

7.1.3 Describe the facilities in the Institution for the management of the following types of degradable and non-degradable waste

7.1.3.1 Solid waste management

7.1.3.2 Liquid waste management

7.1.3.3 Biomedical waste management

7.1.3.4 E-waste management

7.1.3.5 Waste recycling system

7.1.3.6 Hazardous chemicals and radioactive waste management

7.1.3.1 Solid waste Management

The Vimal Jyothi Campus has two institutions VJEC and VJIM. Runs under the MESHAR Diocesan Educational Trust under the Archdiocese of Thalassery. The both campuses jointly integrate the waste management system for better efficiency and sustainability. The campuses have a well-developed waste management system implemented successfully. The main initiatives taken for the solid waste management are given as below:

- A) Integrated sustainable Waste management system for the whole campus**
- B) Bio gas production facility**
- C) Life stock – cattle and goat farm for sustainable waste management**
- D) Grass fields for Cattle feed**
- E) Solid waste collection**
- F) Ponds for the irrigation and ecosystem maintenance**

The details of the solid waste management systems are given below

A). Integrated sustainable Waste management system for the whole campus

The Vimal Jyothi Campus has a clear established waste management system and is displayed in the campus for better awareness to all the stake holders. The effective waste management system implemented with the support of students, staff, cleaning staff, and with defined procedures. The bio degradable waste treated and used for energy production or agricultural production or sold out through the venders.



Figure: The integrated sustainable Waste management system for the whole campus- Display

B). Bio gas production facility

There are well maintained and well-functioning Biogas Plants within the Mess / Hostel campus to process the biodegradable wastes for the biogas production. The bio degradable solid wastes and food remaining from the mess and canteens are the main inputs for the plant. The plant can process sewage waste from various sources also.

The plant adjacent to the Santhome hostel has a capacity of around 5 m³. It is used for the cooking purpose at the centre kitchen. The waste from the santhome hostel is converted with this plant.



Figure: Bio gas plant near the Mess hall- feeding pipe extension point

The Biogas plant adjacent to the Mess / Sanjose hostel has a capacity of 8 m³. The Alphonsa hostel has two plants each having a capacity of 3 m³. Together from all the sources a total of 30 m³ biogas is produced.

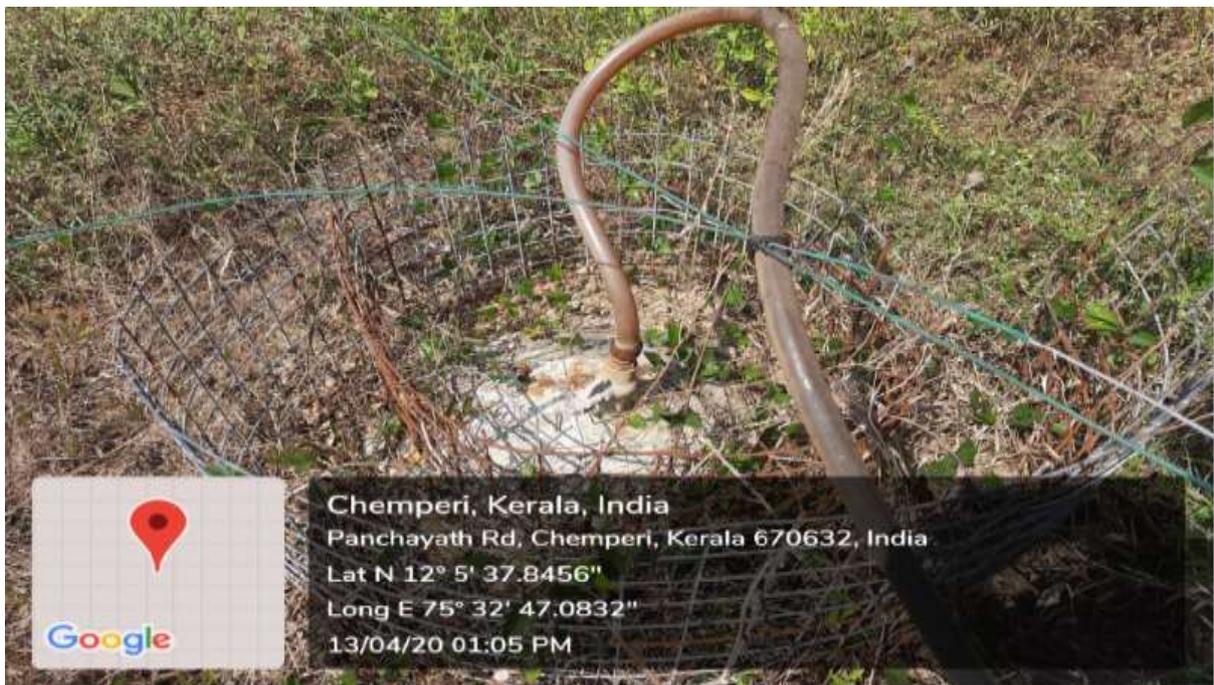


Figure: The Bio Gas Plat at Santhome Hostel campus- with bio-Gas output line

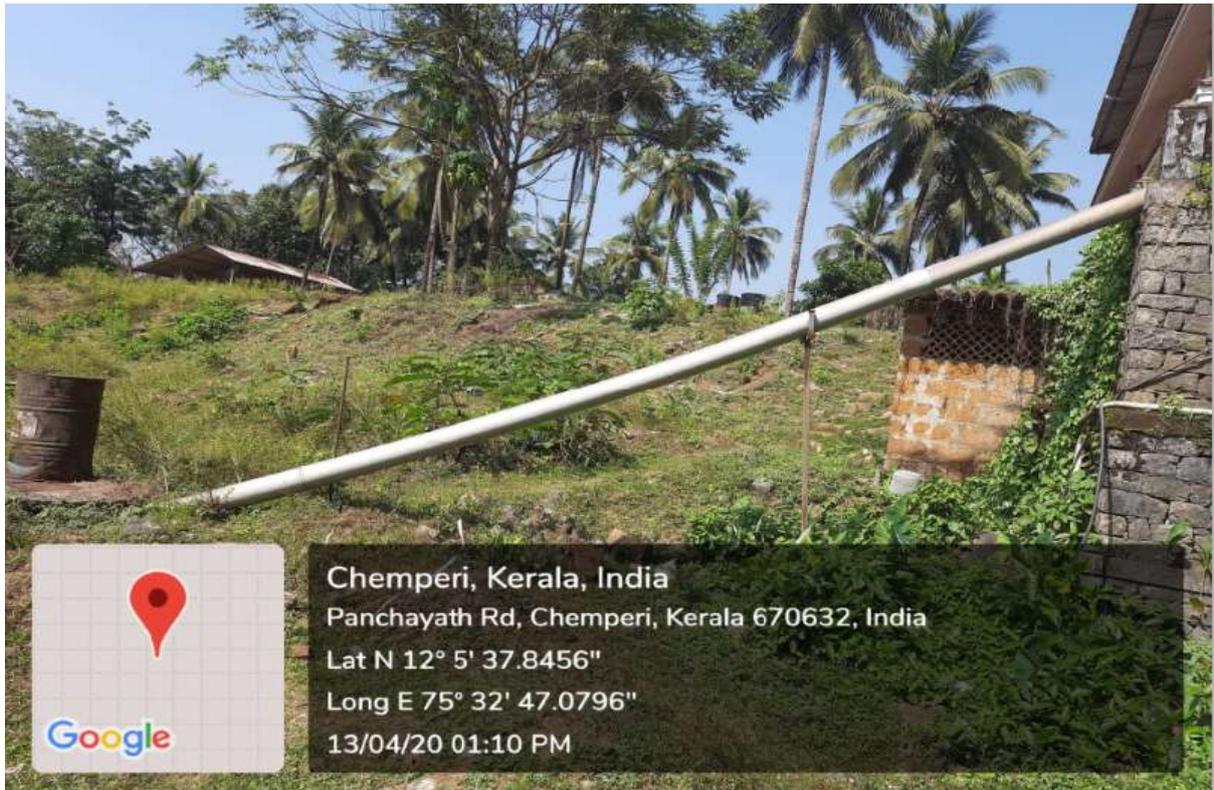


Figure: Biogas Plant- with feeder line and feeding mouth.



Figure: Biogas Plant- feeding mouth secured with movable lid for ease of operation- picture.

The Biogas produced is used for cooking purposes in the canteen. Through these a considerable amount of cooking gas is saved. This contributes to the conservation of non-

renewable resources, reduces carbon footprints, helps to process the bio degradable wastes of the campus, and even saves money for the operations of the mess.



Figure: Cooking Stove burning – connected with Biogas production Plant



Figure: Cooking– connected with Biogas production Plant

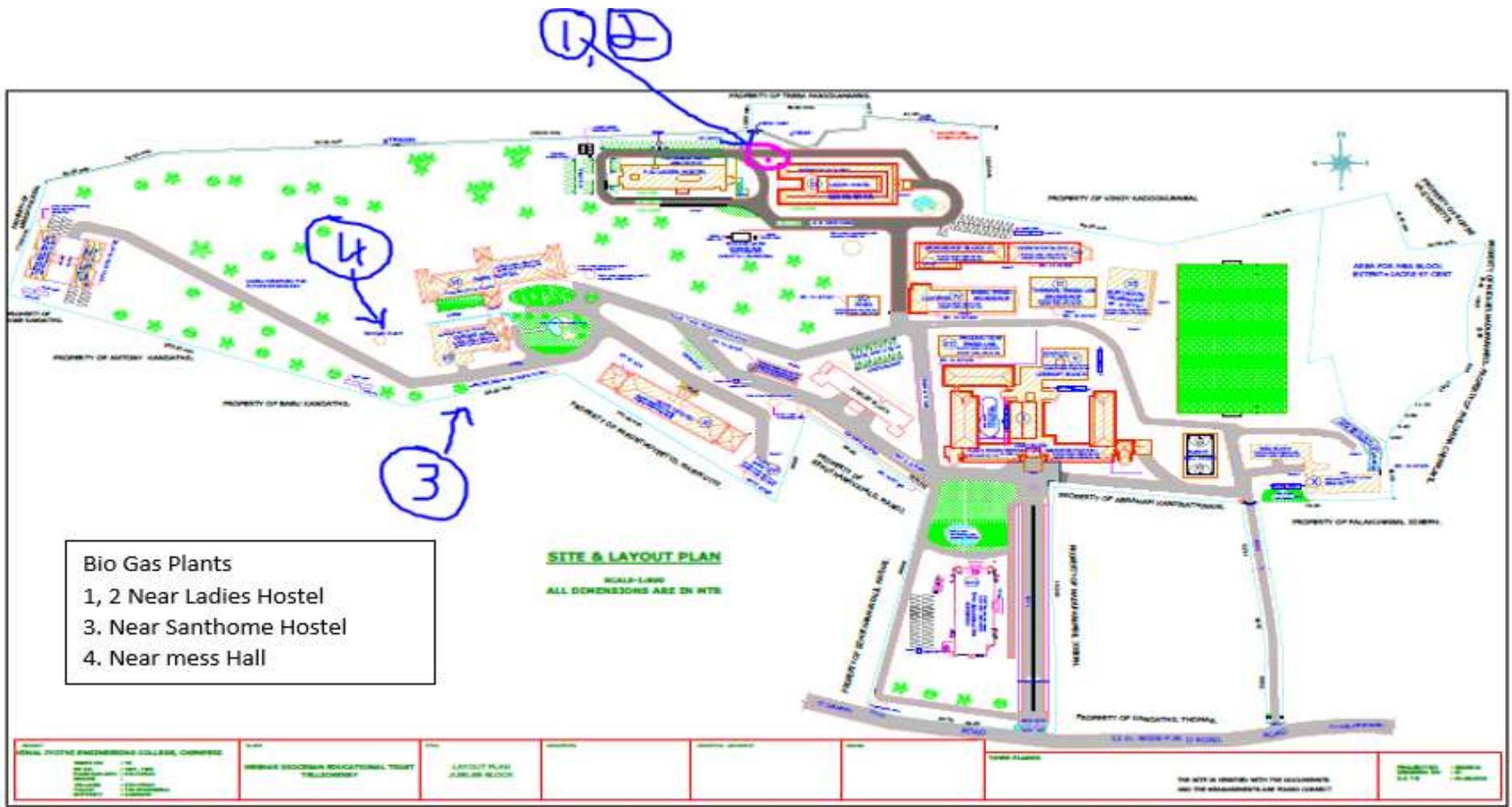
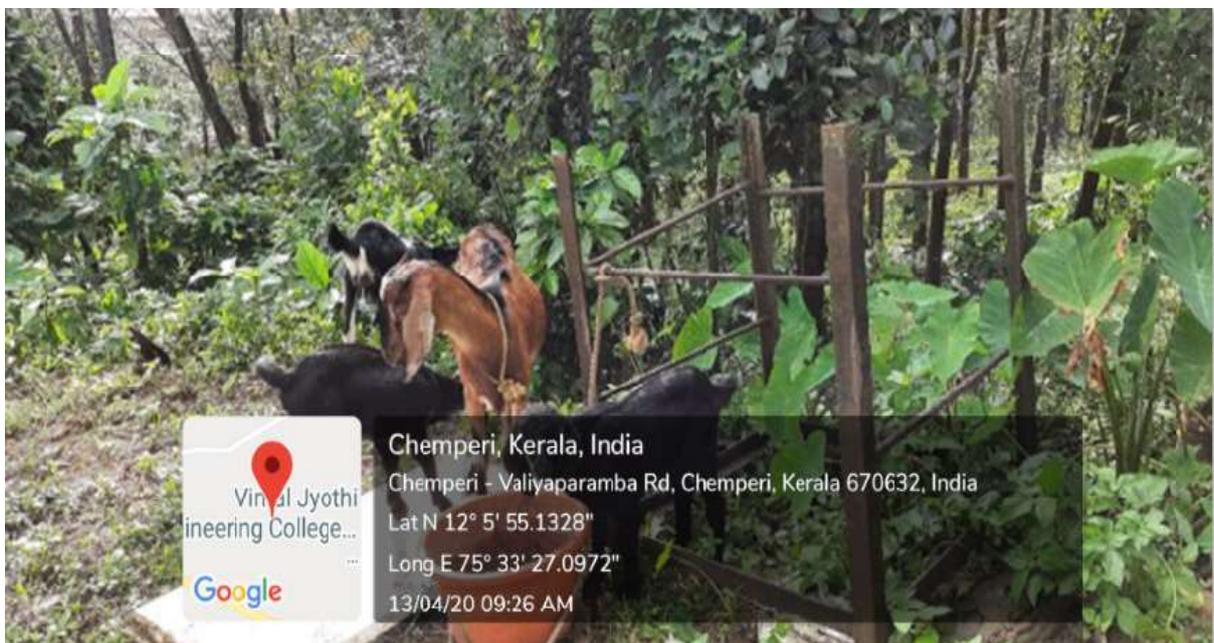


Figure: The Campus plan indicating the positions of the Bio Gas Plants

C). Life stock – cattle and goat farm for sustainable waste management



Figure: Sustainable management system with organized cattle farming for processing the biodegradable vegetable waste from the kitchen



D). Grass fields for Cattle feed

The Campus maintains a Green atmosphere with trees and other organic cultivations with the support of the manure produced from the cow dung. These organic grass cultivations fields not only produce the feed for the life stock but contribute heavily towards the carbon neutrality of the campus. It also reduces the soil erosion at the campus.



Figure: Sustainable ecological management system with organized feed farming for the cattle and ensuring carbon neutrality, green campus goals

Planned fields to ensure the regular supply of food for cattle framing



Manure making with cow dung and biowastes of the agriculture.



Figure 5.1.5. 5 Appreciation form the Government: Sustainable ecological management system with organized feed farming for the cattle and ensuring carbon neutrality, green campus goals





Figure 5.1.5. 8 non-biodegradable Solid waste management system with decentralised sorting and centralized collection systems.

E). Solid waste collection

Distributed solid waste collection points at the multiple corners of the campus



Centralized Common warehouse for solid waste gathering and sorting



Paper waste collection and sorting centre



Plastic waste sorting and storing centre



Figure 5.1.5. 9 non-biodegradable Solid waste management system with incinerator



F). Ponds for the irrigation and ecosystem maintenance

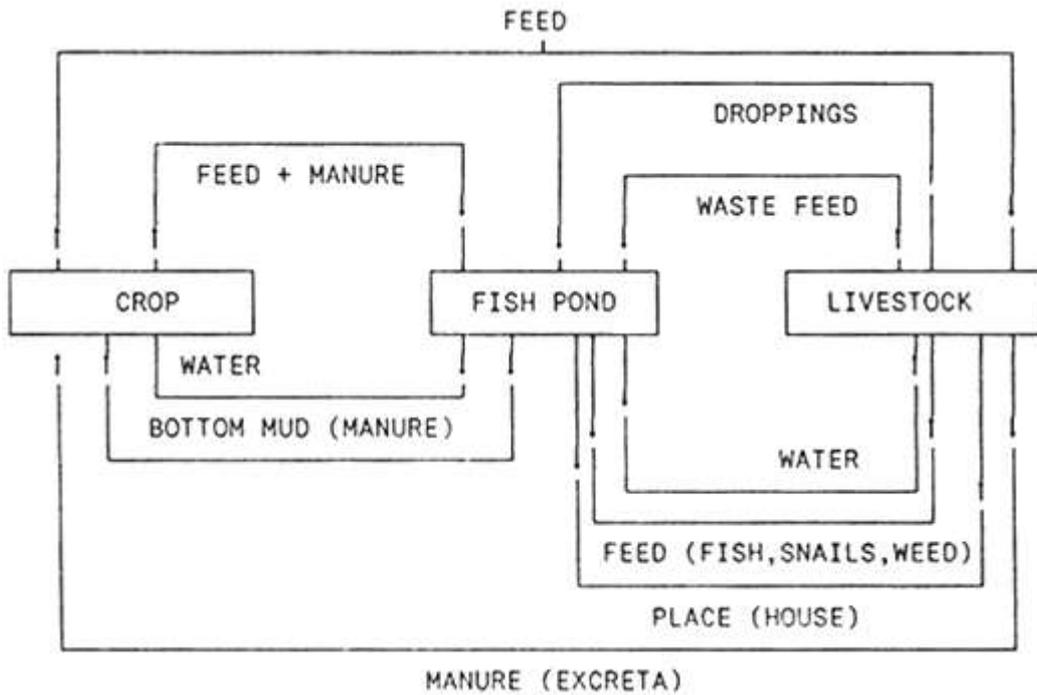


Figure: Fish farming or pisciculture rough outline

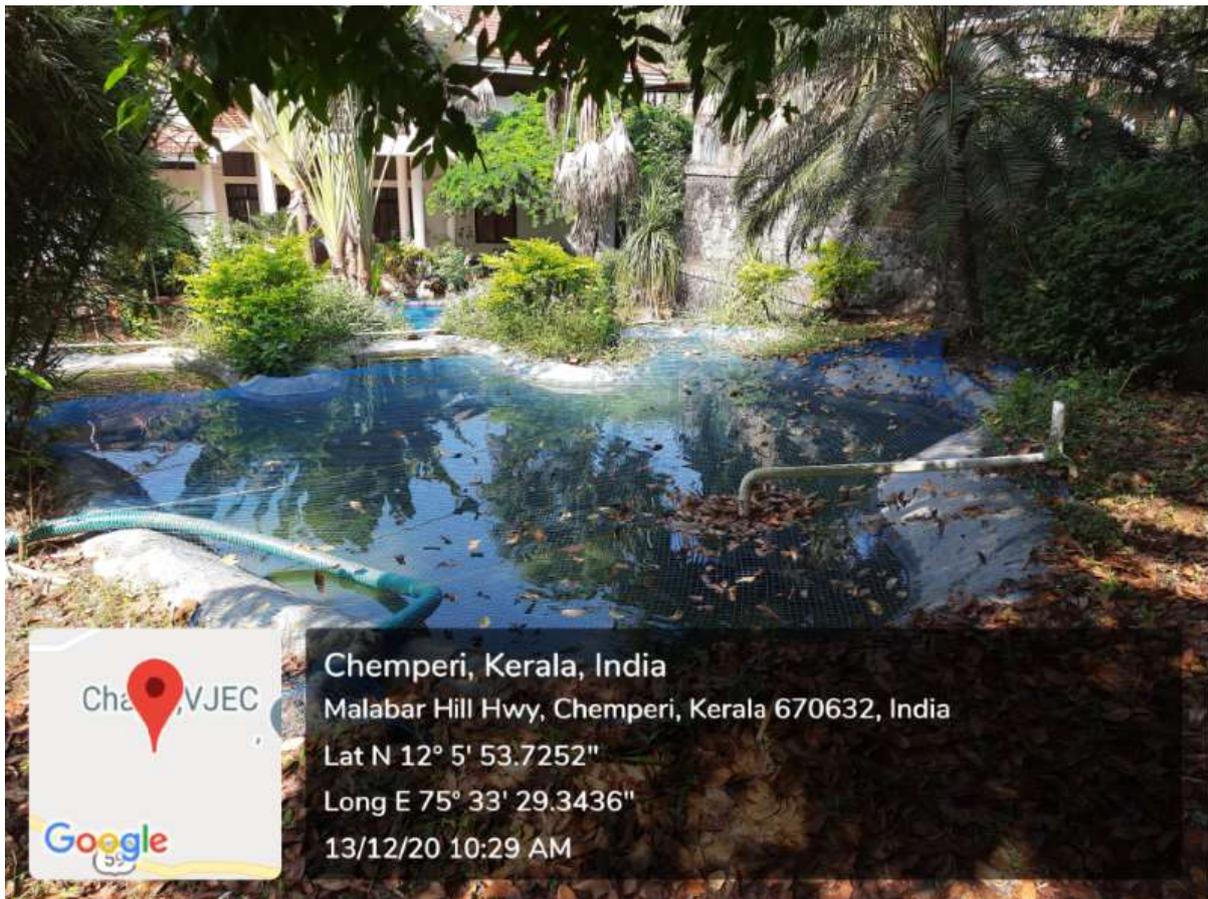
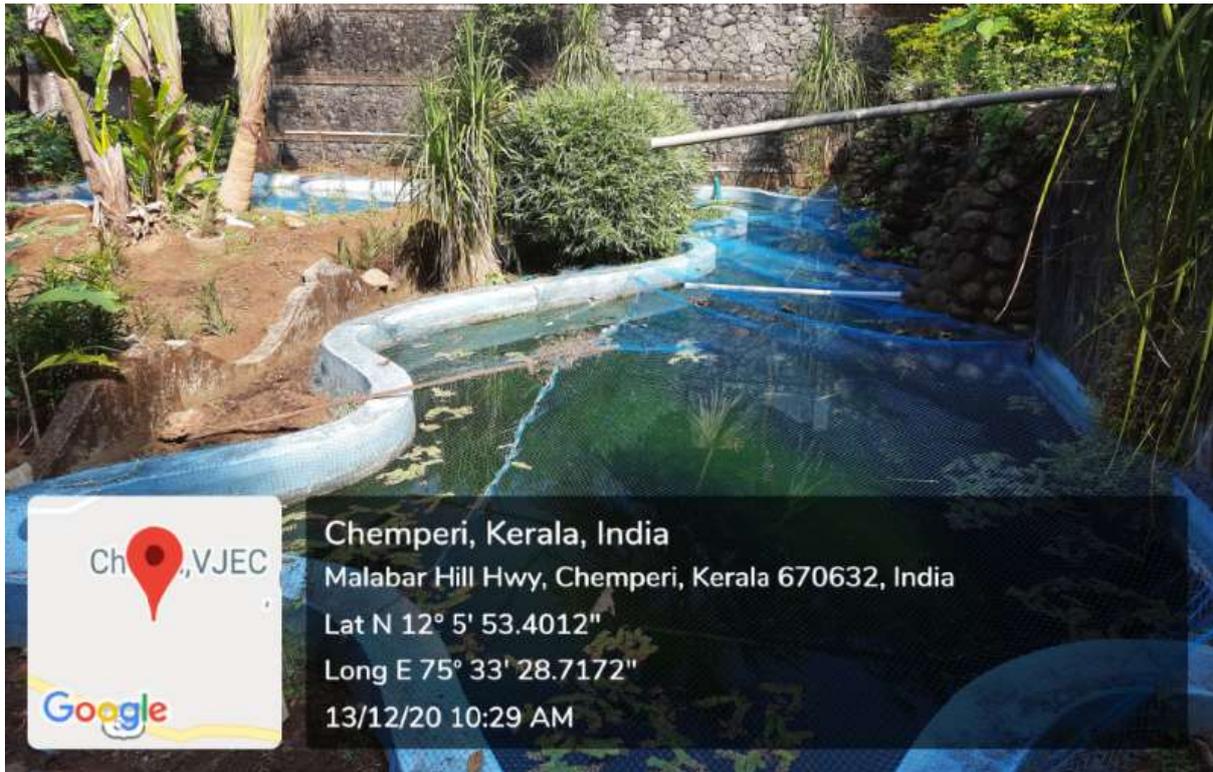


Figure: Fish farming or pisciculture: Sustainable waste management system with organized ecosystem with fish farming, aquaponic and ensuring carbon neutrality, green campus goals



7.1.3.2 Liquid waste management

Waste water management system for treating the water for agricultural process.

Waste water treatment centre

The wastewater and sewage water treatment plant at Vimal Jyothi Campus is of aerobic sewage treatment model. It is located to the rear side of the PG hostel with in a space of 0.40 acres. The capacity of the sewage treatment plant is between 50000 litres to 150000 litres per day. The major waste reaching the plant is in the form of sullage from the hostels and the mess and canteen as well. The type of treatment practised is aerobic treatment. The aerobic treatment helps in the reduction of foul smell being emitted at least to a certain level.

The aerobic oxidation process is adopted for the treatment. The treated waste water is used for the cultivation and gardening process.

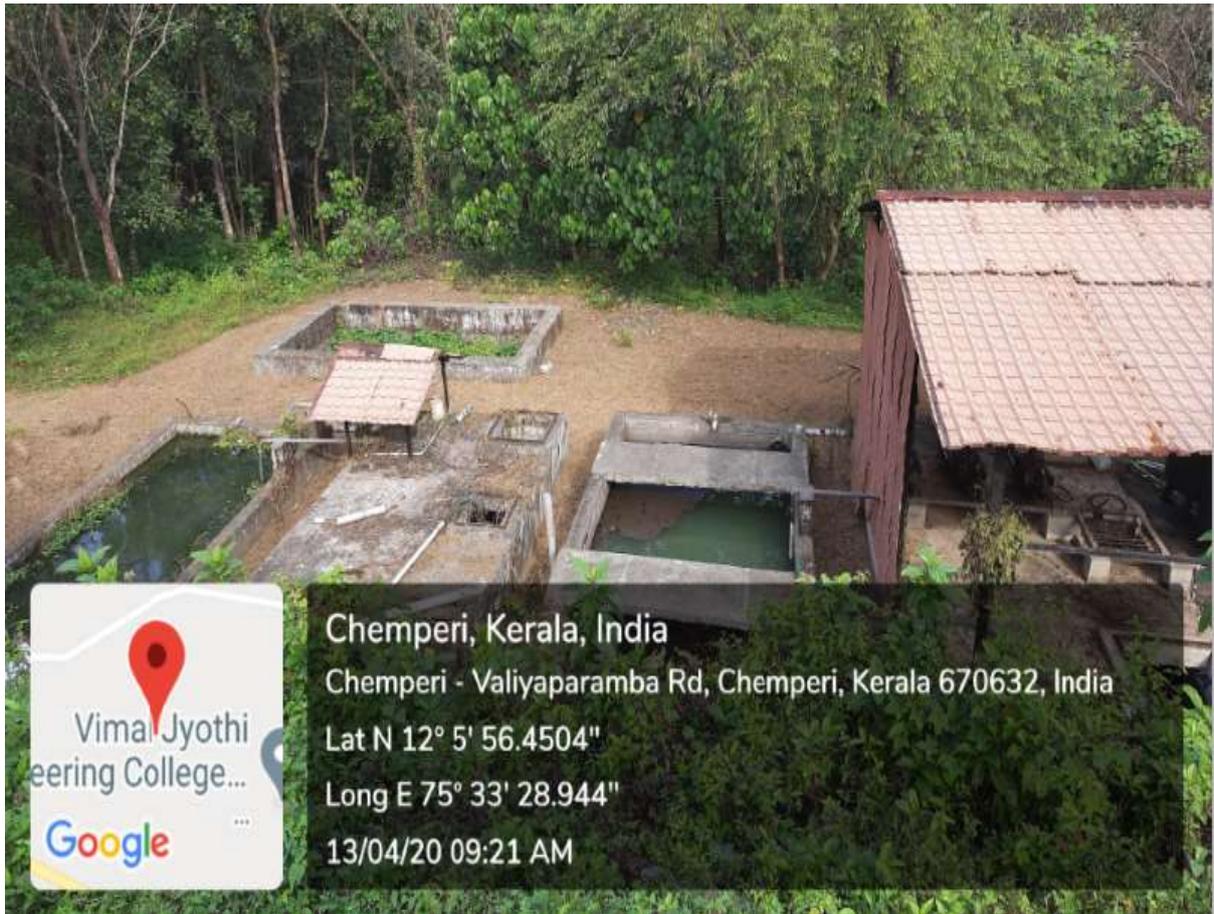


Figure: Technical details of the Waste water management system for treating the water for agricultural process.

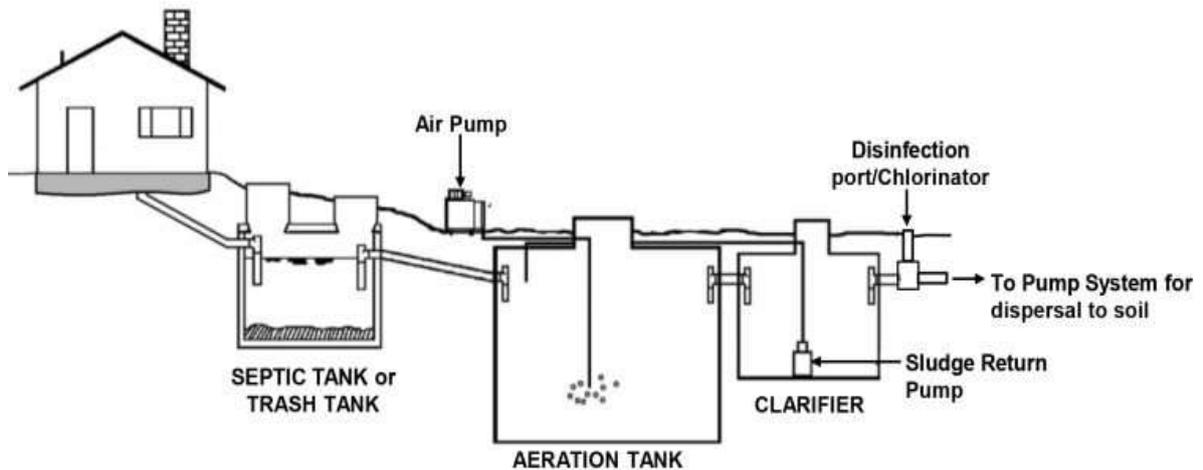


Figure: Aerobic Water treatment system- Specimen diagram



Figure: Aerobic Water treatment system- Pumping Unit area



Figure: Aerobic Water treatment system- Aeration and filtering unit area



Figure: Aerobic Water treatment system- Technical Display

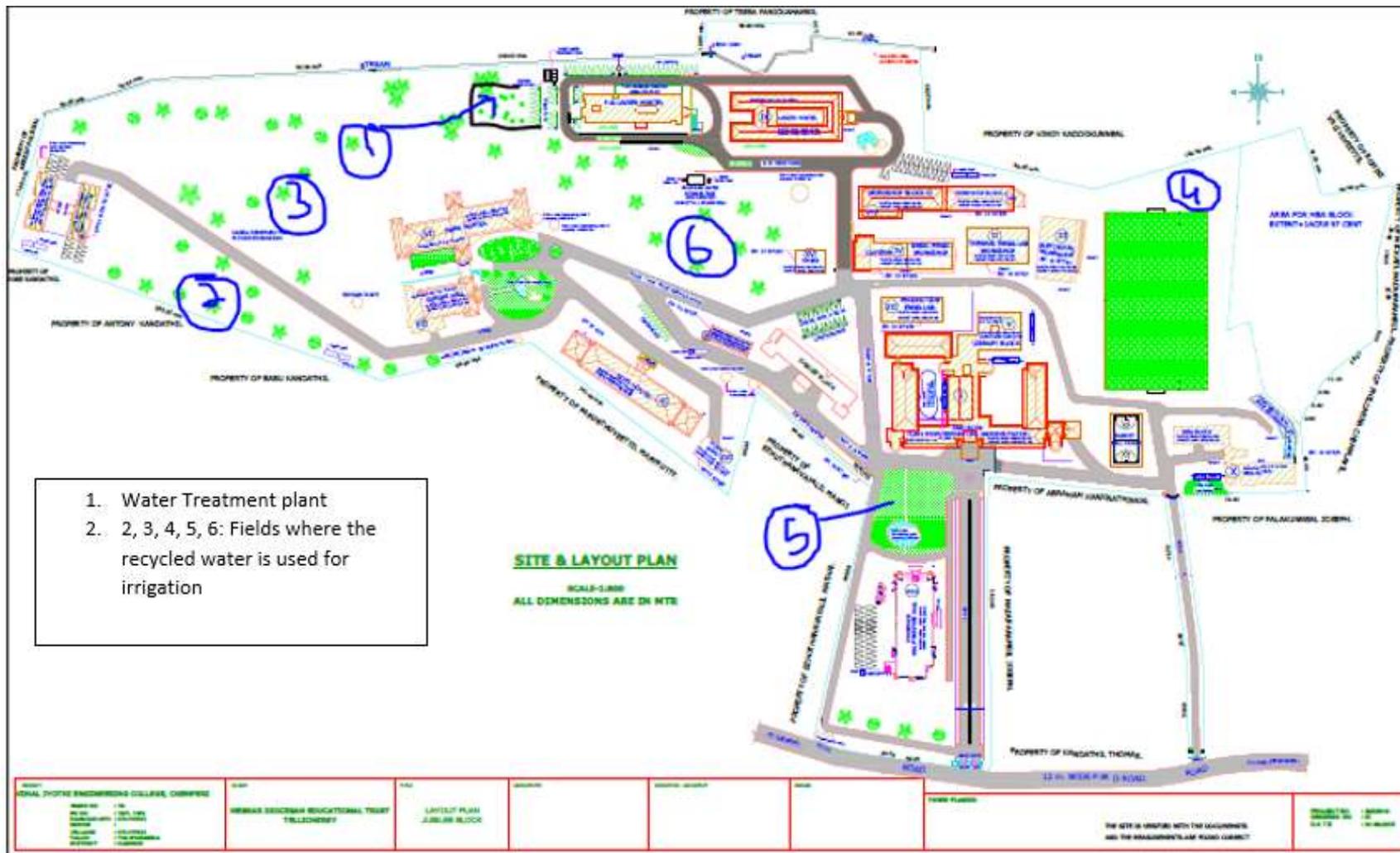


Figure: Water recycling plant and the field where the recycled water is used for irrigation with in the campus



Oil trapping tanks

The oil extraction from waste water is done effectively through the Oil trapping systems installed in the waste water line. The oil extraction is needed to be made before the waste water treatment.

Oil collected for sale to outside venders



7.1.3.3 E-waste management

The e-waste is limited in the campus by maintaining as own repair centre for computer and computer-based items. The computer maintenance and repair is centralized for better coordination and all the repair or non-operating complaints are streamlined through google forms and the report of the repair service is monitored.

The irreparable systems are discarded and the usable parts are used for the replacements. The discarded parts of the systems and other electronic equipment are sold out to vendors for their own recycling process.

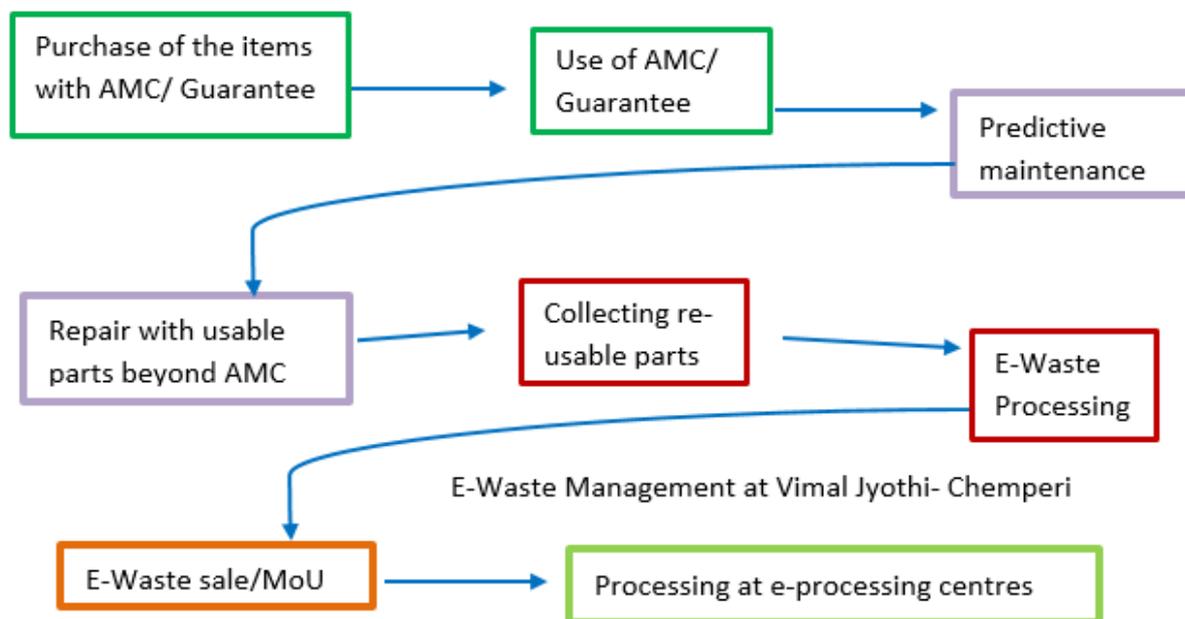


Figure: E-waste management at Vimal Jyothi Campus

7.1.3.4 Waste recycling system

The waste recycling system consisted of

1. Reduce and Reuse strategies
2. Bio-recycling system of the wastes with life stock
3. Waste water recycling system
4. MoUs for the solid waste management using the eternal expertise agents



Figures: Bio recycling systems with life stock in a eco sustainable manner.

3. Waste water recycling system

The water after the purification process is used for gardening, agricultural purpose, and cattle feed cultivation. The one side printed papers used for further use, the waste note books collected to use the note pads. The usable electronic components are used as spares for repair. The leaves and other bio-wastes are used for producing manure.



Figure: water purification and recycling units

4. MoUs for the solid waste management using the external expertise agents

The e-wastes and other non Bio degradable solid wastes are recycled with help of the expert agencies of the field. The MoUs are made to do as it is not financially and environmentally viable to recycle the wastes that produced in the campus.