering the above mentioned points, the proponent will take further necessary action for obtaining environmental clearance in accordance with the procedure prescribed under the EIA Notification, 2006.

The final EIA report shall be submitted to the SEIAA, Tamil Nadu for obtaining Environmental Clearance.


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The TORs prescribed shall be **valid for a period of three years** from the date of issue, for submission of the EIA/EMP report as per O.M. No. J-11013/41/2006-IA-II (I)(part) dated 29th August, 2017.

The receipt of this letter may be acknowledged.

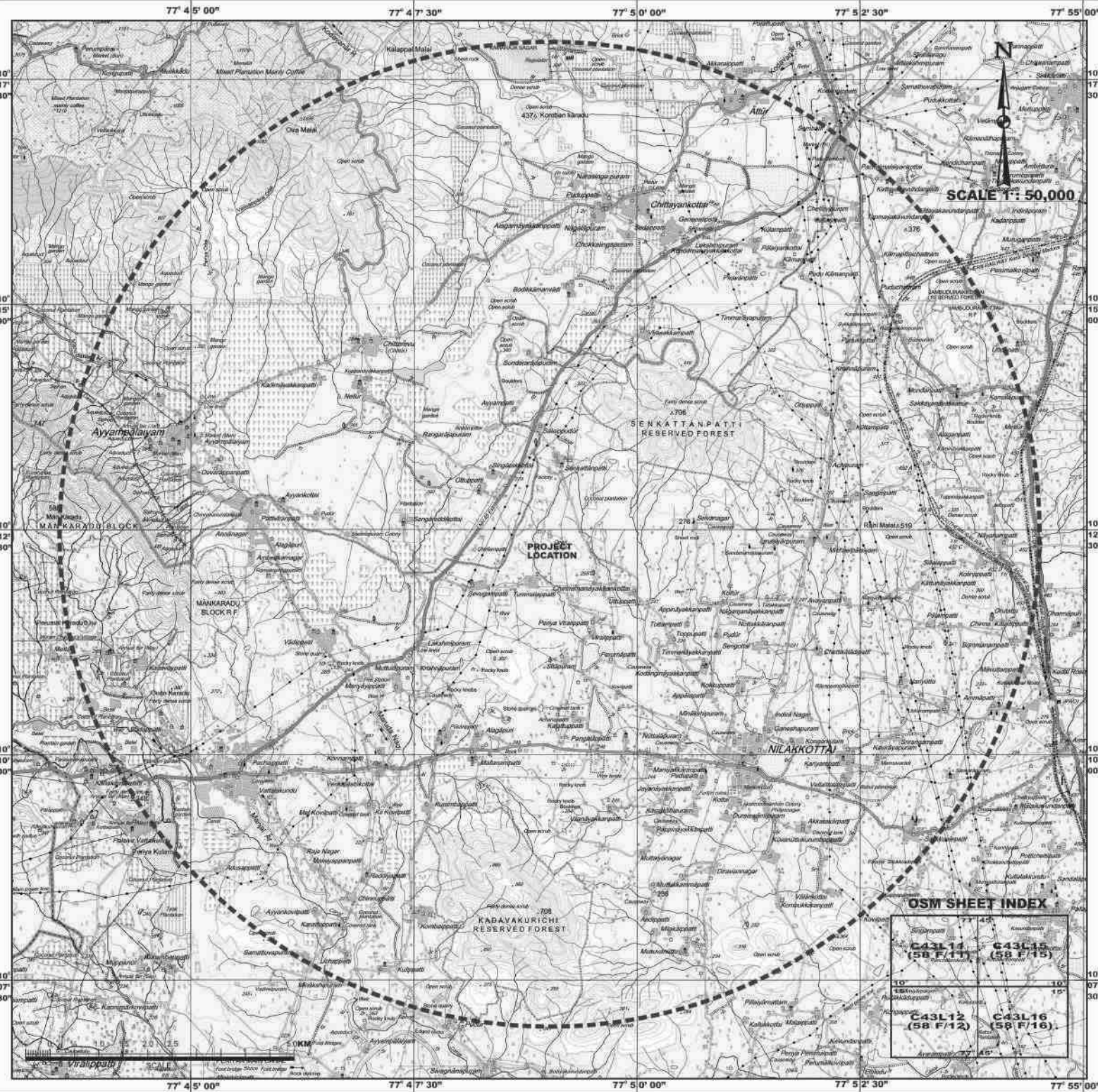

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Copy to:

1. The Additional Chief Secretary to Government, Environment, Climate Change and Forests Department, Govt. of Tamil Nadu, Fort St. George, Chennai - 9.
2. The Additional Chief Secretary to Government, Industries, Investment Promotion & Commerce Department, Govt. of Tamil Nadu, Fort St. George, Chennai - 9.
3. The Chairman, Central Pollution Control Board, Parivesh Bhavan, CBD Cum-Office Complex, East Arjun Nagar, New Delhi - 110 032.
4. The Chairman, Tamil Nadu Pollution Control Board, 76, Mount Salai, Guindy, Chennai - 600 032.
5. The APCCF (C), Regional Office, MoEF & CC (SZ), 34, HEPC Building, 1st & 2nd Floor, Cathedral Garden Road, Nungambakkam, Chennai - 34.
6. Monitoring Cell, IA Division, Ministry of Environment, Forests & CC, Paryavaran Bhavan, CGO Complex, New Delhi - 110 003.
7. The District Collector, Dindigul District.
8. Stock File.

Enclosure 6 - Topographical Map

**TOPOGRAPHICAL MAP 10KM RADIUS AREA OF PROPOSED COMMON
BIO-MEDICAL WASTE TREATMENT FACILITY" AT SURVEY NO: 133/1A2,
154/11 NOTHULAPURAM VILLAGE, NILAKOTTAI, DINDIGUL, TAMIL NADU
BY M/S DINDIGUL WASTE MANAGEMENT PVT. LTD.**



Enclosure 7 -Gap Analysis

GAP ANALYSIS

LOCATION OF NEW CBWTF – DINDIGUL WASTE MANAGEMENT, NILAKOTTAI

S.No	DESCRIPTION	REMARKS	
1	Project name and location (Village, District, State, and industrial Estate (If applicable)	Proposed Common Bio-Medical Waste Treatment Facility “DINDIGUL WASTE MANAGEMENT Pvt Ltd.”	
		Village	Survey No: 133/1A2, 154/11 Noothulapuram Village
		Taluk	Nilakottai
		District	Dindigul
		State	Tamilnadu
2	Product Produced	Recycled plastics & Bottles	

PURPOSE OF THE NEW CBWTF:

As per the CPCB Guidelines for establishment of Common Biomedical Waste Treatment Plant, a dedicated facility can be established for every 10,000 beds within the area of 75km or 150 km radius. It has been instructed when the number of beds is exceeding more than 10,000 in a locality, a new CBWTF may be allowed in the same locality to cater services to such additional bed strength in HCFs.

We are proposing a new facility at Nilakottai covering in its 100 km radius districts Dindigul, Madurai, Theni, and Karur as the number of beds is exceeding more than 10,000 in this locality with the scope of allowing a new CBWTF in this area.

There are Four existing facility near to the proposed location of new CBWTF are;

Ramky Energy and Environment Limited, Madurai — this facility has the coverage area of 5 districts namely Theni, Dindigul, Virudhunagar, Madurai, Ramanathapuram (Govt.HCF only). The service limit is beyond 150 km in contradiction to CPCB guidelines and beds are more than 26,000. And also a shutdown plant named NACCS - previously operated in Ramanadu district is collecting wastes from Ramanadu (Pvt HCF) & Sivagangai districts and handing it over to this facility for final disposal.

Ramky Energy and Environment Limited, Salem — this facility currently has coverage area of 6 districts namely Krishnagiri, Dharampuri, Salem, Erode, Namakkal and Karur. The service limit is beyond 150 km radius in contradiction to CPCB guidelines and beds are more than 25,000 in this area.

Tekno Therm Industries Ltd — this facility covers the following districts Coimbatore, Nilagiri, Tiruppur with number of beds being more than 14000 with Coimbatore alone contributing to more than 10,000 beds.

Medicare Enviro Systems, Thanjavur - this facility although covers the following districts Thanjavur, Pudhukottai, Trichy, Tiruvarur, Ariyalur, Nagapattinam with number of beds being more than 15000 beds in these area.

Hence M/s Dindigul Waste Management Pvt Ltd proposes a new CBWTF facility to enable dedicated biomedical waste management services to the health care units that are poorly managed currently especially in these regions and for the upcoming hospitals.

COVERAGE AREA OF DWMP - CBWTF:

Considering the economic viability and feasibility and to have minimal impacts on the environment, the proposed Nilakottai CBWTF is designed to cater up to 20,000 beds.

Proposed areas of operation for the new facility are Dindigul, Madurai, Theni and Karur to cover around 12,000 beds in total. Note that this does not include Clinics, Laboratory, Blood banks, Veterinary institutions, Research institutions and Primary health centers.

An inventory with regard to the bio-medical waste generation in the proposed, as well as existing biomedical waste treatment capacities the below are bed counts in the four districts.

Table: 1 Showing proposed area with Bed counts

SI No	District	No of Beds
1	Dindigul	4500
2	Madurai	4000
3	Karur	1400
4	Theni	2500
	TOTAL	12,400

Fig: I Map showing Proposed Coverage area for DWMPL



Moreover now a days due to a number of reasons (Pandemic conditions, etc), the healthcare units and elated bed counts are increasing rapidly. Also the Government of Tamilnadu is in action to convert Government hospitals into Medical colleges in this region increasing the future demand for better and advanced biomedical waste handling facilities here. So considering this and also the upcoming new hospitals and beds strength ratio, a new Common Biomedical Waste Treatment Facility becomes a necessity to this region.



Plastic Pollution Free
Tamilnadu

TAMIL NADU POLLUTION CONTROL BOARD



From
Er.S.Pandiarajan, M.Tech.,
Public Information Officer /
District Environmental Engineer,
Tamil Nadu Pollution Control Board,
Kappalur,
Madurai – 625 008.

To
Mrs. Vijaya Lakshmi Pattam,
No:16, Saththiram East Street,
Near PM. Modi Pharmacy,
Nilakottai,
Dindigul – 624 208.

Letter.No: F.RTI-000171/ DEE/MDU/TNPCB/2022 Dated. 02.06.2022

Sir,

Sub: TNPC Board, Madurai District – Under RTI Act 2005 – Information Request
– Reply furnished - Regarding.


Ref: Your Right to Information Act Petition received in this office on 06.05.2022

With reference to your RTI Petition, I am furnishing herewith the details pertaining to the
O/o.DEE, TNPCB, Madurai as follows,

Sl.No	Information Requested	Information Given
1.	Number of Hospitals and Clinics in Madurai District including both Government (GH, PH, ESI) and Private Hospitals.	No of Hospitals & Clinics in Madurai District including both Government (GH, PH, ESI) and Private Hospital is 900 No's.
2.	Total bed strength in Madurai Dt including both Government (GH, PH, ESI) and Private Hospitals and Total Biomedical waste generation quantity per day.	Total bed strength in Madurai District including both Government (GH, PH, ESI) and Private Hospitals is 11804 No's. Total Biomedical Waste generation quality per day is 1917 kg / Day
3.	How many beds are covered by available CBWTF (for Biomedical waste management service) and its capacity in Tons / Day.	11804 beds are covered in CBWTF. There is no Common Bio Medical Waste Treatment facility in Madurai District.

incase, if you wish to file appeal against the reply furnished to you under RTI Act, 2005 you are requested to approach the appellate authority in the following address.

**Appellate Authority/
Chief Environmental Engineer,
Tamilnadu Pollution Control Board,
76, Mount Salai, Guindy,
Chennai – 600 032.**


Public Information Officer/
District Environmental Engineer,
Tamilnadu Pollution Control Board,
Madurai.


02/06/22



TAMILNADU POLLUTION CONTROL BOARD

From	To
Dr. K. Ravichandran, M.Tech., Ph. D., District Environmental Engineer/ Public Information Officer, Tamil Nadu Pollution Control Board, 26, Ramakrishnapuram West, Karur – 639 001.	Mrs. Vijaya Lakshmi Pattam, No. 16, Saththiram East Street. Near PM.Modi pharmacy, Nilakottai. Dindigul – 624 208

Letter No./DEE/TNPCB/KAR/RTI/2022, Dated: 08.06.2022.

Sir,

Sub: Tamil Nadu Pollution Control Board – O/o. District Environmental Engineer,
Karur – Mrs. Vijaya Lakshmi Pattam, RTI Petition - Details – Submitted – Reg.

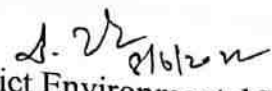
Ref: Right to Information Act 2005 Petition Dated: 09.05.2022.

With reference to the above under Right to Information Act 2005, the following information are provided.

Sl. No.	Information details
1, 2 & 3	They details are enclosed

If the applicant desires to make an appeal, it is requested to make the appeal to,

The Appellate Officer,
Additional Joint Chief Environmental Engineer,
Tamil Nadu Pollution Control Board,
76, Mount Salai,
Guindy,
Chennai – 600 032.


District Environmental Engineer/
Public Information Officer,
Tamil Nadu Pollution Control Board,
Karur.



TAMILNADU POLLUTION CONTROL BOARD

- Ref:1. Bd Memo T4/TNPCB/F.8418/BMWM/2020 dt17.02.2020
2. Memo. No. T4/TNPCB/F.8418/BMWM/2020-2 dated 19.02.2020
3. Memo. No. T4/TNPCB/F.BMW Inventory/ BMWM/2020 dated 18.08.2020

Inventory of Healthcare Facility April 2022 Monthly Report (as on 30.04.2022)

Inventory of Health Care Facilities	
BMWM	KARUR
I. No. of bedded HCFs	151
II. No. of non-bedded HCFs	326
No. of Hospitals	95
No. of Nursing Homes	25
No. of Clinics	57
No. of Dispensaries	57
Veterinary Institutions	74
Animal Houses	0
Pathological Laboratories	13
Blood banks,	5
Ayush Hospitals	0
Clinical establishments	0
Research or Educational Institutions	0
Health camps, medical or surgical camps, vaccination camps, blood donation camps	0
First aid rooms of schools	0
Forensic laboratories and Research labs	0
III. No. of Authorisation issued to bedded HCFs	151
IV. No. of Authorisation issued to non-bedded HCFs	326
Qty of BMW generated in Kg/Day	941.30
No. of HCFs provided Bar coding system	151
No. of HCFs provided pre-treatment system	151
Remarks	
The Bio Medical waste generated from the hospitals in Karur District is being disposed through Common BMW treatment facility M/s. Ramky Energy And Environment Ltd, Thankayur Village, Edappadi Taluk. Salem District.	


District Environmental Engineer
TNPCC/Karur



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TAMIL NADU POLLUTION CONTROL BOARD



From

Er. P.Manimaran, M.E., M.B.A.,
Public Information Officer/
District Environmental Engineer,
Tamil Nadu Pollution Control Board,
Collector office campus,
Dindigul

To

Mrs. Vijaya Lakshmi Pattam
No.16 Saththiram East Street,
Near PM Modi Pharmacy,
Nilakottai
Dindigul 624 208.

Lr.No. 000355/DEE/TNPCB/DGL/RTI/2022 dated: 11.05.2022


Sir,

Sub: TNPC Board, O/o.DEE, Dindigul – RTI Act 2005 – Information requested in your petition – Sent - Reg.

Ref: Your petition dated: 02.05.2022 Under RTI Act .(Petition received in this office dated:05.05.2022)

With reference to your RTI petition the requested information details as per records of this office is furnished as follows:-

Question Sl.No	Information Requested	Information Given
1.	Number of Hospitals and clinics in Dindigul District including both Government (GH, PH, ESI) and Private Hospitals	GH – 14 PH- 72 ESI – 7 Private - 116
2.	Total bed strength in Dindigul District including both Government (GH, PH, ESI) and Private Hospitals and Total Biomedical Waste generation quantity per day	Total No, of Beds – 4809 Biomedical waste generation - 633 kg/day
3..	How many beds are covered by available CBWTF (for Biomedical Waste Management Service) and its capacity in Tons/Day	No records available in this office


Public Information Officer/
District Environmental Engineer,
TNPC Board, Dindigul


11522


111522



TAMILNADU POLLUTION CONTROL BOARD

From Er. K. Senthil Vinayagam, M.E., Public Information Officer/ District Environmental Engineer, Tamil Nadu Pollution Control Board, 1/1984, Jothi Nagar, Collectorate Post, Ramanathapuram - 623 504. 04567-222297 tnpnbrmd@gmail.com.	To Mrs. Vijaya Lakshmi Pattam, No. 16, Saththiram East Street, Near PM. Modi Pharmacy, ✓ Nilakottai, Dindigul - 624 208. Cell: 93450 27454.
---	--

Lr.No. F.No. /RTI/DEE/TNPCE/RMD/2022 Dated. 11 .05.2022.

Sir,

Sub : TNPCE - Ramanathapuram - RTI Act 2005 - Information requested in your Petition - Sent - Reg.

Ref : Your Petition Dated: 02.05.2022 , in this office. Received on 05.05.2022.

With reference to your RTI petition, the requested information details as per records of this office is furnished as follows :-

Sl. No.	Information Requested	Information Given
1.	Number of Hospitals and clinics in Ramanathapuram District including both Government (GH, PH, ESI) and Private Hospitals.	Total number of hospital and clinic in Ramanathapuram District is 316.
2.	Total Bed strength in Ramanathapuram District including both Government (GH, PH, ESI) and Private Hospitals and Total Biomedical waste generation quantity per day.	Bed strength = 2881. Bio Medical Waste generation = 315 Kg/Day.
3.	How many beds are covered by available CBWTF (for Biomedical)	M/s. Ramky Energy and Environment Limited,

From
Er. T.Sehar, M.E.,
Public Information Officer /,
District Environmental Engineer,
Tamil Nadu Pollution Control Board,
Collectorate Complex,
Sivagangai - 630 562.
deesvg@tnpcb.gov.in

To
Mrs.Vijaya Lakshmi Pattam,
No.16, Saththiram East Street,
Near PM.Modi pharmacy,
Nilakottai,
Dindigul - 624208
Cell.: 9345027454

Lr.F.No.1962/RTIA/DEE/TNpcb/SVG/2022 dated 13.05.2022

Sir,

Sub: TNPCB - O/o DEE - TNPCB - SVG - RTI Act 2005 - Mrs.Vijaya Lakshmi Pattam, Dindigul - Reply - send - Reg.

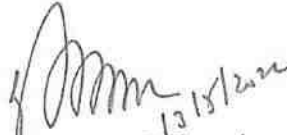
Ref: Mrs.Vijaya Lakshmi Pattam, Dindigul dated 02.05.2022 Received on 05.05.2022

With reference to the above petition calling for information under RTIA, The details relevant to our office as follows.

Sl. No.	Information requested	Information given
1.	Question No.1: Number of Hospitals and clinics in Sivagangai District including both Government (GH, PH, ESI) and Private Hospitals	400 Nos. HCFs located in Sivagangai District, which had obtained Consent/Bio-Medical Waste Authorization.
2.	Question No.2: Total bed strength in Sivagangai District including both Government (GH, PH, ESI) and private Hospitals and Total Biomedical Waste generation quantity per day	Bed Strength: 3231 Nos. Total BMW generation Quantity: 469.1Kg/Day as per Bio-medical waste Authorization issued.
3.	Question No.5: How many beds are covered by available CBWTF (for Biomedical waste management service and its capacity in Ton/Day)	No CBMWTF available in Sivagangai District.

Incase, If you wish to file appeal against the reply furnished to you under RTI Act, 2005 you are requested to approach the appellate authority in the following address please.
This receipt of this letter shall be acknowledged.

Dr.S. Selvan,
Appellate Authority,
Tamil Nadu Pollution Control Board,
76, Mount Salai, Guindy,
Chennai - 630032
Office: 044-22353146, 22353143
Email: rtisec@tnpcb.gov.in


Public Information Officer /,
District Environmental Engineer
Tamil Nadu Pollution Control Board
Sivagangai 1/3
13/5/22

**From**

Thiru.G.Ramaraj, M.E.,M.B.A.,
Public Information Officer &
District Environmental Engineer(A/c),
Tamil Nadu Pollution Control Board,
SAR Complex,Door.No.15-4,12 A3
Boothipuram Road, Theni-625 531

To

Mrs. Vijaya Lakshmi Pattam,
No.16, Saththiram East St,
Near PM. Modi Pharmacy,
Nilakkottai,
Dindugul-624 208.

Lr.No.F.0427/DEE/TNPCB/Theni/RTI/2022 Dated: 27.05.2022

Sir,

Sub: TNPC Board-O/o.DEE,Theni-Information requested under RTI Act 2005-
Information furnished -Reg.

Ref: Your RTI Petition Dated:02.05.2021, received by this office on 05.05.2022.

With reference to the above, the information sought in your RTI Petition dated:02.05.2021
are furnished as follows.

Sl. No	Requisition	Reply
1	Number of Hospitals & Clinics in Theni District including both Government(GH, PH,ESI) and Private Hospitals.	As per the records available in this office, there are 48 Nos of Government Hospitals and 103 Nos of Private Hospitals have been issued consent of the Board.
2	Total bed strength in Theni Dt including both Government(GH, PH,ESI) and Private Hospitals and total Bio Medical Waste Generation quantity per day.	As per the records available in this office, the total bed strength in 48 Nos of Government hospitals and 103 Nos of Private Hospitals are 2846; About 396 kgs of bio medical waste is generated per day in Theni District from these hospitals.
3	How many beds are covered by available CBWTF(for Biomedical waste management service) and its capacity in Tons/Day	All the 48 Nos of Government and 103 Nos of Private Hospitals in Theni district are disposing their biomedical waste to the CBWTF of M/s. Ramky Energy and Environment Ltd, Virudhunagar District.

Public Information Officer &
District Environmental Engineer(A/c)
Tamil Nadu Pollution Control Board
Theni

27/5/22



TAMILNADU POLLUTION CONTROL BOARD

From

V. Swaminathan, M.E.,
Public Information officer,
TamilNadu Pollution Control Board,
Tiruppur (South)
12A, Pollachi By-pass Road,
Palladam - 641 664, Tiruppur District.
Email ID. deetnpcbtr.s@gmail.com
Phone No.0425-5252225

To

Mrs. Vijaya Lakshmi Pattam
No.16, Saththiram East Street,
86/119, Varagappa Street,
Near P.M. Modi Pharmacy,
Nilakottai, Dindigul - 624 208.
Mobile : 93450 27454

Letter No: C.No.01513/DEE/TNPCB/TPS/RTI/2022 dt.01.06.2022

Sir,

Sub : TNPC Board - O/o. DEE, Tiruppur (South) - Right to Information Act, 2005 - Petition received - Details furnished - Reg.

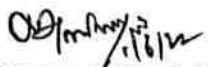
Ref : Your petition dated 02.05.2021 received in this office on 06.05.2022.

With reference to the above, I furnish the following information under Right to Information Act, 2005 in the jurisdiction of District Environmental Engineer, Tamilnadu Pollution Control Board, Tiruppur (South).

Sl.No.	Information sought	Information given
1.	Number of Hospitals and clinics in Tiruppur District including both Government (GH, PH, ESI) and Private Hospitals.	There are 369 Government & Private Hospitals and clinics in the jurisdiction of office of DEE, TNPCB, Tiruppur South.
2.	Total bed strength in Tiruppur Dt including both Government (GH, PH, ESI) and Private Hospitals and Total Biomedical waste generation quantity per day.	There are 1982 beds in 369 hospitals & clinics which are covered under CBWTF and authorized Bio Medical Waste generation is 761.49 Kg/day in the jurisdiction of office of DEE, TNPCB, Tiruppur South.
3.	How many beds are covered by available CBWTF (for Biomedical waste management service) and its capacity in Tons/day.	

If you are not satisfied with the above information furnished, you can apply to the following Appellate Officer and get the information.

"The Appellate Officer,
TamilNadu Pollution control Board,
76, Mount Road, Guindy,
Chennai - 600 032."


PUBLIC INFORMATION OFFICER
TAMILNADU POLLUTION CONTROL BOARD
TIRUPPUR (SOUTH) @ PALLADAM


11/6/22


16/6/22



TAMIL NADU POLLUTION CONTROL BOARD

From

Er. A. Shanmugam M.Tech., M.B.A.,
Public Information Officer/
District Environmental Engineer,
Tamil Nadu Pollution Control Board,
No.23, Collectorate Campus,
Virudhunagar - 626 002.

To

Mrs. Vijaya Lakshmi Pattam,
No.16, Saththiram East Street,
Near PM.Modi Pharmacy,
Nilakottai,
Dindigul - 624 208.

Letter No.DEE/TNPCB/VNR/F.R-195/RTI/2022 Dated: 31.05.2022

Sir,

Sub: TNPC Board - O/o.DEE, Virudhunagar- Certain information furnished under RTI Act 2005 - Regarding.

Ref: Your RTI Petition dt:02.05.2021 (Received in this office on:05.05.2022)

With reference to your RTI Petition cited, the information are furnished as follows.

1	Number of Hospitals and Clinics in Virudhunagar District including both Government (GH, PH, ESI) and Private Hospitals- 528
2	Total bed strength in Virudhunagar District including both Government (GH, PH, ESI) and Private Hospitals - 4239 Total Biomedical waste generation quantity per day - 402Kg/day (Average)
3	The beds that are covered by available CBWTF (for Biomedical waste management service) is 15250 and its capacity is 3813.33 Kg/day (Average)

Appellate Authority Address:-

Dr. S. Selvan, M.E, M.B.A, Ph.D,
Chief Environmental Engineer/
Appellate Authority
76, Mount Salai,
Guindy,
Chennai-600 032.

Ashwini
21/5/22
Public Information Officer/
District Environmental Engineer,
TNPC Board, Virudhunagar.

Ah
10/5/22



TAMIL NADU POLLUTION CONTROL BOARD

From
Er.R.Gunaseelan, M.E, M.B.A.,
Public Information Officer/
District Environmental Engineer,
Tamilnadu Pollution Control Board,
25, SIDCO Industrial Estate,
Thuvakudy, Trichy-15.

To ✓
Mrs. Vijaya Lakshmi Pattam,
No.16, Saththiram East Street,
Near PM.Modi Pharmacy,
Nilakottai,
Dindigul-624 208.

Lr.No.DEE/TNPCB/TRY/RTI-001780/2022 dt:30/05/2022

Sir,

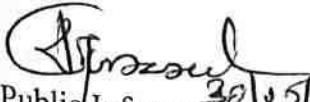
Sub: O/o.DEE-TNPCB, Trichy- Information under RTI Act, 2005-
Furnished- Reg.

Ref: Your application under RTI Act dt:02/05/2022.

With reference to above, I am furnishing the following particulars under Right to Information Act, 2005.

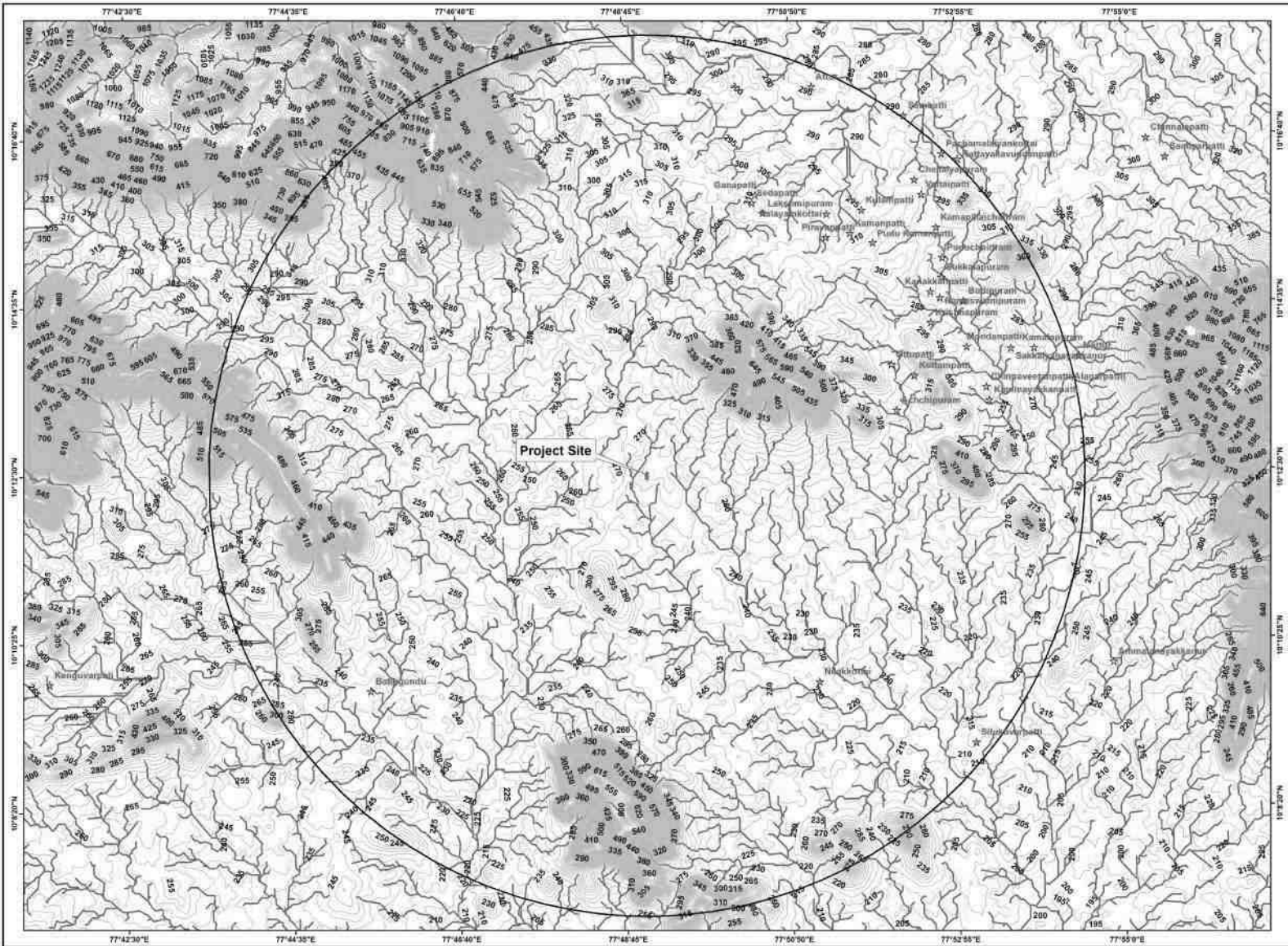
Question No. 1	Number of Hosptial and clinics in Trichy District including both Government (GH, PH,ESI) and Private Hospitals.	Bedded Hospital - 400 Nos.
No. 2	Total bed strength in Trichy Dt including both Government (GH,PH,ESI) and Private Hospitals, Total Biomedical waste generation quantity per day	10529 Nos. 1813.878 Kg/day
No. 3	How many beds are covered by available CBWTF (for Biomedical waste management service) and its capacity in Tons/Day	The information requested is not available in this office record.

The receipt of the letter may be acknowledged.


 Public Information Officer/
 District Environmental Engineer
 Tamilnadu Pollution Control Board
 Trichy.

30/5/22
 30/5/22

Enclosure 8 - Drainage Map



Legend

- Project_Location
- Project Buffer 10 KM
- Drains
- Contour 5M Interval

Drainage Map With Contours

Scale

0 1 2 4 6

Kilometers

Data Source

<https://nrtns.com/irtn30/>

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Perfact Enviro Solution Pvt Ltd.

Enclosure 9-EB Report

Introduction on Ecology and Biodiversity:

Plant and animal communities are indicators of the environment. They respond not only to one environmental factor, but also to an interacting group of factors. These communities influence and react sensitively to change in the balance of environmental stresses. A detailed knowledge of the diversity of the area definitely helps in managing the area properly following suitable mitigation practices. The study was conducted in the project area to assess all possible consequences on the biological environment.

Floral and faunal surveys are conducted for assessing the biological diversity and its status over a period of time that form an integral part of Impact Assessment Techniques. The present study is highlighting the various issues pertaining to floristic diversity and faunal wealth.

The project falls under the activity 7d(a) i.e. Biomedical Waste Management Treatment Facility, falling under Category "B" as per EIA Notification dated 14.09.2006 amended on 17.04.2015, and subsequent amendments.

The project is Common Bio-Medical Waste Treatment Facility by M/s Dindigul waste Management Pvt. Ltd. located at Survey No: 133/1A2, 154/11 Nothulapuram Village, Taluk - Nilakottai, District- Dindigul, State- Tamilnadu.

Scope of this report

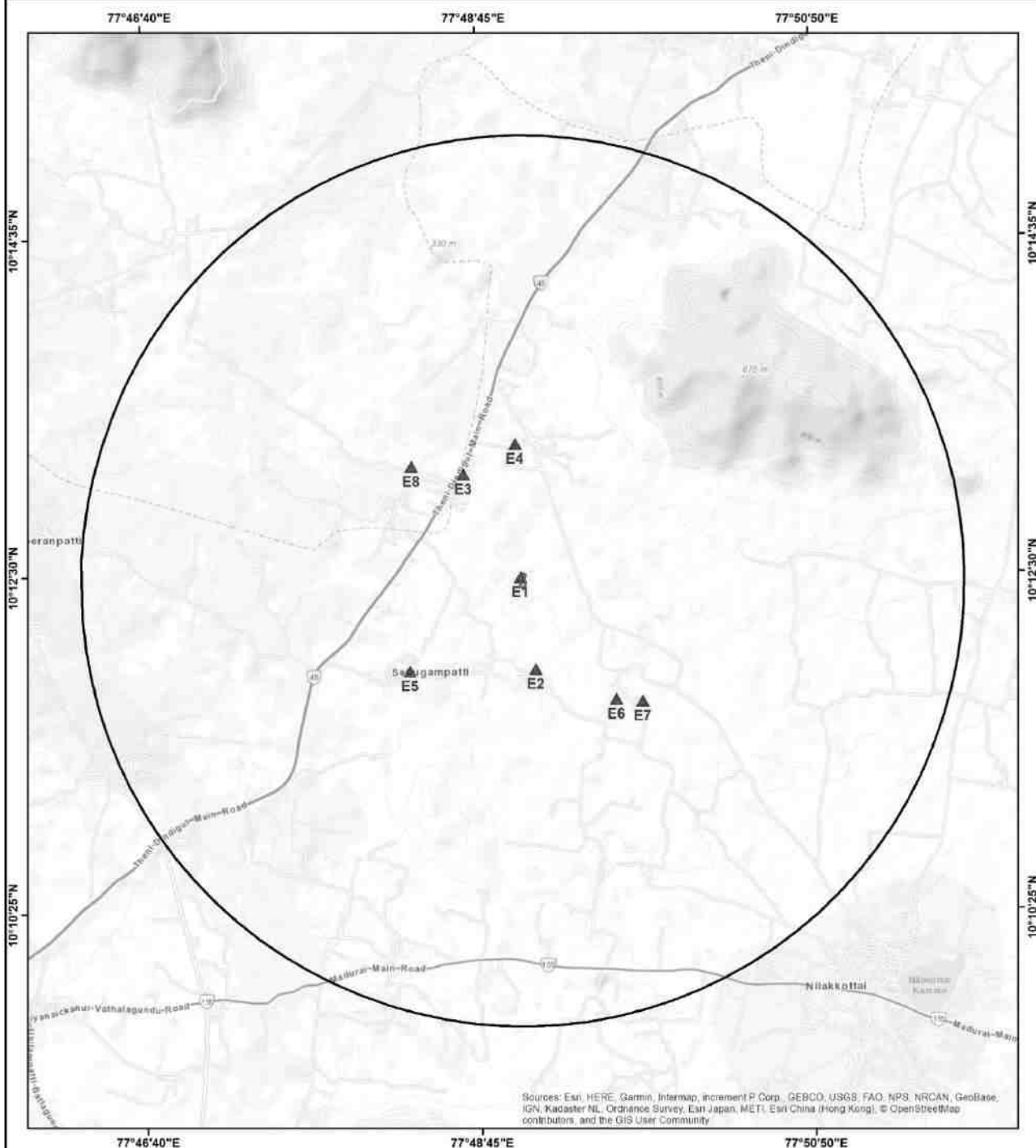
- To study the project details and identify the Eco-sensitive zone, sensitive habitats, water bodies, Rare, Endangered or Threatened species, endemic species, Land use, Wildlife corridor (including core & buffer zone)
- To review the KML for marking sample location to study primary analysis of Plant species varieties, diversity and dominance
- To identify the type of forest area, agricultural crop, soil type and cultural value within the 10 Km of buffer zone.
- To Map the area including all the sensitive and major habitat, Eco-sensitive zone & Water bodies.
- To study the secondary literature from various sources like WPA 1972, WII, IUCN red book, Forest Manual, district reports on forest inventories, national policy issues and community forestry issues, any Local news associated with Man wildlife conflict information, etc.
- To Prepare Flora and Fauna inventory with schedules or status of the species.
- Identify, in consultation with stakeholders, the current and potential impact and evaluate the significance of impacts and mitigation measures.

Sampling Location

Buffer Sampling Location: Patches of flora are studied in 5 locations within the study area.

Sampling Code	Location	Distance & Direction
E-1	Onsite	--
E-2	Thumlapatti	0.93km, SSE
E-3	Sangatampatti	1.31km, NW
E-4	Ottupatti	1.50km, North
E-5	Sevugampatti	1.58km, NW
E-6	Chinamanayakkan kottai	1.6km, SW
E-7	Othupatty	1.63km, SE
E-8	Singarakottai	1.75 km, NW

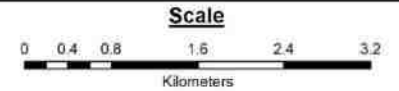
EB Sampling Location Map



Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, Geotitles, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), © OpenStreetMap contributors, and the GIS User Community

Legend

- EB Sampling Locations
- Project Location
- Project Buffer 5Km



Data Source
 Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), © OpenStreetMap contributors, and the GIS User Community

Projection - WGS_1984_UTM_Zone_43N

EB Sampling Locations			
Name	Location	Latitude	Longitude
E1	Onsite	10° 12' 28.948" N	77° 49' 0.791" E
E2	Thumlapatti	10° 11' 54.854" N	77° 49' 6.220" E
E3	Sangatampatti	10° 13' 7.226" N	77° 48' 39.645" E
E4	Ottupatti	10° 13' 18.447" N	77° 48' 59.157" E
E5	Sivugampatti	10° 11' 54.283" N	77° 48' 19.145" E
E6	Chinamanayakkan kottai	10° 11' 43.627" N	77° 49' 36.283" E
E7	Othupatty	10° 11' 42.836" N	77° 49' 46.215" E
E8	Singarankottai	10° 13' 10.235" N	77° 48' 20.219" E

Methodology:

Terrestrial Floral Study: Depending upon the vegetation & size of the area, Plot Quadrate method was adopted for this survey [Michael (1964), Trivedi *et. al.*, (1987) and Odum (1971)].

Plot Quadrate Method: To assess the floral composition, the area was evaluated through primary survey by considering the aspects as the type of vegetation and landscape parameters. The local populations were also consulted to get further information. Plant species are identified first and then counted up within the core zone with the help of quadrate method.

The size of the quadrate was based on the area size. For the survey 10 X 10 metre plot were selected for the respective analysis and for the buffer zone the same was estimated with the help of line transect along the stratified survey blocks in all the potential habitats and vegetation associations with an altitudinal sequence in a random regular interval.

Location Map: Location map of the site showing eco sensitive zones are given in **Figure-1**

1.0 LOCATION DETAILS

The proposed Common Bio-Medical Wastes treatment Facility with Area of 7165 m² (1.776 acre) and production capacity 19 TPD (6935 TPA) located at Survey No: 133/1A2, 154/11 Nothulapuram Village, Taluk - Nilakottai, District- Dindigul, State- Tamil Nadu will be developed by M/s Dindigul Waste Management Pvt. Ltd.

Diversity and Cropping Pattern

Dindigul district is primarily agro-based. About 70% of the total population earns their livelihood directly or indirectly through agriculture. There are about 165 Rice Mills in and around Dindigul. Tapioca is one of the major crop in the district. Different types of food products are manufactured from tapioca in the district. Dindigul city is an important wholesale market for cotton, onions and groundnuts (peanuts). Paddy and cholam are cultivated in major areas in the district. Groundnut has also been cultivated in the district. These three products yield in the district recorded high amongst others. Cotton and Ragi are the products with least yield in the district.

The important floras in the Dindigul district are Teak, Kumil, Rose wood, Sandana, Vembu, Mahagani, Pala, Seehakai, Nellikai, Blue gum, Pine and Silavagai are some important timber species. Coffee, Tea, Agricultural crops, Fire wood and Pulpwood plantations are being cultivated in hilly areas of Palani and Kodaikanal hills, which is a part of Western Ghats. Paddy, Black gram, Maize, Cholam, Groundnut, Cotton, Tamarind, Mango, Banana, Grape, Tomato are mainly cultivated as Cash crops. The cash crops, seasonal crops and fruits which were observed during survey are as follows:

S.No.	COMMON NAME	BOTANICAL NAME
1.	Paddy	<i>Oryza sativa</i>
2.	Maize	<i>Zea mays</i>

S.No.	COMMON NAME	BOTANICAL NAME
3.	Red Gram	<i>Cajanus cajan</i>
4.	Horse Gram	<i>Macrotyloma uniflorum</i>
5.	Groundnut	<i>Arachis hypogaea</i>
6.	Kumbu	<i>Pennisetum glaucum</i>
7.	Cholam	<i>Sorghum bicolor</i>
8.	Grapes	<i>Vitis vinifera</i>
9.	Sugarcane	<i>Saccharum officinarum</i>
10.	Green Gram	<i>Vigna radiata</i>
11.	Cotton	<i>Gossypium Sp.</i>
12.	Gingelly	<i>Sesamum indicum</i>
13.	Coconut	<i>Cocus nucifera</i>
14.	Banana	<i>Musa acuminata</i>

Cash crops, seasonal crops and fruits

The most common seasonal fruit grown in the district is Coconut (*Cocus nucifera*).

ii) TYPES OF FOREST IN DINDIGUL DISTRICT

Total extent of Shola forests is 2337 Ha and of Grass land is 16627 Ha. Dindigul District forest consists of 84564.87 Ha of Reserved Forest, 19730 Ha of Reserved Land and 44,000 Ha of Hill Preservation Areas. It is ecologically very sensitive and is a part of Western Ghats bio-diversity. It contains many endangered and threatened species of plants, different rare species of fauna like grizzled squirrel and Slender Loris are found here. Forest contains many medicinal plants and they are used in the local and Siddha health care system. Forest Department has established a Medicinal Plants Conservation Area (MPCA) in Alagarmalai RF of Alagar Kovil Range in this Division.

List of Environmental Sensitive Area

Water Body		
Name	Distance	Direction
Nala near Lease Area	0.24 Km	NW
Nala near Chinnamanayakkankotti	1.5 Km	SE

Nala near Appinayakanpatti	2.43 Km	SE
Pond near Perumpatti	2.46 Km	SSE
Pond near Kovilpatti	3.19 Km	SSE
Maruda Nadi	4.65 Km	SW
Nilakottai Lake	6.09 Km	SE
Canal near Devarappanpatti	6.65 Km	WNW
Pond near Puduppatti	6.80 Km	N
Marutha Nadi	6.92 Km	WNW
Pond near Chittayankottai	7.87 Km	NE
Sempatty Lake	8.06 Km	NE
Manjalar River	8.15 Km	SW
Periya Odai	8.38 Km	NW
Canal near Adusappatti	8.40 Km	SW
Kodavanar River (Kudagan River)	8.85 Km	N
Gopinath Pond	8.99 Km	NE
Vannamparai Odai	9.04 Km	NW
Kamrajar Sagar Dam	9.17 Km	N
Kaladi Lake	9.25 Km	SW
Veerakudumban Lake	9.62 Km	SW
Batlagundu Dam	9.8 Km	SW
Thalapathiveeran Sundaralingam Lake	9.89 Km	SW
Canal near Betal (Plantain garden)	10.10 Km	SW
Periyar main Canal	10.12 Km	SSW
Canal near C Puaur	10.48 Km	SSW
Vaigai River	10.53 Km	SSW
Lake Kullichettipatti	10.93 Km	S
Canal near Avarampatti	12.98 Km	SE
Forest		
Senkattanpatti Reserved Forest	2.26 Km	NE
Kadavakurichi Reserved Forest	5.63 Km	SSW
Mankaradu Block Reserved Forest	6.31 Km	WSW
Jambuduraikkottai Reserved Forest	9.00 Km	NE

Figure 1. Eco-sensitive Map

1.0 OBJECTIVE

In view of the TOR, the biological study of the area has been conducted in order to understand the ecological status of the existing flora and fauna to generate baseline information and evaluate the probable impacts on the biological environment.

1.1 Terrestrial Ecology: The study was undertaken with a view:

- ❖ To assess nature and distribution of the vegetation in the area.
- ❖ To assess the frequency, frequency class, relative frequency, abundance, density, diversity index.
- ❖ To evaluate the dominant species of plant and animal.
- ❖ To list the endangered species (both flora and fauna).
- ❖ To mark the wetlands and other ecologically sensitive areas such as national parks/sanctuaries
- ❖ To evaluate the native species of ecological value and of good utility value
- ❖ To assess the effect of construction and operation of the project on existing ecology

1.2 Aquatic Ecology: The study was carried out in the project site aiming at:

- ❖ To identify Aquatic species (plankton (phyto & zoo), benthos).
- ❖ To Identify Macro invertebrates and fishes in the river.
- ❖ To identify the feeding and breeding grounds of economically important fishes.
- ❖ To assess the existing status of endangered species.
- ❖ To recognize the diversity indices of the terrestrial and aquatic communities.
- ❖ To assess the spawning and feeding habitats of aquatic species with respect to time and location.

2.0 LEGISLATIVE TOOLS OF CONCERNS

India has a number of Acts and various policy documents relating to conservation or protection of environment, agriculture, forestry, wildlife. Following enactments deals with the issues of biodiversity conservation and management and are applicable to the project.

- ❖ Indian Forest Act, 1927
- ❖ Wildlife (Protection) Act, 1972
- ❖ Forest (Conservation) Act, 1980
- ❖ Environment (Protection) Act, 1986
- ❖ The Biological Diversity Act, 2002
- ❖ National Forest Policy
- ❖ National Wildlife Policy
- ❖ National Biodiversity Conservation strategy and Action Plan
- ❖ Environment Policy, 2006

3.0 SAMPLING SITE SELECTION

3.1 Primary Survey: Floral composition of the area was evaluated. For the primary survey core zone area (within mine premises) and buffer zone area [10 KM radius of the periphery of the site] was divided in view of Natural vegetation; Rivers and water bodies in vicinity; according to habitat types followed by the random sampling method, surveys, exploration, collection, and preparation of specimens toward building an inventory of floral diversity of the area. Phyto-sociological studies were conducted to assess the composition, diversity, distribution, and their status in nature. This was cross-checked with the traditional knowledge of the people of the study region.



Photograph:- Jasmine (*Canthium parviflorum*)



Photograph:- Coconut (*Cocos nucifera*)



Photograph:-Banana (*Musa acuminata*)



Photograph:-Nar Bans (*Dendrocalamus strictus*)

Study of fauna species were observed at different timing during day and night like standard transect walk, visual encounter survey etc. Seasonal variations have also been studied. While doing the survey, photographs were taken for identification of species.



Photograph:-Wild Turkey (*Meleagris gallopavo*)



Photograph:-Junglefowl (*Gallus gallus*)



Photograph- Goat (*Capra aegagrus hircus*)



Photograph:- Cow (*Bos taurus*)

4.0 FINDINGS

4.1 Description of Core Zone with Flora and Fauna Details Flora of core Zone:

4.1.1 Flora of Core Zone (within site location):

In the core zone trees, shrubs are found at the site. The most dominating species in the core zone is Coconut (*Cocos nucifera*) followed by Banana(*musa acuminata*).

List of species recorded in Buffer Zone

S.No.	COMMON NAME	SCIENTIFIC NAME
Trees		
1	Banana	<i>Musa acuminata</i>
2	Coconut	<i>Cocus nucifera</i>
3	Nar Bans	<i>Dendrocalamus strictus</i>
4	Neem	<i>Azadirachta indica</i>
Shrubs:		
1.	Century Plant	<i>Agave americana</i>
2.	Kattu Sundai	<i>Solanum pubescens</i>
3.	Wild Jasmine	<i>Canthium parviflorum</i>
Herbs:		
1.	Indian Copperleaf	<i>Acalypha indica</i>
2.	chaff flower	<i>Achyranthes aspera</i>
3.	Thuthi	<i>Abutilon indicum</i>
4.	blue snake weed	<i>Stachytarpheta jamaicensis</i>
5.	Horse purslanes	<i>Trianthema triquetra</i>
6.	Puncture vine	<i>Tribulus Lanuginosus</i>
7.	Golden Senna	<i>Senna auriculata</i>
Grasses:		
1.	Indian Doab	<i>Cynodon dactylon</i>
2.	Tridax daisy	<i>Tridax porcumbens</i>
3.	Mountain Knot Grass	<i>Aerva lanata</i>

List of Species Recorded in Core Zone

4.1.2 Fauna of Core Zone (within site location): Varieties of fauna recorded in Core Zone are listed in Table-6.

List of Fauna

TYPE	COMMON NAME	SCIENTIFIC NAME	SCHEDULE
Amphibian:			
1.	Indian Toad	<i>Bufo melanostictus</i>	-
2.	Asian common toad	<i>Duttaphrynus melanostictus</i>	IV
3.	Freshwater frog	<i>Rana tigrina</i>	-
Reptiles:			
1.	Monitor Lizard	<i>Varanus bengalensis</i>	I
2.	Common garden lizard	<i>Calotes versicolor</i>	IV
3.	Common skink	<i>Mabuya carinata</i>	-
Mammals:			
1.	Common langur	<i>Presbytis entellus</i>	-
2.	Jungle cat	<i>Felis chaus</i>	II
3.	Small Indian Civet	<i>Viverricula indica</i>	II
4.	Palm Squirrel	<i>Funambulus palmarum</i>	-
5.	Grizzled Indian Squirrel	<i>Ratufa macroura</i>	I
6.	Common Mongoose	<i>Herpestes edwardsii</i>	II
7.	Large Fruit Bat	<i>Pteropus giganteus</i>	IV
8.	Short Nose Fruit Bat	<i>Cynopterus sphinx</i>	IV
9.	Indian pangolin	<i>Manis crassicaudata</i>	I
10.	Indian Cow	<i>Bos taurus</i>	-
11.	Goat	<i>Capra aegagrus hircus</i>	-
Aves:			
1.	Indian robin	<i>Saxicoloides fulicata</i>	-
2.	Asian koel	<i>Eudynamys scolopaceus</i>	-

3.	Peacock	<i>Pavo cristatus</i>	I
4.	Indian Cuckoo	<i>Cuculus micropterus</i>	IV
5.	Cattle Egret	<i>Bubulcus ibis</i>	IV
6.	Common Myna	<i>Acridotheres tristis</i>	IV
7.	House swift	<i>Apus affinis</i>	-
8.	Blue rock pigeon	<i>Columba livia</i>	IV
9.	House Crow	<i>Corvus splendens</i>	V
10.	House Sparrow	<i>Passer domesticus</i>	-
11.	Redvented BulBul	<i>Pycnonotus cafer</i>	-
12.	Indian robin	<i>Saxicoloides fulicata</i>	-
13.	Wild Turkey	<i>Meleagris gallopavo</i>	-
14.	Junglefowl	<i>Gallus gallus</i>	-
Insects:			
1.	Grasshopper	Hieroglyphus Sp.	-
2.	Common Indian crow	<i>Euploea core</i>	IV
3.	Common grass yellow	<i>Eurema hecabe</i>	-
4.	Blue pansy	<i>Junonia orithya</i>	-
5.	Lime butterfly	<i>Papilio demoleus</i>	-

Fauna in Core Zone

(Source: Field survey done by Ecology & Biodiversity team)

4.2 Flora of Buffer Zone (within 10 km radius of the site location):

On the basis of primary survey and secondary data collected from the forest office a large variety of trees, herbs, shrubs, ornamental plants, weed and grasses found suited to climatic conditions.

Threatened, Rare, Endangered or Endemic species: No threatened, rare, endangered or endemic species were observed or reported in the study area.

List of plant species based on primary and secondary data are listed in **Table-7**.

Flora of the Buffer Zone

S. No	Common Name	Scientific Name
Trees:		
1.	Acacia	<i>Acacia intsia</i>
2.	Acacia Sp.	<i>Acacia latronum</i>
3.	Acacia Sp.	<i>Acacia leucophloea</i>
4.	Acacia Sp.	<i>Acacia planifrons</i>
5.	Kadam Tree	<i>Adina cordfolia</i>
6.	Fine -leaved Albizia	<i>Albizia amara</i>
7.	Siris	<i>Albizia lebbeck</i>
8.	Black Siris	<i>Albizia odoratissima</i>
9.	Dhaora	<i>Anogeissus latifolia</i>
10.	Neem	<i>Azadirachta indica</i>
11.	Indian Balm of Gilead	<i>Balsamodendron berryi</i>
12.	Salai	<i>Boswellia serrata</i>
13.	Black Dammar Tree	<i>Canarium strictum</i>
14.	Wild Jasmine	<i>Canthium parviflorum</i>
15.	Satin Wood	<i>Chloroxylon swietenia</i>
16.	Dalchini	<i>Cinnamomum zylanicum</i>
17.	Hadjod	<i>Cissus quadrangularis</i>
18.	Beete	<i>Dalbergia latifolia</i>
19.	Nar Bans	<i>Dendrocalamus strictus</i>
20.	Panlata	<i>Derris indica</i>
21.	Sanatta	<i>Dodonaea viscosa</i>
22.	Wild Olive Tree	<i>Elaeocarpus serratus</i>
23.	Nilgiri	<i>Eucalyptus</i>

24.	Gamhar	<i>Gmelina arborea</i>
25.	Dhaman	<i>Grewia tiliifolia</i>
26.	Ratanjyot	<i>Jatropha carcus</i>
27.	Menhdi	<i>Lagerstroemia lanceolata</i>
28.	Mango	<i>Mangifera indica</i>
29.	Amla	<i>Phyllanthus emblica</i>
30.	Karanj	<i>Pongamia glabra</i>
31.	Vijaysar	<i>Pterocarpus marsupium</i>
32.	Soapnut Tree	<i>Sapindus emarginatus</i>
33.	Imli	<i>Tamarindus Indica</i>
34.	Teak	<i>Tectona grandis</i>
35.	Arjun	<i>Terminalia arjuna</i>
36.	Harad	<i>Terminalia chebula</i>
37.	Zaitun	<i>Gyrocarpus americanus</i>
38.	Toon	<i>Toona ciliata</i>
39.	White Gulmohar	<i>Delonix elata</i>
40.	Vijaysar	<i>Pterocarpus marsupium</i>
41.	Peacock Chaste Tree	<i>Vitex altissima</i>
42.	Dhundi	<i>Wrightia tinctoria</i>
Herbs:		
1.	Indian Copperleaf	<i>Acalypha indica</i>
2.	chaff flower	<i>Achyranthes aspera</i>
4.	Thuthi	<i>Abutilon indicum</i>
5.	Kupanti Sodakku	<i>Physalis lagascae</i>
6.	Common purslane	<i>Portulaca oleracea</i>
7.	Country mallow	<i>Sida cordifolia</i>
8.	blue snake weed	<i>Stachytarpheta jamaicensis</i>

9.	Horse purslanes	<i>Trianthena triquetra</i>
10.	Puncture vine	<i>Tribulus Lanuginosus</i>
11.	Golden Senna	<i>Senna auriculata</i>
14.	Black nightshade	<i>Solanum nigrum</i>
15.	Verbenas	<i>Lantana camara</i>
Grasses:		
1.	Indian Doab	<i>Cynodon dactylon</i>
2.	Tridax daisy	<i>Tridax porcumbens</i>
3.	Mountain Knot Grass	<i>Aerva lanata</i>
Shrubs:		
1.	Century Plant	<i>Agave americana</i>
2.	Kattu Sundai	<i>Solanum pubescens</i>
Climbers:		
1.	Pavakkai	<i>Momordica charantia</i>
2.	Pirandai	<i>Cissus quadrangularis</i>

List of Floral species of Buffer Zone

(Source: Data from Forest Department)

Quantitative Analysis of Species by Belt Transect Method: In Buffer zone the most dominating species is Neem (*Azadirachta indica*) followed by Acacia (*Acacia Sp.*).

Fauna in Buffer Zone:

The buffer zone is full of diversity of birds & animals. It consists of a 10 km radius and it covers village, agricultural land and vacant land so the following varieties of fauna are found.

The species observed in the buffer zone are migratory, common ones are given in Table----.

- (I) **Amphibians:** Among amphibians Toad (*Bufo sp.*) and Frog (*Rana tigrina*) are reported.
- (II) **Reptiles:** Among reptiles Indian Garden Lizards (*Calotes versicolor*), Krait (*Bungarus sp.*) are generally reported.
- (III) **Mammals:** Among mammals Indian Palm Squirrel (*Funambulus pennant*), Cat (*Felis chaus*), Dog (*Cuon sp.*), Cow, Rat (*Rattus rattus*) etc. are reported.
- (IV) **Aves:** Among aves common birds like Crow (*Corvus splendens*), Sparrow (*Passer domesticus*), pigeon (*Columba livia*), Myna, Bulbul etc. are reported.
- (V) **Arthropods:** Among arthropods common insects viz Butterflies, Dragonflies, Wasps, Grasshopper, Cockroach, House fly, Beetles, Mosquitoes etc are reported.

TYPE	COMMON NAME	SCIENTIFIC NAME	SCHEDULE
Amphibian:			
1.	<i>Indian Toad</i>	<i>Bufo melanostictus</i>	-
2.	<i>Asian common toad</i>	<i>Duttaphrynus melanostictus</i>	IV
3.	<i>Freshwater frog</i>	<i>Rana tigrina</i>	-
Reptiles:			
1.	Krait	<i>Bungarus caeruleus</i>	IV
2.	Russell Viper	<i>Daboia russelii</i>	II
3.	Monitor Lizard	<i>Varanus bengalensis</i>	I
4.	<i>Common garden lizard</i>	<i>Calotes versicolor</i>	IV
5.	Common skink	<i>Mabuya carinata</i>	
6.	Indian cobra	<i>Naja naja</i>	IV
Mammals:			
1.	Bonnet macaque	<i>Macaca radiata</i>	II
2.	Common langur	<i>Presbytis entellus</i>	-
3.	Nilgiri langur	<i>Presbytis johni</i>	-
4.	Jungle cat	<i>Felis chaus</i>	II
5.	Rusty spotted cat	<i>Felis rubiginosa</i>	-
6.	Palm civet	<i>Paradoxurus hermaphroditus</i>	II
7.	Small Indian Civet	<i>Viverricula indica</i>	II
8.	Palm Squirrel	<i>Funambulus palmarum</i>	-
9.	Indian giant squirrel	<i>Ratufa indica</i>	II
10.	Grizzled Indian Squirrel	<i>Ratufa macroura</i>	I
11.	Black napped hare	<i>Lepus nigricollis</i>	IV
12.	Common Mongoose	<i>Herpestes edwardsii</i>	II
13.	Ruddy Mongoose	<i>Herpestes smithii</i>	II
14.	Large Fruit Bat	<i>Pteropus giganteus</i>	IV

7.	Indian Grey hornbill	<i>Ocyrceros birostris</i>	-
8.	Peacock	<i>Pavo cristatus</i>	I
9.	Coppersmith Barbet	<i>Psilopogon haemacephalus</i>	-
10.	Indian Cuckoo	<i>Cuculus micropterus</i>	IV
11.	Cattle Egret	<i>Bubulcus ibis</i>	IV
12.	Common Myna	<i>Acridotheres tristis</i>	IV
13.	Parakeets	<i>Psittacula krameri</i>	IV
14.	House swift	<i>Apus affinis</i>	-
15.	Pond Heron	<i>Ardeola grayii</i>	-
16.	Blue rock pigeon	<i>Columba livia</i>	IV
17.	Jungle Crow	<i>Corvus macrorhynchos</i>	-
18.	House Crow	<i>Corvus splendens</i>	V
19.	Indian black drongo	<i>Dicrurus adsimilis</i>	-
20.	Green Bee-Eater	<i>Merops orientalis</i>	-
21.	Black kite	<i>Milvus migrans</i>	-
22.	House Sparrow	<i>Passer domesticus</i>	-
23.	Redvented Bul Bul	<i>Pycnonotus cafer</i>	-
24.	Indian robin	<i>Saxicoloides fulicata</i>	-
25.	Spotted dove	<i>Spilopelia chinensis</i>	-
26.	White headed Babbler	<i>Turdoides affinis</i>	-
27.	Common babbler	<i>Turdoides caudatus</i>	-
28.	Wild Turkey	<i>Meleagris gallopavo</i>	-
29.	Junglefowl	<i>Gallus gallus</i>	-
Insects:			
1.	Grasshopper	Hieroglyphus Sp.	-
2.	Common Indian crow	<i>Euploea core</i>	IV

15.	Short Nose Fruit Bat	<i>Cynopterus sphinx</i>	IV
16.	Jackal	<i>Canis aureus</i>	II
17.	Sloth Bear	<i>Melursus ursinus</i>	I
18.	Wild Pig	<i>Sus scrofa</i>	III
19.	Indian Elephant	<i>Elephas maximus</i>	I
20.	Gaur	<i>Bos gaurus</i>	I
21.	Spotted Deer	<i>Axis axis</i>	III
22.	Barking Deer	<i>Muntiacus muntjac</i>	III
23.	Sambar Deer	<i>Cervus unicolor</i>	III
24.	Indian pangolin	<i>Manis crassicaudata</i>	I
25.	Indian porcupine	<i>Hystrix indica</i>	IV
26.	Nilgiri Tahr	<i>Hemitragus hylocrius</i>	-
27.	Tiger	<i>Panthera tigris</i>	I
28.	Leopard	<i>Panthera pardus</i>	I
29.	Wild dogs	<i>Cuon alpinus</i>	II
30.	Mouse deer	<i>Tragulus meminna</i>	-
31.	Slender loris	<i>Loris tardiwadus lydekke rianus</i>	-
32.	Indian Cow	<i>Bos taurus</i>	-
33.	Goat	<i>Capra Aegagrus Hircus</i>	-
Aves:			
1.	Indian robin	<i>Saxicoloides fulicata</i>	-
2.	Spotted dove	<i>Spilopelia chinensis</i>	-
3.	White headed Babbler	<i>Turdoides affinis</i>	-
4.	Common babbler	<i>Turdoides caudatus</i>	-
5.	Asian koel	<i>Eudynamys scolopaceus</i>	-
6.	Spotted Owlet	<i>Athene brama</i>	-

8.	Peacock	<i>Pavo cristatus</i>	I
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Table 7. Schedule I Species Recorded in Buffer Zone

(Source: Data from Forest Department)

5.0 TOR POINTS (most related to biological study)

Biological study related points given under TOR provided by SEIAA-TN are given **Table-1**.

TOR Point No.	Details	Applicability under the project
STANDARD TERMS OF REFERENCES		
2.	The implication on Flora & fauna, shall be included in the EIA report.	
29.	Action plan for the greenbelt development in accordance to CPCB guidelines	
STANDARD TERMS OF REFERENCE		
3.	The Environmental Impact Assessment should study biodiversity, the natural ecosystem, the soil microflora, fauna and soil seed banks and suggest measures to maintain the natural Ecosystem.	
5.	The Environmental Impact Assessment should study impact on standing trees and the trees should be numbered.	
9.	The project proponent shall furnish the details of trees in the project site with all trees numbered and protected.	
14.	The GPS co-ordinates for the boundaries at the green belt proposed & proposed project site shall be furnished separately.	
21.	The proponent shall furnish the baseline data for the environmental and ecological parameters with regard to surface water / ground water quality / air quality soil quality & flora /fauna.	
STANDARD TERMS OF REFERENCE 7(d)		
3.	Submit the present land use and permission required for any conversion such as forest,	

3.	Common grass yellow	<i>Eurema hecabe</i>	-
4.	Blue pansy	<i>Junonia orithya</i>	-
5.	Lime butterfly	<i>Papilio demoleus</i>	-
6.	Blue mormon	<i>Papilio polymnestor</i>	-
7.	Common leopard	<i>Phalanta phalantha</i>	-
8.	Ditch jewel	<i>Brachythemis contaminata</i>	-
9.	Ground skimmer	<i>Diplocodes trivialis</i>	-
10.	Crimson marsh glider	<i>Trithemis aurora</i>	-
11.	Long legged marsh skimmer	<i>Trithemis pallidinervis</i>	-

List of Fauna Recorded in Buffer Zone

(Source: Data from Forest Department)

Endangered, Rare, Endemic and Threatened Species: Endangered and threatened animals of India have been listed in the **Schedule I of the Wildlife (Protection) Act, 1972** (amended in 2002). Schedule status is also given in **Table-10**.

No threatened, rare, endangered or endemic species were observed during the survey in the core zone. However, six (10) Schedule II species i.e. *Daboia russelii*, *Macaca radiata*, *Felis chaus*, *Paradoxurus hermaphroditus*, *Viverricula indica*, *Ratufa indica*, *Herpestes edwardsii*, *Herpestes smithii*, *Canis aureus* and *Cuon alpinus* reported while two (08) schedule I Species are reported in Buffer zone lies within 10 km radius and is summarised in **Table-11**.

TYPE	COMMON NAME	SCIENTIFIC NAME	SCHEDULE
Reptiles:			
1.	Monitor Lizard	<i>Varanus bengalensis</i>	I
Mammals:			
2.	Grizzled Indian Squirrel	<i>Ratufa macroura</i>	I
3.	Indian Elephant	<i>Elephas maximus</i>	I
4.	Gaur	<i>Bos gaurus</i>	I
5.	Indian pangolin	<i>Manis crassicaudata</i>	I
6.	Tiger	<i>Panthera tigris</i>	I
7.	Leopard	<i>Panthera pardus</i>	I
Aves :			

	agriculture etc.	