

Executive Summary of EIA

For

Proposed Common Biomedical Waste Treatment & Disposal Facility (CBWTF)

[Project under Schedule (7 d a) – Category B 1 – CBWTF as per EIA Notification
2006 & its amendments]

By



M/s. Greater Chennai Biomedical Waste Management Private Limited

Greenfield Common Biomedical waste Treatment & Disposal Facility (CBWTF)

Survey No: 123/4B, Nayapakkam Village, Uthukottai taluk,

Tiruvallur District, Tamil Nadu

Prepared by

Consultant



SAMRAKSHAN

F-4, I Floor, Swastik Manandi Arcade, S C Road,
Sheshadripuram, Bangalore - 560020.

www.samrakshan.co.in

NABET SI. No. NABET/EIA/1922/SA 0138

September 2022



1. Introduction

M/s. Greater Chennai Bio-Medical Waste Management Private Limited has proposed to set up a Common Bio-Medical Waste Treatment & Disposal Facility (CBWTF) at Survey No: 123/4B, Nayapakkam Village, Uthukottai taluk, Tiruvallur District, Tamil Nadu, where the bio-medical wastes generated from number of healthcare units including veterinary institutions, animal house, pathological Laboratory, blood bank etc. will be suitably collected treated to reduce adverse effects that the waste may pose.

The total plot area of the project is 4046.86 Sq.m (1 acre) out of which 44.28 % of land area will be used for greenbelt development & total built up area would be 368 Sq.m.

The proposed project site is located in non-agricultural dry land as per Revenue record of Nayapakkam Village, Uthukottai Taluk, Tiruvallur district, Tamil Nadu. At present, the land is barren land, no trees and plantation on the ground. The soil is rocky, sandy with gravel stones.

The proposed project comes under Category B1 – Schedule No. 7(d a) as per the EIA Notification of Ministry of Environment Forest & Climate Change (MoEF&CC), dated 14/09/2006 and subsequent amendments. Therefore, unit requires obtaining Environmental Clearance (EC) from State Environment Impact Assessment Authority (SEIAA), Tamil Nadu. As per MoEF&CC notification, it is mandatory for any new or expansion and modernization projects or activities to obtain environmental clearance. This is a newly proposed – CBWTF.

Under above circumstances, proponent has initiated action towards obtaining environmental clearance. The proposal seeking ToR was placed in the 203rd SEAC meeting held on 23.02.2021. The proposal was considered as recommended by SEAC in 436th SEIAA meeting held on 30.03.2021 & communicated vide Letter No. SEIAA –TN/F.No.7990/7 (d) (a)/ToR-934/2021 dated 16.04.2021 and after detailed discussion, the authority decided to issue ToR with public consultation subject to standard ToR for preparation of EIA report along with additional ToR.

The work of undertaking detailed studies and preparation of EIA report has been assigned to NABET accredited EIA consultant - M/s.Samrakshan, Swastik Manandi Arcade, F-4, 1st Floor, S.C Road, Shesharipuram, Bangalore, Karnataka- 560020, NABET certificate no.-NABET/EIA/1922/IA0051 validity until July 24, 2022 for the Common Biomedical Waste Treatment & Disposal facility sector.

Existing environmental data and the other data collection for the project work has been assigned to NABL accredited lab- M/s. Femo Labs Pvt Ltd., for the study period 1st March 2021 to 30th June 2021.



Draft EIA study report for the proposed Common Biomedical Waste Treatment & Disposal Facility (CBWTF) unit of capacity 10 Tonnes per day is prepared in conformity with the conditions laid down in ToR.

2. Project Description

The general features of the proposed project and location are given below in **Table 1**.

Table 1 Project Details

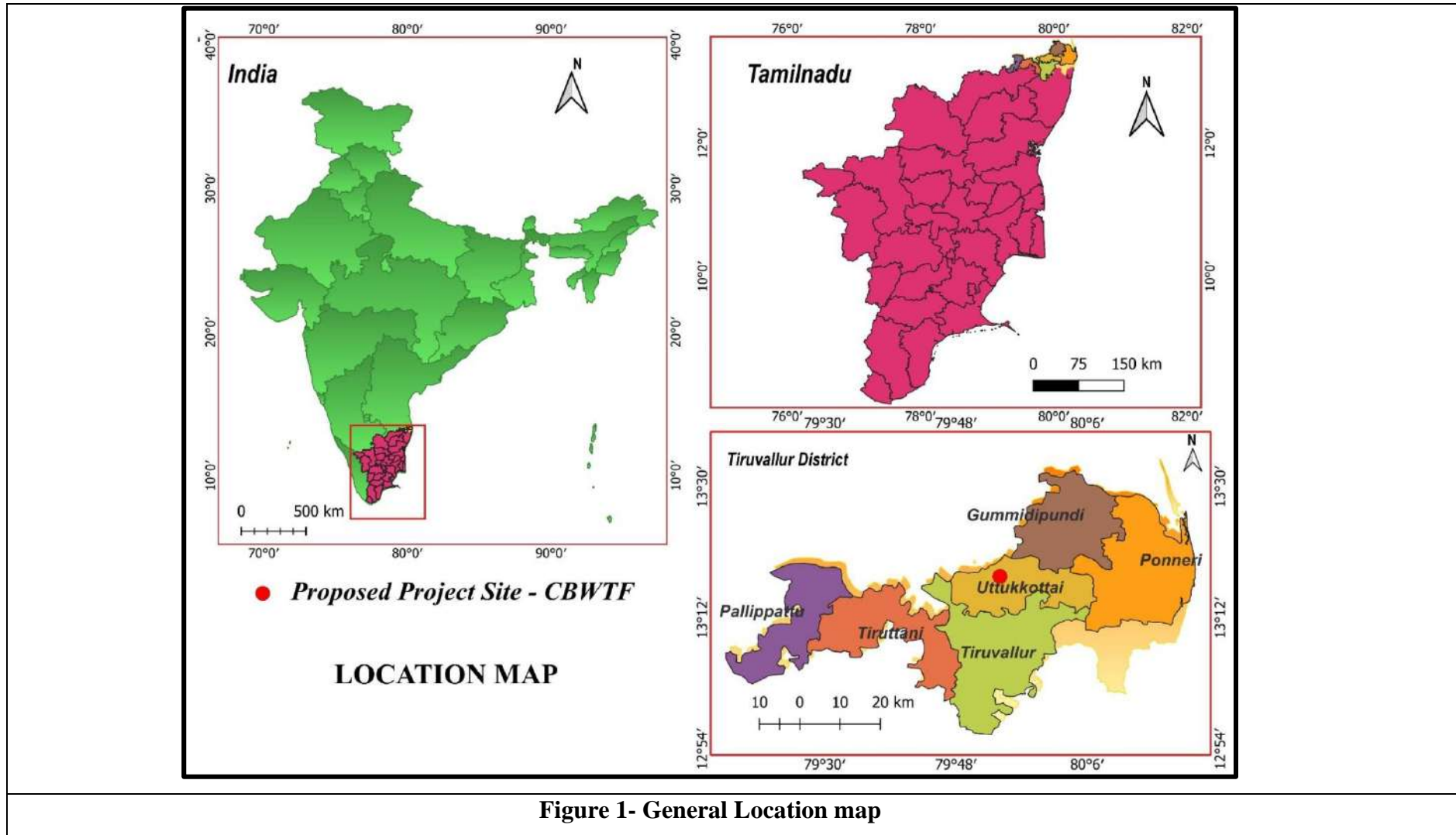
Feature	Details
Project Activity	Common Biomedical waste Treatment & Disposal Facility (CBWTF)
Category	B 1
Schedule No.	7(d a)
General Conditions /Special conditions	Not applicable as per EIA Notification 2006, as amended on 17 th April 2015
Location	Survey No: 123/4B, Nayapakkam Village, Uthukottai taluk, Tiruvallur District, Tamil Nadu
Geo coordinates/ SOI Toposheet	13° 13' 11.5" N 79° 51' 26.3" E D44N16
Project Size	Incineration Technology CBWTF capacity – 10 TPD in One acre
Project Cost	Rs. 2.2 Crores

The general & specific location map of the proposed project site, Survey of India toposheet showing the proposed project site & project site photos taken during Site Visit are shown in the following figures. The overall site plan layout is enclosed as **Annexure 1**.



Executive Summary for EIA -English

Proposed Common Bio-Medical Waste Treatment Facility (CBWTF)-10 TPD
M/s. Greater Chennai Bio Medical Waste Management Private Limited
Nayapakkam Village, Uthukottai Taluk, Tiruvallur District, Tamil Nadu – 602023.





Executive Summary for EIA -English

Proposed Common Bio-Medical Waste Treatment Facility (CBWTF)-10 TPD
M/s. Greater Chennai Bio Medical Waste Management Private Limited
Nayapakkam Village, Uthukottai Taluk, Tiruvallur District, Tamil Nadu – 602023.

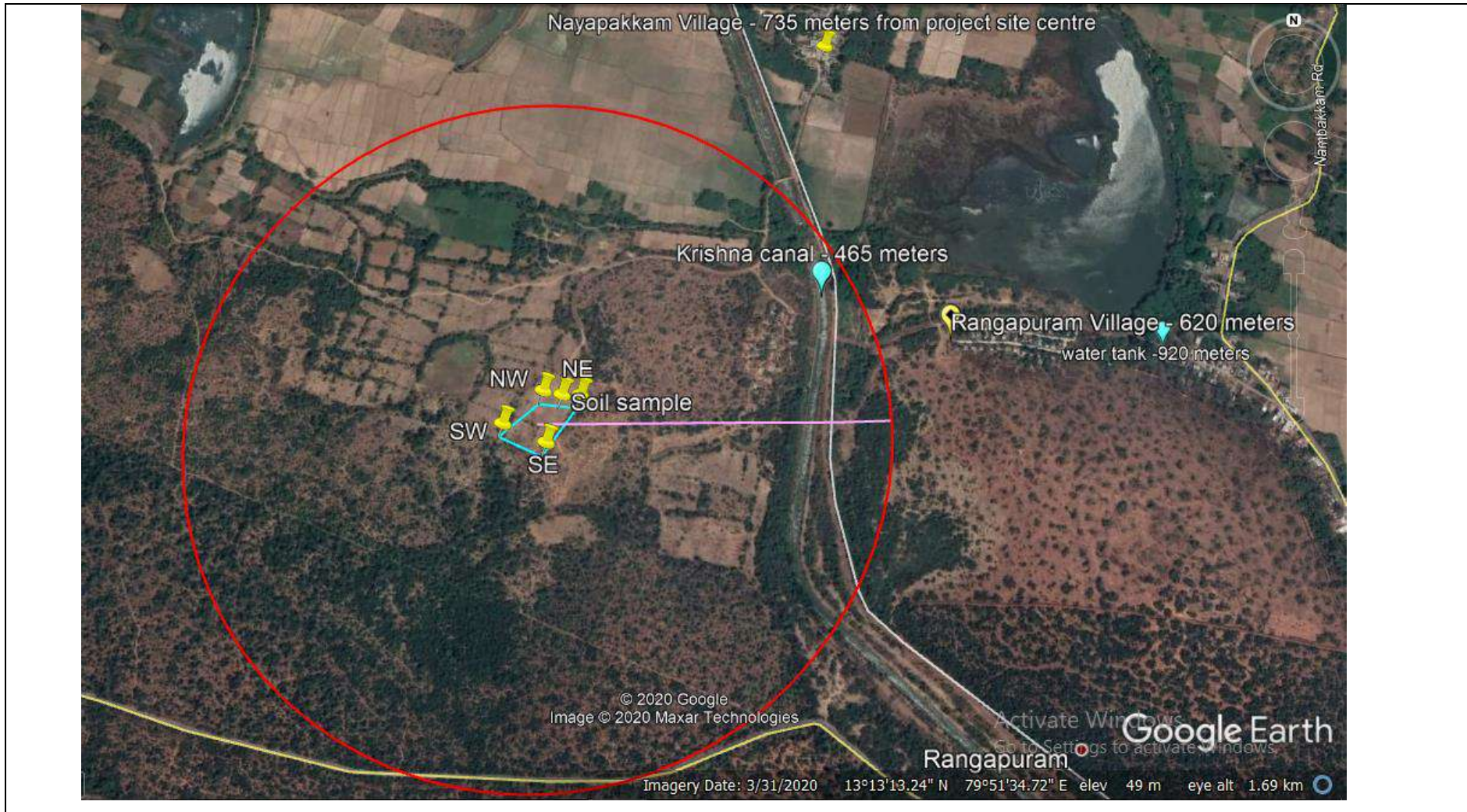


Figure 2- Google satellite imagery showing specific location map of the proposed project site



Proposed Common Bio-Medical Waste Treatment Facility (CBWTF)-10 TPD
M/s. Greater Chennai Bio Medical Waste Management Private Limited
Nayappakkam Village, Uthukottai Taluk, Tiruvallur District, Tamil Nadu – 602023.

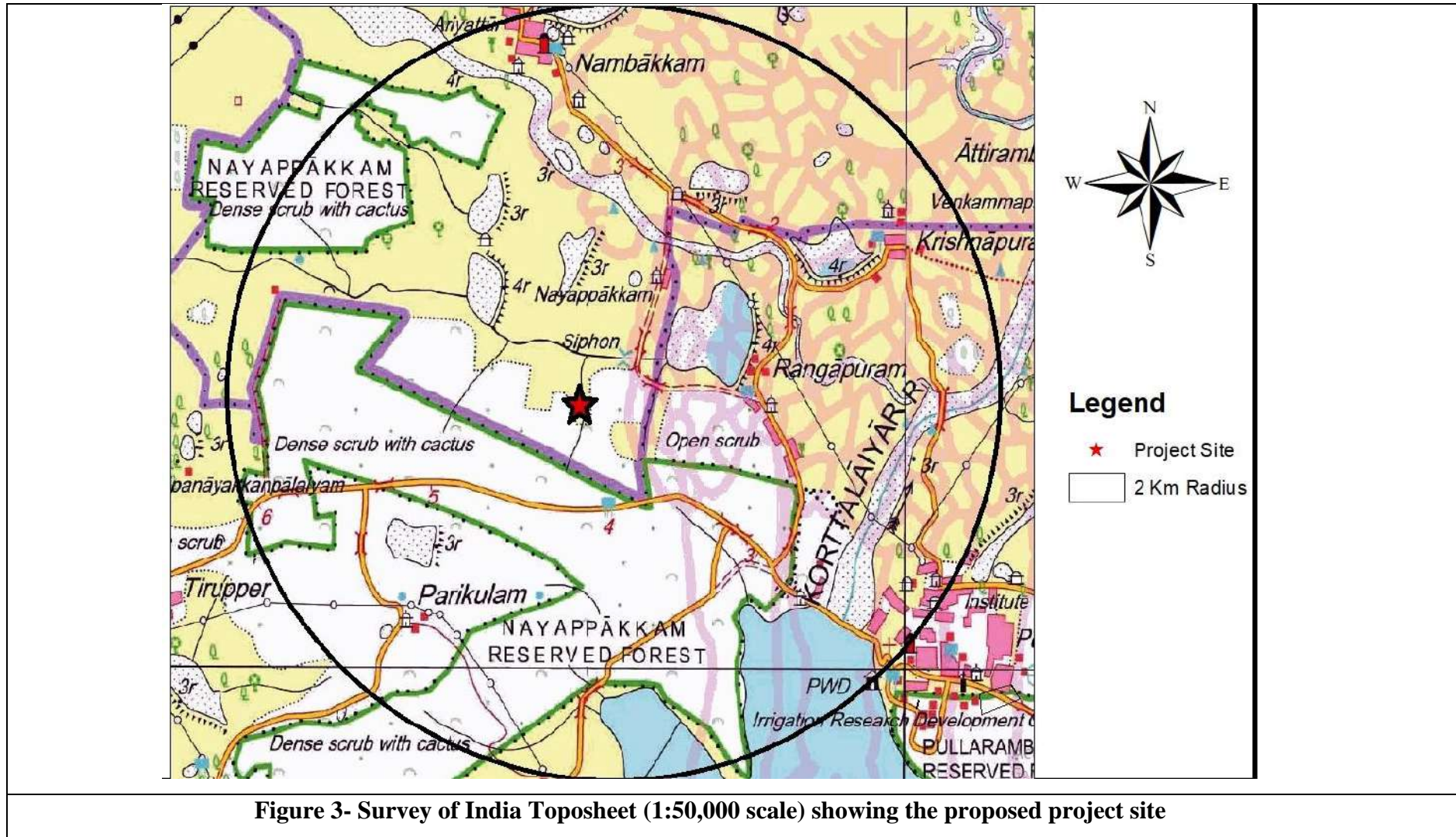


Figure 3- Survey of India Toposheet (1:50,000 scale) showing the proposed project site



**Proposed Common Bio-Medical Waste Treatment Facility (CBWTF)-10 TPD
M/s. Greater Chennai Bio Medical Waste Management Private Limited
Nayapakkam Village, Uthukottai Taluk, Tiruvallur District, Tamil Nadu – 602023.**



Figure 4 - Photos showing proposed project site



The environmental setting is given in Table 2 below.

Table 2 Environmental setting

Feature	Details
Village, Tehsil, District, State	Nayapakkam village, Uthukottai taluk, Tiruvallur district, Tamil Nadu
District head quarters	Tiruvallur - 9.3 Km - South East
IMD STATION	Regional Climatological Centre , Nungambakkam
Max./Min Temp., °C *	35.4°C / 25.8 °C
Relative Humidity,%	52-80 %
Annual rainfall,	1152.8 mm
Topography/ Soil Type	Gravel ,Sandy mixed
Terrain, level with respect to MSL	Flat terrain and lies at an altitude of 50 m MSL
Nearest Habitation	Nayapakkam Village - 735 m - North East
Nearest Major City	Chennai - 47 km - South East
Nearest Air port	Chennai International Airport - 42 km - South East
Nearest Railway	Tiruvallur Railway Station - 12 km - South East
Nearest Highway	NH 48 - 6.51 Km - South
Nearest Water Bodies	Nayapakkam Eri - 0.69 Km - North West Thangal Eri - 0.70 Km - North Poondi - 1.5 Km - South East Kosasthalaliyar River - 1.65 Km - South East Telugu Ganga canal - 0.46 Km -North East
Nearest Forest	Nayapakkam R.F -1.5 Km - South Pullarambakam RF -2.85 Km - South East Mylapur RF - 5.95 Km - North East Pulikondram RF -7.67 Km - North West Allikulam RF - 8.3 km – North West
Historical places	None within 10 km radius
Interstate boundary	Andhra Pradesh - Tamil Nadu -8.5 km - North East

*DCHBTiruvallur2011



2.1 Location of the proposed CBWTF

The proposed common bio-medical waste management facility is at Nayapakkam Village, Uthukottai Taluk, Tiruvallur, Tamil Nadu is non-agricultural dry land as per revenue record.

The land of extent 1.0 acre is owned by M/s Greater Chennai biomedical waste management Private limited. The land use of the site is given as UNCLASSIFIED by the DTCP. The land is the dry land, non-agriculture. At present, the land is barren land, no trees and plantation. The soil is sandy with gravel stones. The soil of the district is classified as alluvial soil, loamy sand to loam well drained. The soil in the site has been tested and found to be silty loam with gravels.

Table 3 -Project Cost Details

S.No	Description	Details
1.	Land	Rs.20.00 Lakhs (Owned by Greater Chennai Biomedical Private Limited)
2.	Building	Rs.50.00 Lakhs (Will be contributed by GCBMW Directors)
3.	Plant and machinery	Rs.1.2 Crores
4.	Other Fixed & Pre-Operating Exp.,	Rs.30.00 Lakhs
Total Investment		Rs.2.20 Crores

The proposed facility is extended up to 4046.86 Sq. Meter (1 Acre) Land. The area statement of proposed project site is shown in **Table 4**.

Table 4 Land area statement

S.No	Project area use	Area (Sq.m)	% of total plot area
1	Building ground coverage	734	18.14
2	Parking area	79.3	1.96
3	Road coverage	485	11.98
4	green belt	1791.98	44.28
5	Vacant area	956.78	23.64
Total Plot Area		4046.86	100



2.2 Process components

The Common bio-medical waste treatment facility will include incinerator, Autoclave, Shredder, Effluent Treatment Plant, Air pollution control measures with computerization. The following are the proposed equipment to be installed in the plants shown in **Table 5**.

Table 5 List of Equipment

S.No.	Equipment	Installed Capacity	Numbers
1	Static Incinerator	200 Kg Per Hour	1
2	Static Incinerator	100 Kg Per Hour	1
3	Autoclave	300 liter Per Hour	1
4	Shredder	200 Kg Per Hour	1

i. Incinerator

Incineration is a closed chamber with controlled combustion process where the waste such as Human Anatomical waste, Animal Anatomical waste, Soiled waste, Chemical waste, discarded linen mattresses bedding etc.. are completely oxidized and converting it into inert material and gases. Incinerators can be oil fired, gas fired or electrically powered or a combination of gas and oil. The incinerator will have primary and secondary combustion chambers raising temperature to 800°C and 1050±50 °C.

The incinerator shell is lined with high temperature resistant refractory bricks. In incinerators, solid phase combustion takes place in the primary chamber whereas the secondary chamber is for gas phase combustion. Additional burners are used to raise the temperature in secondary chambers. Ashes are collected at the bottom of the chambers.

The waste is incinerated in two stages i.e. the primary chamber and the secondary combustion chamber which are positioned adjacent to each other. The flue gases are treated through the Cyclone separator, high-pressure drop Venturi Scrubber, Wet Scrubber, droplet separator and are let out to atmosphere via ID fan and 30 m high chimney. The Primary Combustion chamber operates at 800°C where the wastes are oxidized, harmful microorganisms present in it are destroyed, and all volatiles are released. The substrate remaining is converted into sterile ash. The volatiles released from the primary combustion chamber are then completely burnt in the secondary combustion chamber under high temperature and excess air.



Incineration Process Description

Incineration system contains basic elements such as feed system, combustion chambers (primary and secondary), exhaust system and residue disposal system. The incinerator equipment includes material feeding system at front end of the incinerator in to the primary combustion chamber and air pollution control devices at the back end of the incinerator. The incineration plant is divided into following sections:

- Waste Receiving and Storing Area
- Incineration Section/Combustion chamber – primary and secondary
- Pollution Control devices

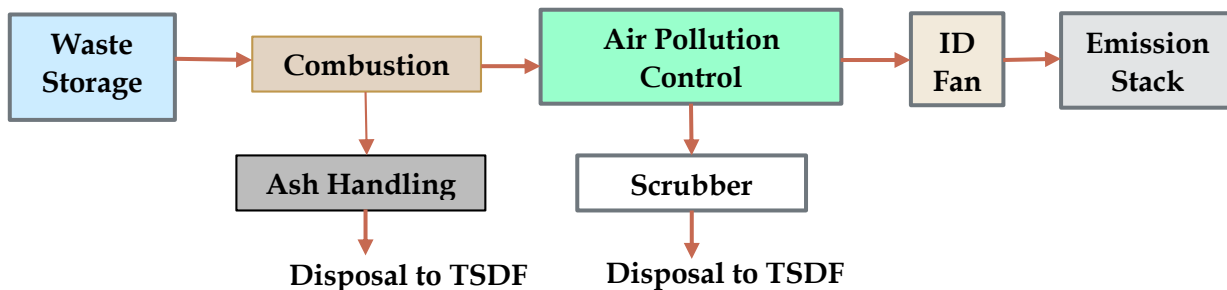


Figure 10- Flow diagram of steps followed in Incineration process

Discarded or Expired medicine will go for the encapsulation or return to the manufacturer/TSDF for incineration.

ii. Autoclave

An autoclave is a device for disinfection of waste such as Microbiology, biotechnology & clinical laboratory waste, blood bags, laboratory culture etc., disposable items like tubing, bottles, catheters, urinal bags, syringe (without needles), sharps & glassware etc., are loaded, door closed and injecting steam operating at 121°C temperature under 15 psi pressure for a period of 1 hour in a chamber, with the aim of disinfection or sterilizing the contents of the chamber.

Disinfection/ Decontamination is the reduction of contamination to a level where it is no longer a hazard to people and environment.

iii. Shredder

Shredding is a processing of above autoclaved materials by which waste are de-shaped or cut into smaller pieces to make the waste unrecognizable. Shredder has non-corrosive sharp blades capable for shredding.



Proposed Common Bio-Medical Waste Treatment Facility (CBWTF)-10 TPD
M/s. Greater Chennai Bio Medical Waste Management Private Limited
Nayapakkam Village, Uthukottai Taluk, Tiruvallur District, Tamil Nadu – 602023.

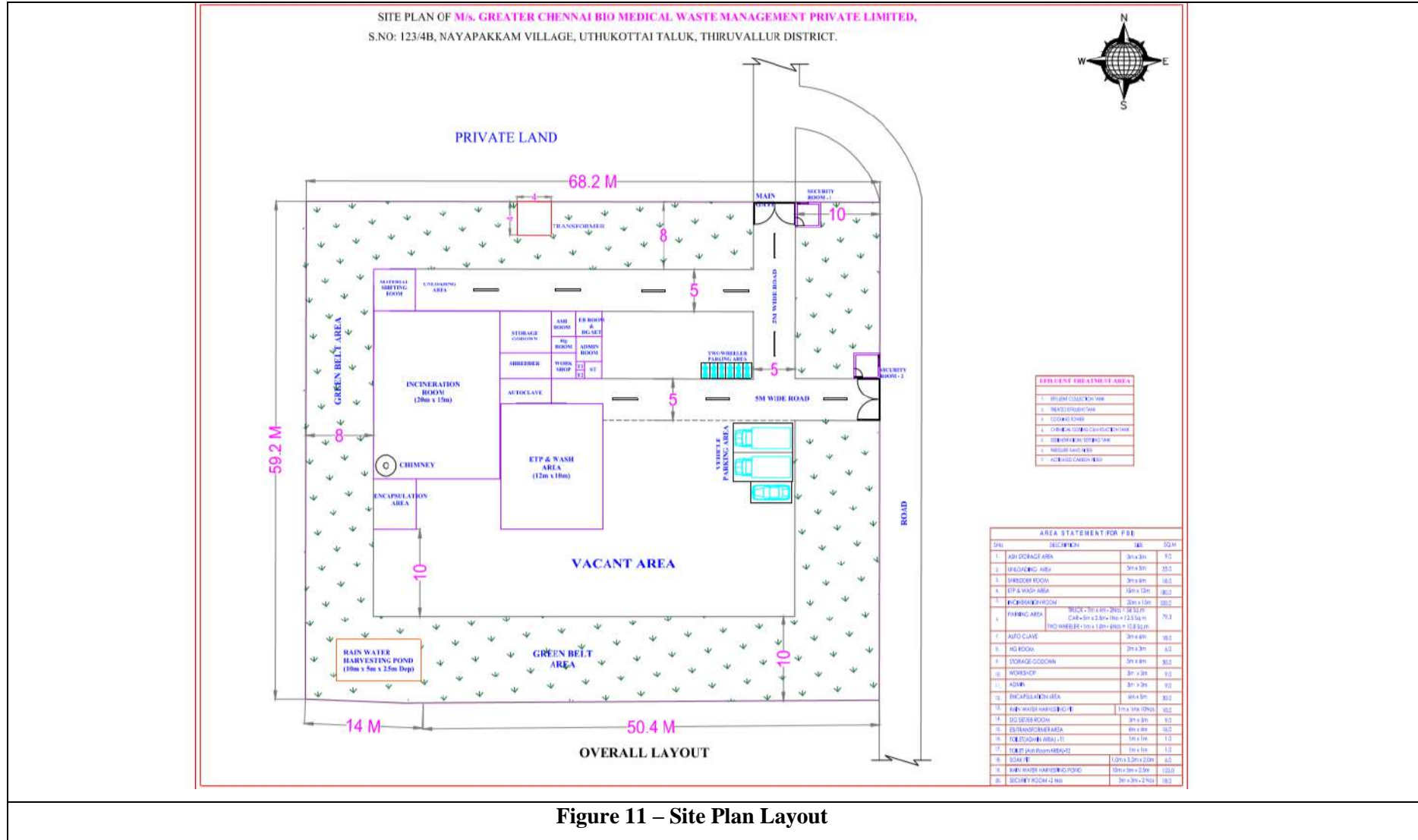


Figure 11 – Site Plan Layout

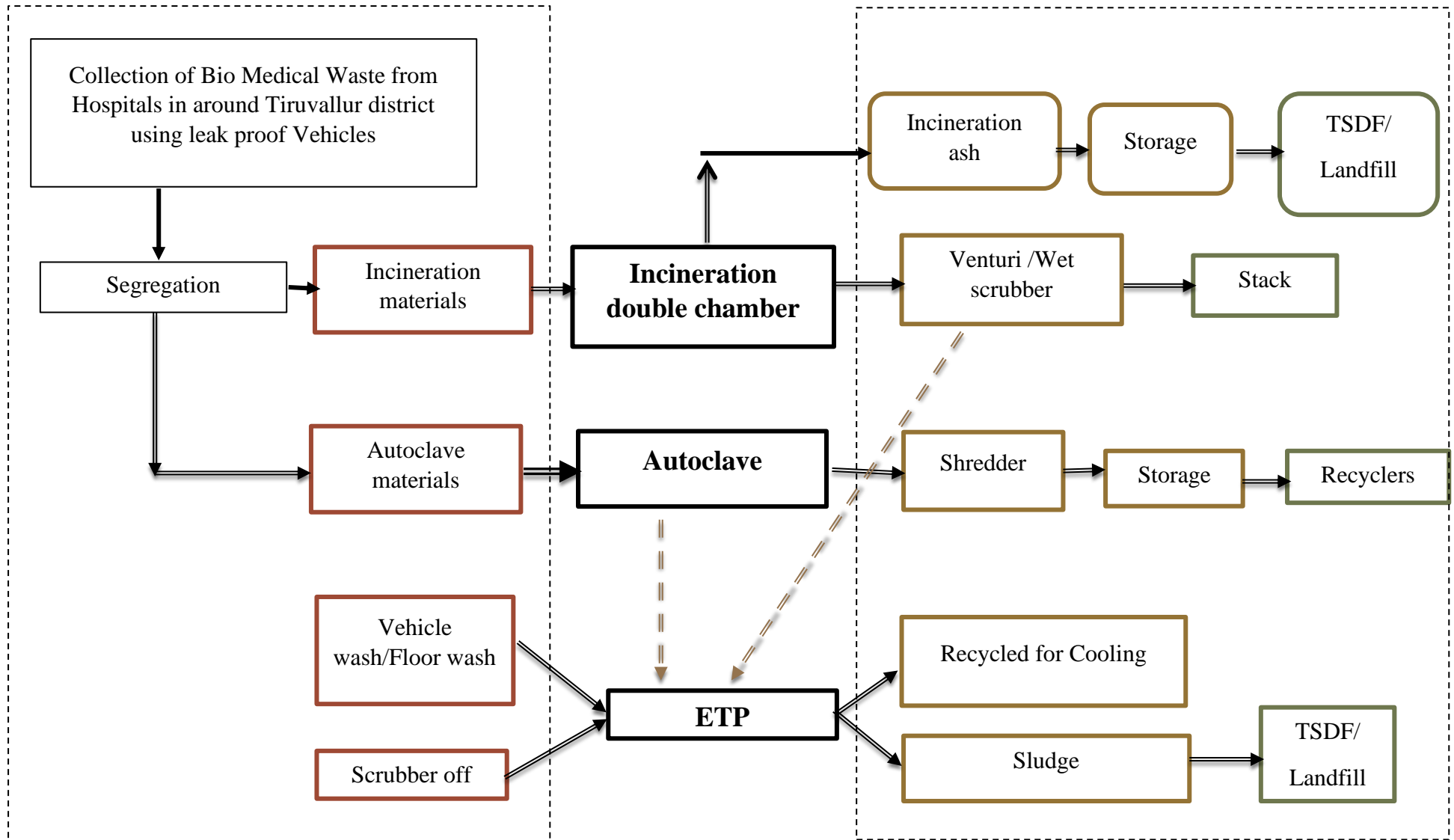


Figure 12 - Flow diagram for BMW management facility



Executive Summary for EIA -English

Proposed Common Bio-Medical Waste Treatment Facility (CBWTF)-10 TPD
M/s. Greater Chennai Bio Medical Waste Management Private Limited
Nayapakkam Village, Uthukottai Taluk, Tiruvallur District, Tamil Nadu – 602023.



**Static
Incinerator**

Loading of Red category waste to Autoclave



Activate Windows
Go to Settings to activate Windows



**Inside Autoclave
Processing Unit**

Activate Windows
Go to Settings to activate Windows



Shredding Unit



Activate Windows
Go to Settings to activate Windows



Proposed Common Bio-Medical Waste Treatment Facility (CBWTF)-10 TPD
M/s. Greater Chennai Bio Medical Waste Management Private Limited
Nayapakkam Village, Uthukottai Taluk, Tiruvallur District, Tamil Nadu – 602023.

During Construction phase of the unit, the labours and workers will be hired from nearby villages. Number of persons required in operational phase is shown in **Table 6**.

Table 6 Manpower Requirement

Manpower	Person	No. of Shift	Total
Incineration operator	5	3	15
Autoclave/shredder	3	2	6
Driver & cleaner (2 vehicle)	4	1	4
Manager & Office staff	5	1	5
Total			30 persons

2.3 Water requirement

During construction phase, Water requirement of about 20 KLD will met by bore well in the project site.

During operation, the total water requirement on day one is calculated to be 18.9 KLD. On subsequent day, water required per day is only 6.4 KLD i.e. make up water on evaporation. The details are given in **Table 7** & in water balance chart.

Table 7 Water Consumption Details

S.No	Source Consumption	Quantity(KLD)
1	Domestic use	1.4
2	Process use	17.5
Total		18.9

The water required for facility is met from the bore well located within the premises. The water is required for

1. Domestic
2. Autoclaving
3. Washing vehicle/floor/equipment
4. APC measures such as Venturi scrubber and wet scrubber.

The domestic water requirement per day is 1.4 KLD for drinking and toilet purposes only.



Proposed Common Bio-Medical Waste Treatment Facility (CBWTF)-10 TPD
 M/s. Greater Chennai Bio Medical Waste Management Private Limited
 Nayapakkam Village, Uthukottai Taluk, Tiruvallur District, Tamil Nadu – 602023.

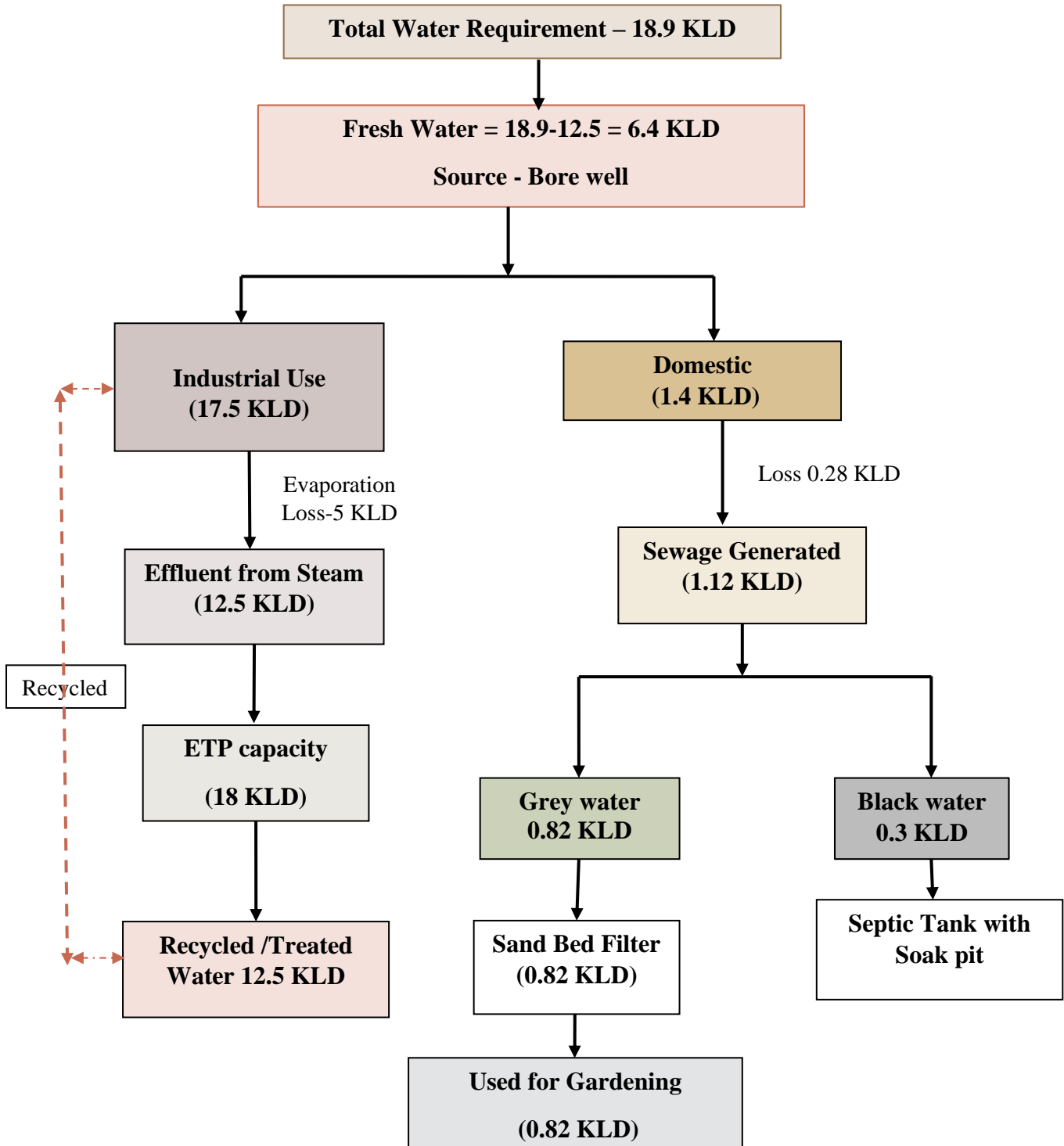


Figure 13 Water Balance



2.4 Waste water generation & its Management

In the Effluent Treatment Plant, the treated effluent will be continuously recycled for scrubbing activity. Thus, the sludge obtained from ETP will be collected in the bag & stored in waste storage area until the final disposal to TSDF. No wastewater will be discharged outside, always achieves Zero Liquid Discharge by recycling.

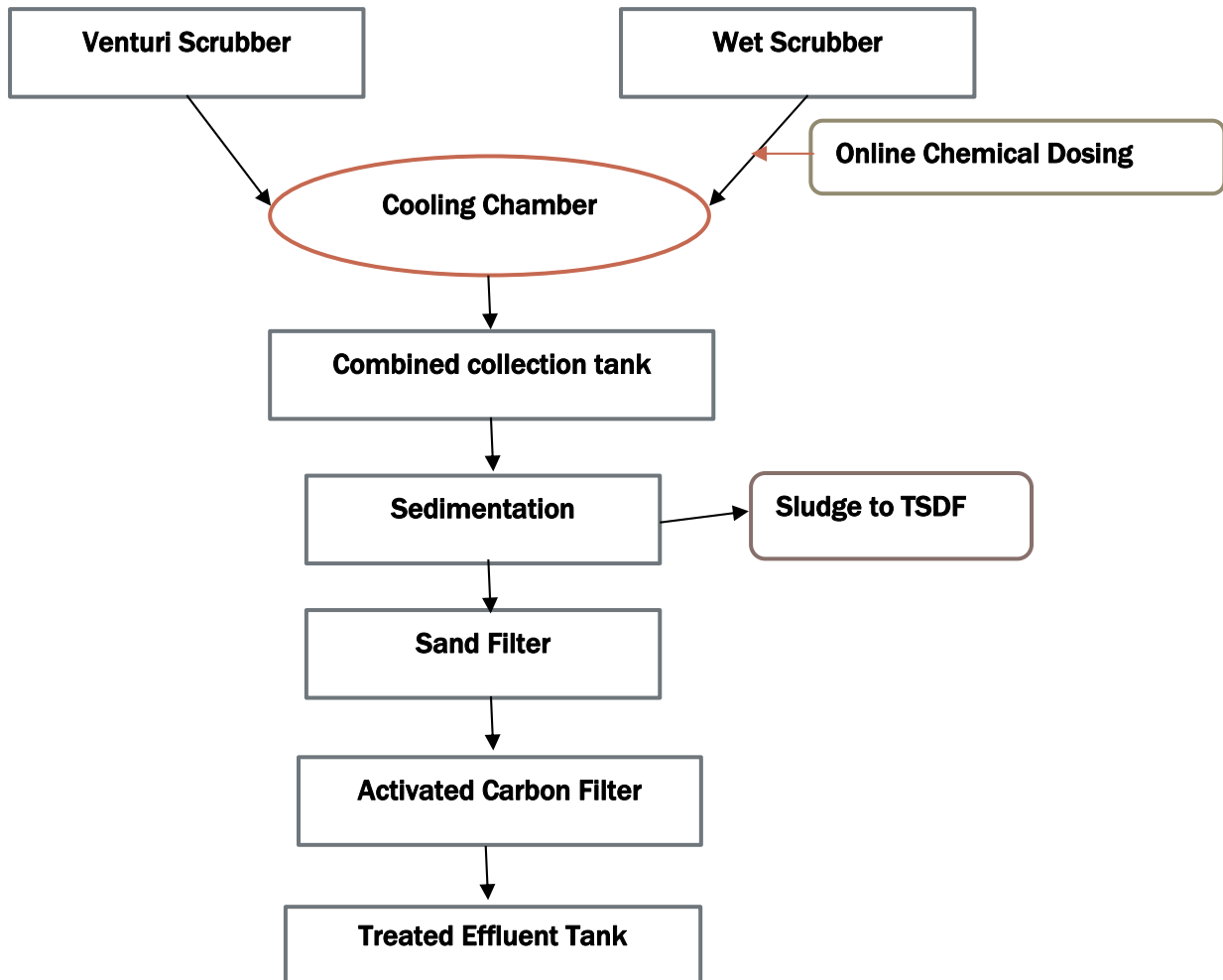


Figure 14 ETP Process Flow

2.5 Solid waste and its disposal

The solid waste generation during wastewater treatment & bottom ash incinerator will be collected and disposed to secured landfill facility located at Gummidipoondi. The incinerator will be operated with LDO. If gas is available in future, the provision will be made to establish gas burner. Autoclave/shredded waste are collected and stored in bags and kept in earmarked area. Once it reaches 10 TPD or more will be sent to authorised plastic /metal scrap recycling units which are located nearby to the unit.



It is estimated that total waste to be incinerated per day is 5000-7000 Kg ash obtained during incineration will be 3 to 5% of maximum 360 Kg/day. The above ash will be collected in bags/drums and stored in waste storage lined pit area in a specially earmarked area within site. The material collected be disposed to TSDF, Gummidipoondi once in a month. The disinfected plastic waste shall send for recycling to registered recycler. The floor/vehicle will be cleaned by mobbing, hence reduces the quantity of wastewater generation.

2.6 Air Pollution Control Devices

Cyclone Separator

It is so designed to remove fly ash particulates present in the flue gases. The flue gases that enter the cyclone tangentially, by centrifugal action/force the heavier particulates drop down through conical chamber will be bagged. The heavier particulates free off gases enter the venturi scrubber.

Venturi Scrubber

In the venture scrubber, the flue gases are in acidic condition is forced in through the divergent column along with 5% caustic solution of scrubbing liquid. The SO_2 gas, HCl gas etc. present in the flue gases will get neutralized due to high pressure drop across the venture. At divergent, the effluent is collected at the bottom, treated and re-circulated. The neutralized gases with traces of ashes if any will be taken to wet scrubber for further treatment purification of flue gas.

Wet Scrubber

It is a packed tower column made of mild steel and rubber lined from inside. The scrubber is packed with ceramic rings and with mist eliminator at the top of the tower for further purification of flue gases. The scrubber is connected with inner connecting piping's with water recirculation pump with motor. The chemical & particulate free flue gas now enter moist separator.

Moist separator

A moist separator is a drum type equipment made of MS/SS with number of partition. The water droplets present in the flue gases are removed in moist separator before being vent to chimney through ID fan.

Chimney

The chimney is provided for the final out let of flue gas into the atmosphere. This chimney is fabricated with mild steel with 10 mm lining 30 meter height with ladder and platform .stack, aviation lamp, lightening arrestor and other accessories.

The proposed project will have minimal noise within the prescribed limit during construction & operation phase.



2.7 Power Requirement & Supply source

The Tamil Nadu State Electricity Generation and Distribution Company Limited (TANGEDCO) will supply the power requirement of 120 KVA. In case of power failure, a D.G. Set of 120 KVA capacity will be used.

2.8 Rain water harvesting system

The rainwater from roof top and garden area will be sent to RWH pits and RWH pond. A RWH pond will be located in the SW corner with dimension 10 x5 x 2.5 m. The excess runoff water during rainfall inside the project site will be diverted to the nearby manmade canal.

3. Baseline Study

Baseline data has been collected for the study of parameters such as Ambient Air, Noise, Water & Soil by NABL Accredited Laboratory M/s.Femo Labs Private Limited. The study period is from March 2021 to June 2021. The environmental baseline data has been compiled for Land Environment (Physiography, Soils, Geology and Minerals); Water Environment (Water resources, and quality); Air Environment (Meteorology and Ambient Air Quality); Noise Environment (Noise level); Ecological Environment (Flora and Fauna); Socio-Economic environment (Demography and occupation etc.) as per CPCB guidelines.

The wind rose diagram for the study period (March 2021 –June 2021) is given as **Annexure -2**.

In the study area, it is observed that all values are within the prescribed limits for ambient air quality. The water quality of the area is found to be within the prescribed limits for drinking water. The quality of the ground water samples are within prescribed limit. The noise levels are found to be within limits.

The copy of test reports for the project site from NABL accredited lab is given as **Annexure-3**.

4. Site & Technology

We have selected this site based on the compliance to location criteria for site selection for CBWTF(Revised guidelines for CBWTF,2016 by CPCB). This site complies all the conditions of guidelines and meets economic viability for land purchase. There is no national park, wild life sanctuary, critically polluted area within 10 Km radius aerial distance of the plant site.

The project proponent owns the site and the land use of the selected site is declared as unclassified zone by the DTCP, Tiruvallur. The proposed project site is meeting site selection criteria of CPCB guidelines as well as the site selection criteria of CBWTF.

We have proposed to adopt the technology of incinerator, autoclave shredder after



careful consideration and requirement based on BMW quantity. Incineration technology will be adopted in the proposed CBWTF as it is sufficient and it will meet all the emission standards as per Bio-Medical Waste Management Rules 2016. In addition, autoclave equipment will be used instead of microwave equipment. This is due to the fact that, autoclave technology is tested, superior and sufficient type of sterilization.

5. Identification of Impacts & its mitigation measures

The project site is suitable for establishing Common Biomedical Waste Treatment & Disposal facility as the site is 500 m away from approved residential area & water bodies. The site is surrounded naturally by greenbelt on all side. The site is located at higher elevation with respect to villages and water bodies. The unit operation will not have any environmental impact, as the system is inbuilt with air pollution control measures to remove the particulate matter, gaseous matters, temperature, etc.

During the air quality survey, the wind movement is on SSE where no villagers are located. Also most of the time, the wind is calm. Hence no impact on air emission. All solid waste collected will be sent to recyclers /TSD. Hence no impact on solid waste.

The water used for treatment is completely recycled. Hence no discharge of wastewater, 100% recycling unit always achieves Zero liquid discharge. The mitigation measures on air, soil & water are carefully undertaken to achieve pollution free project.

As per content in item 4 & 5, the site is very well suitable for establishing the biomedical waste treatment & disposal facility in Nayapakkam Village in an area of 1 acre to the plant capacity of 10 T/day with 44.28% of green cover area.

6. Environmental monitoring plan

Environmental monitoring will be carried out during construction and operation phase with respect to Air, Noise, Solid waste, Soil quality, Rainwater Harvesting, Health, etc.,

The monitoring on above parameters will be carried out half yearly basis /yearly basis as per CPCB /TNPCB/MoEF & CC guidelines. Online monitoring will be carried out for emissions with computer recording facility.

The greenbelt will be developed in and around the factory. 44.28 % of the area will be under greenbelt with high-rise trees in consultation with forest/agricultural department.



7. Project Benefits

It is evident that the ongoing pandemic has aggravated the severity of challenges of the BMW management, treatment & disposal sector in India. There are around 200 Common Biomedical Waste Treatment Facilities (CBMWTF) spread across the country. However, due to the corona virus pandemic, these CBMWTF are inadequate even while running at full capacity.

As the generation of the biomedical waste is increasing and need to be treated, there is necessity for establishment of more number of Common Biomedical Waste Treatment and Disposal facilities in Tamil Nadu ,as per Rule 6 of the Biomedical Waste Management Rules 2016, State pollutions Control Board is responsible to monitor the proper management of Biomedical waste. “Moreover, after the onset of Corona Virus Pandemic in 2020 in India, CBWTF establishment has become a priority.

At present, in Tamil Nadu, 11 CBWTF facilities are functioning. They are two in Kanchipuram, 1 in Vellore, 2 in Coimbatore, 1 in Thanjavur, 1 in Salem, 1 in Tirunelveli, 1 in Virudhunagar, 1 in Cuddalore.

Number of new multi-specialty hospital have come up after the establishment of the 2 units in Kanchipuram which caters the need of Chennai, Tiruvallur, Chengalpattu & Kanchipuram District.Also,new hospitals are emerging ,thereby increasing the BMW need additional facilities.

Environmental Benefit of the proposed CBWTF is that it minimizes pollution load on environment with an additional benefit of green and clean environment.

The major financial benefits will be that, the project will create direct and indirect employment for local people for which skilled and unskilled work force will be needed. About 75 people will be deployed temporarily during construction/installation of the project and about 50 people (as regular employee) will get employment during the operational stage of the project. Other Social Benefits will be that a centralized system of waste management is the best method in terms of cost reduction and minimizes legal and ethical hassles of health care staff authority.

8. Environmental Management Plan & Budget

All environmental mitigation will be undertaken to keep the process free from all the type of pollution by regular monitoring by regular monitoring management .The qualified staff and operators are employed, regular maintenance & cleaning will be carried out, daily, weekly, monthly plans are arranged to keep environment free from pollution .Also separate CSR found will be allocated as per MoEF&CC guidelines.



9. Conclusion

The CBWTF is proposed to meet the growing quantities of bio medical waste especially during the Pandemic period and to scientifically treat the same. For the treatment of biomedical waste, an incinerator, autoclave and shredder of required capacity has been planned.

The proposed CBWTF is planned as per Revised Guidelines for Common Bio-Medical Waste Treatment Facility and Bio-Medical Wastes Management Rules 2016.

The baseline environmental condition of the project area in terms of Air Quality, Noise Levels Water Quality, Soil and biological Environmental attributes are well within the prescribed limits.

The wastewater from the CBWTF will be treated in the ETP and recycled. The black and grey water will be treated in suitably designed treatment plants. The impact on water environment is practically minimal.

The plant machinery design and acoustic measures ensure that no significant impact on the noise environment.

The proponent will carry out CER activities as per the guidelines of the MoEF&CC.

Safety precautions for employees and fire safety will be carried out as per legal requirements.

Greenery development and rainwater harvesting have been planned in order to enhance environmental benefits.

The effective implementation and supervision of EMP to mitigate the environmental impacts will be achieved through a suitable training to employees and by use of professional help of environmental experts.

The proposed CBWTF unit will improve environmental hygienic condition and uplift the socioeconomic conditions of people in the surrounding villages.