

## **EXECUTIVE SUMMARY**

# **SETTING UP OF INTEGRATED MUNICIPAL SOLID WASTE MANAGEMENT PROCESSING AND DISPOSAL FACILITY**

Sy. no. 249/(P2, P3, P4, P5, P6), 250/(P1, P2, P3) Village-Aralalu, Kanakapura District-  
Ramanagara, State-Karnataka

**Proposed By,  
Kanakapura City Municipal Council**

**January 2021**

**ENVIRONMENT CONSULTANT**

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## EXECUTIVE SUMMARY

### 1.0 Introduction

Looking to the current scenario of waste generation and disposal; City Municipal Council, Kankapura has come-up to develop Integrated Municipal Solid Waste Management, Processing and disposal facility At Sy. no. 249/(P2, P3, P4, P5, P6), 250/(P1, P2, P3) of Aralalu, Kanakapura Taluk, Ramanagara District, Karnataka. As per the notification, proposed project falls under Activity 7 (i) Cat B, as per EIA Notification 2006, Common Municipal Solid Waste Management Facility (CMSWMF).

The synopsis of the data is presented in below exhibits. The major waste generation is from residents followed by street sweeping waste. The other sources generate lesser wastes.

**Table 1: Estimation of Waste Quantity from Waste Generators**

Sl.No.	Waste Generators	No of Generators	Avg.waste/day inKg	Total waste (Kgs)
1.	Households	12,425	0.953	11,840
2.	Commercial	1,200	0.635	780
3.	Silk filature			
4.	Market	3	800	2400
5.	C & D Waste			
6.	Hotel waste	43	32.55	1400
7.	Meat stall waste	40	25	1000
8.	Street sweeping waste	35.12 Km/day	74	2600
9.	Drain Cleaning Waste	5.0 Km/day	70	350
10.	Floating Population	2700	0.148	400
<b>Total</b>				<b>22,700</b>
				<b>22.70 MT</b>

### 2.0 Project at Glance

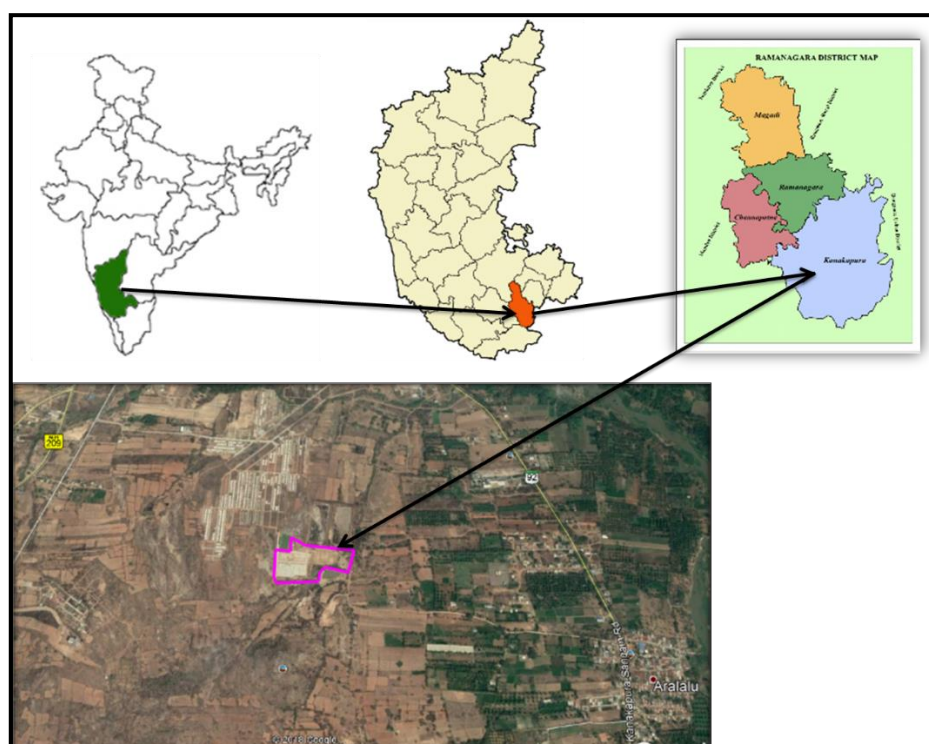
**Table 2: Project Information in brief**

Sl. No.	Particulars	Description
1.	Name of the proponent	City Municipal Council, Kanakapura
2.	Proposal	Integrated Municipal Solid Waste Management Processing and Disposal facility at Kanakapura
3.	Name of City	Kanakapura CMC
4.	Project capacity	40 TPD
5.	Location of the project	Sy. no. 249/(P2, P3, P4, P5, P6), 250/(P1, P2, P3) of Aralalu, Kanakapura Taluk, Ramanagara District, Karnataka

**Proposed Integrated Municipal Solid Waste Management Processing and Disposal Facility in Aralau, Kanakapura.**

**January  
2021**

Sl. No.	Particulars	Description
6.	Geographic Location	Latitude: 12°31'32.17"N Longitude: 77°25'7.79"E Elevation: 648 msl
7.	Solid Waste Generation	36.43 TPD
8.	Implementation Time	1 year
9.	Land requirement	Total plot area: 18.84 acres STP area: 11.3 SW processing facility: 7.5 acre Green belt area: 2.47 acres
10.	Operation days	365 days
11.	Total water requirement	Approximately 3 KLD water will be required for drinking, gardening and other non-portable purpose from City Municipal Council, Kanakapura
12.	Electricity	100 kVA 35 kVA DG set will be provided
13.	Fuel	High Speed Diesel: as per requirement
14.	Man-power	Construction Phase: 30-50 Approx. Operation Phase: 15 Workers
15.	Total project cost	759.24 Lakhs
16.	Total EMP cost	Capital cost: 5.00 Lakhs Recurring: 1.05 Lakhs



**Kanakapura City Municipal Council**

Figure 1: Project Location Map

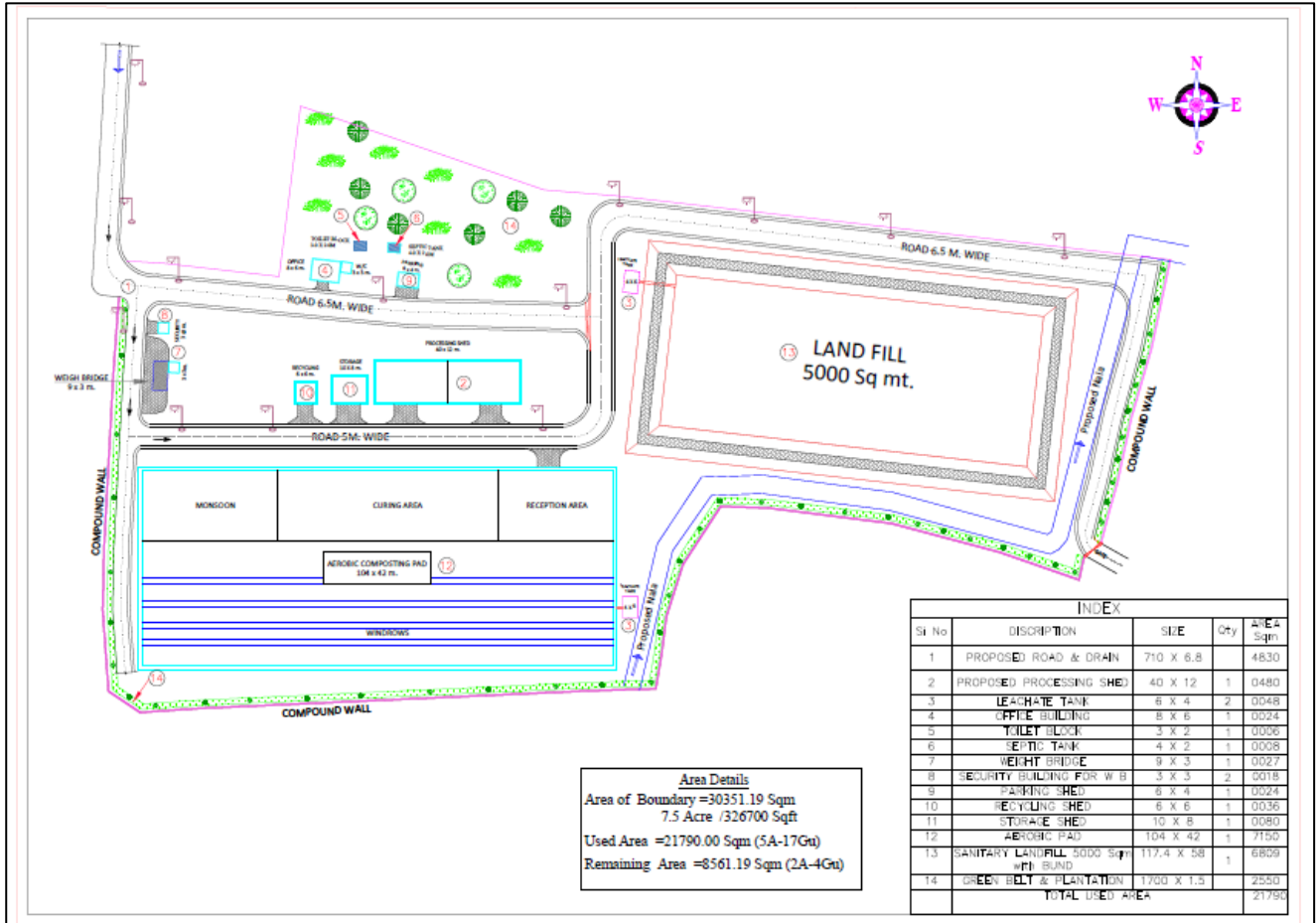


Figure 3: Layout Plan

### 3.0 Requirements of the Project

#### 3.1 Man power requirement

Table 3: Manpower requirement

Sl. No.	Manpower	Proposed (No)
1.	Manager cum Supervisor	1
2.	Workers at tipping floor & Helpers	4 +2
3.	Operators	2
4.	Security	2
5.	DWCC	2
	<b>Total</b>	<b>13</b>

#### 3.2 Water Requirement

Water requirement for the proposed facility will be met through the village Gram panchayat /water tanker.

**Table 4: Water budget**

Sl. No	Particulars	Source	Freshwater
			KLD
1	Domestic	Fresh Water from CMC Kanakapura	1.00
2	Floor Washings / mopping	Recycled water from STP	0.05
3	Work Shop/ Vehicle maintenance shed		0.35
4	Compost Plant		0.45
5	Plastic Recycling		0.15
6	Green belt		1.00
<b>Total</b>			<b>3.00</b>

### 3.3 Electricity requirement

Estimated quantity of electricity requirement will be around 100 KVA per day.

**Table 5: Electricity and Fuel consumption breakup**

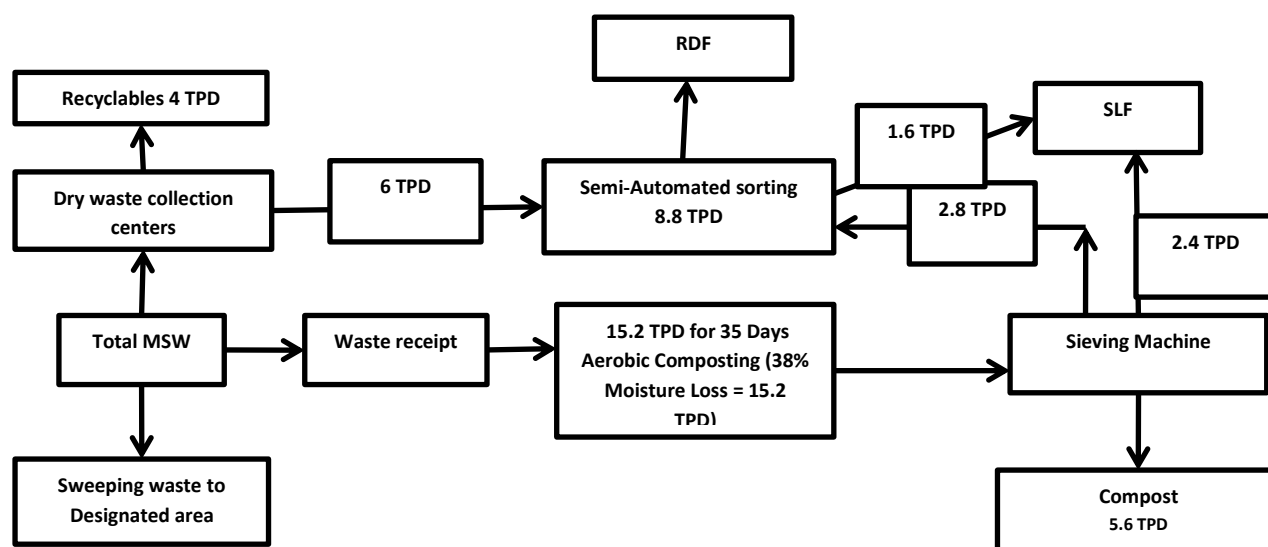
Sl. No.	Description	Unit	Capacity
1.	Pre-Sorting Section	KVA	20
2.	Compost Plant	KVA	20
3.	Finishing Section	KVA	20
4.	General Requirements (Office Building, Pressure Pumps, Street Lights, Future Enhancements)	KVA	15
Demanded Load		KVA	75
Total Connected		KVA	100

### 3.0 TECHNOLOGY AND PROCESS DESCRIPTION

Based on chemical characterization study of MSW, pH of waste is in alkaline nature. It is recommended that no thermal processing technologies can be adopted in Kanakapura. Compost, vermi-compost and Bio-Methanation plants are working successfully in many places in India. From the agrarian environment of Kanakapura city, the adoption of organic recovery solutions like composting and vermi-compost are the preferred options. We do not recommend Bio-Methanation at present as segregation is a primary requirement for successful operation of Bio-Methanation plants. Windrow composting technology can process fresh waste generated in the city as well as existing waste available in dumpsite. The physical processing technologies are useful to recover some of the non-organic matter and should be integrated into the main technology solution linked to organic waste recovery through composting.

Based on the analysis it is recommended to have aerobic windrow composting based waste management facility. This would be supported by the recycling of plastics and other inorganics. This technology proposed is simple and easy to implement with potential to meet the overall objectives of waste management elucidated above. This is cost effective.

**Figure 1: Material Balance for Proposed Capacity of Processing Facility**



#### 4.0 DESCRIPTION OF THE ENVIRONMENT

The study area as per awarded ToR is earmarked to be 10 km from the project site. Baseline monitoring study was conducted in Pre-Monsoon Season i.e., March 2019 to May 2019. Details of frequency of environmental sampling considered for the study are illustrated in below Table 8.

**Table 8: Sampling locations and frequency of sampling**

Environmental Attributes	Parameters	Frequency of monitoring
Meteorology	Wind speed, wind direction, temperature, relative humidity, precipitation	Meteorological data from India Meteorological Department (IMD)
Ambient Air Quality	PM <sub>10</sub> , PM <sub>2.5</sub> , SO <sub>2</sub> , NO <sub>x</sub> , CO, H <sub>2</sub> S and NH <sub>3</sub>	8 Locations 24 hourly samples Twice a week for 3 months
Water Quality (Ground & Surface)	Physical, chemical and biological parameters	Once in season at 8 Locations
Soil Quality	Soil type and texture, Physicochemical properties, NPK	Once in season at 8 Locations

Noise Quality	Noise levels in dB(A)	Once in season at 8 Locations
Land use Pattern	Identification & classification of land use	One time visit of the study area for ground truthing
Geology and hydrogeology	Data collected during field survey and from secondary sources	Once in the study period
Ecology	Existing terrestrial and aquatic flora and fauna	General in 10 km radial study area and data collected around the project site through field visits
Socioeconomic Data	Socio-economic characteristics of the affected area	General in 10 km radius study area and data collected around the project site through field visits

## 5.0 Baseline Environmental Studies

The studies conducted during the Pre-monsoon season of the Year 2019 (March - 2019 to May -2019).

**Table No. 1: Summary of Baseline Environmental Studies**

Sl No.	Parameters	Baseline Status
<b>1.</b>	<b>Ambient Air Quality</b>	
i.	PM <sub>10</sub>	28.7 to 66.9 µg/m <sup>3</sup>
ii.	PM <sub>2.5</sub>	21.2 to 39.3 µg/m <sup>3</sup>
iii.	SO <sub>2</sub>	4.2 to 11.5 µg/m <sup>3</sup>
iv.	NO <sub>x</sub>	10.1 to 20.1 µg/m <sup>3</sup>
Based on comparison study of results with NAAQS for tested parameters, it is interpreted that ambient air quality of studied locations is good as all the results of tested parameters are well within the limit.		
<b>2.</b>	<b>Noise Level Monitoring</b>	
i.	Day Time (06:00 AM to 10:00 PM)	40.0 - 53.0 dB(A)
ii.	Night Time (10:00 PM to 06:00 AM)	30.4 - 43.8 dB (A)
Based on noise level data obtained during the survey for residential area, it is interpreted that noise levels are within the standard norms prescribed by MoEF & CC & CPCB. Looking towards the increase in noise generating sources it is suggested that there is need to apply noise reducing devices at noise generating sources and generate public awareness.		
<b>3.</b>	<b>Soil Quality and Characteristics</b>	
i.	pH	6.33 to 7.49
ii.	Moisture Content (%)	2.0 – 14.8 %

Sl No.	Parameters	Baseline Status
iii.	Total Nitrogen	1.14 - 13.82 mg/kg
iv.	Total Potassium	11.8 to 191.0 mg/kg
v.	Conductivity	26.5 to 208.5 $\mu$ mhos/cm
Heavy metal like Lead, Total Chromium, Cadmium is absent in all soil sample. Soil is good for agricultural field.		
<b>4.</b>	<b>Ground Water</b>	
i.	pH	7.51 to 7.93
ii.	TDS	256 to 980 mg/L
iii.	Total Hardness	94.12 to 213.74 mg/L
iv.	Total Alkalinity	30.94 to 464.1 mg/L
v.	Chloride	63.60 to 240.29 mg/L
To save the ground water from contamination and improving the quality, rainwater harvesting and ground water recharging may be helpful.		
<b>5.</b>	<b>Surface Water</b>	
i.	pH	7.15 to 8.35
ii.	TDS	316 to 615 mg/L
iv.	Total Hardness	94.0 to 270.59 mg/L
v.	COD	24.0 to 32.0 mg/L
Vi	DO	4.13 to 6.0 mg/L
vii.	BOD	5.17 - 8.45 mg/L
<b>6. Ecology and Biodiversity</b>		
This area falling within the buffer zone of Bannerghatta National Park but boundary of Eco-Sensitive Zone and boundary of National Park is lies at 3.5km and 4.5 Km respectively from the project site. Part of Bannerghatta National Park i.e. Bilikal Betta Reserve Forest falling within 10 km radius area from Project Site.		

## 6.0 Environmental Management Plan

Significant impact from the project activities and its mitigation measures are summarize in below table.

**Table 2: EMP for various Environmental Attributes**

Sr. No.	Environment Aspects	Potential source of Impact	Proposed mitigation measures
1.	Site preparation/ Excavation/ foundation	<ul style="list-style-type: none"> <li>Loss of fertile soil</li> <li>Loss of vegetation</li> <li>Temporary impacts because of air contamination due to dusting &amp; emissions from machineries. Health effects like</li> </ul>	<ul style="list-style-type: none"> <li>Excavated soil will be used for greenbelt development.</li> <li>There will be minor vegetation clearance and earth excavation required. However, no major impact is anticipated.</li> <li>Personal protective (PPs) equipment like masks, ear muffs will</li> </ul>



Sr. No.	Environment Aspects	Potential source of Impact	Proposed mitigation measures
		<p>allergic sickness, breathing problems etc., due to dust emission.</p> <ul style="list-style-type: none"> <li>Noise generation due to excavation machineries created hearing problems</li> </ul>	<p>be provided to worker.</p> <ul style="list-style-type: none"> <li>All construction machineries/equipment's and vehicles will be turned off, when not in use.</li> </ul>
2.	Transportation of construction material, equipment and machineries	<ul style="list-style-type: none"> <li>Air emissions created occupational health hazards like allergic sickness, breathing problems etc.</li> <li>Noise generation</li> </ul>	<ul style="list-style-type: none"> <li>During the transportation of dusty materials, loaded trucks will be covered to avoid PM dispersion level in air.</li> <li>Regular spraying of water for dust suppression.</li> <li>Electrically operated machineries shall be preferred</li> </ul>
3.	Handling of material /loading and unloading of material	<ul style="list-style-type: none"> <li>Health effect on labor due to dust emission while handling of construction material.</li> <li>Occupational health issues due to frequent exposure of dust, chemicals etc.</li> </ul>	<p>Personal protective (PPs) equipment like masks, ear muffs will be provided to worker.</p>
4.	<ul style="list-style-type: none"> <li>Civil work</li> </ul>	<ul style="list-style-type: none"> <li>Disposal of construction waste on land changes the soil physical and chemical properties.</li> <li>During construction, occupational health hazards due to frequent exposure of dust. Labor may suffer from respiratory and allergic disease.</li> <li>Air pollution due to emission of dust.</li> <li>Noise pollution due to machineries and equipment. Frequent exposure of high decibel noise causes hearing problems in construction labors.</li> </ul>	<ul style="list-style-type: none"> <li>Construction waste dispose will be done safely in accordance with statutory norms.</li> <li>Personal protective (PPs) equipment like masks, ear muffs will be provided to worker to avoid the heath effect.</li> </ul>
<b>Operational phase</b>			

<b>Sr. No.</b>	<b>Environment Aspects</b>	<b>Potential source of Impact</b>	<b>Proposed mitigation measures</b>
5.	Air Environment	Dust emissions, vehicular movement, Waste transportation and handling	<ul style="list-style-type: none"> <li>• Internal roads will be concreted/ asphalted to reduce dust emissions.</li> <li>• Stack height for DG sets will be maintained as per CPCB norms.</li> <li>• All the trucks bringing waste to the site will be covered from top throughout their transportation route.</li> <li>• Adequate moisture, oxygen and C: N ratio will be maintained during the operations as per standard procedures to minimize the odor and to maintain adequate temperature in compost plant</li> <li>• PUC of the vehicles shall be checked periodically</li> <li>• Periodical maintenance of vehicles</li> <li>• If required spraying of water on the road to suppress the dust emission</li> </ul>
6.	Odor	Ammonia, Methane, CO <sub>2</sub> and hydrogen sulfide gas may get generated during composting. Exposure to ammonia vapors may occur, especially during windrow turning operations.	<ul style="list-style-type: none"> <li>• Proper dense green cover will be developed in the surrounding of each facility</li> <li>• It will be ensured that material is turned or aerated often enough to maintain aerobic conditions.</li> <li>• Proper ventilation ducts and exhaust fans will also be installed in MSW management facility</li> </ul>
7.	Water Environment	Discharge of waste water	<ul style="list-style-type: none"> <li>• The toilets at the facility will be provided with STP arrangement and no sewage will be disposed outside the facility.</li> <li>• Leachate will be conveyed into a leachate collection.</li> <li>• Recycling of leachate will be carried out to minimize fresh water requirement</li> <li>• No waste water will be discharged from the proposed project there will be no impact is envisaged on surface water</li> </ul>

<b>Sr. No.</b>	<b>Environment Aspects</b>	<b>Potential source of Impact</b>	<b>Proposed mitigation measures</b>
			bodies of the study area.
8.	Land	Land use	Currently, land does not have any agricultural uses It is open land and without any human settlement
9.	Soil	Disposal of waste on the land	Spill over garbage and waste containment will be done in a designated restricted area within the site. Proper concreting with standard design of compost pad Waste oil from pumps and machinery will be collected and stored, waste/used oil will be disposed of through recyclers/ re-processors.
10.	Noise	During Operation	Acoustic enclosure will be provided. Sound from the machineries or from other operation shall be restricted within plant boundary
11.	Ecology	Release of pollutant in environment and loss of vegetation during construction	No vegetation clearance is required One National park is presented in buffer zone of the study area. Conservation plan has been provided for the same. There is no any discharge from the project activities. Hence, no any impact on the biological environment has been found any alteration or destruction to the biological environment. Green cover will be developed and maintained, which will provide more habitats to birds and smaller mammals. Native plant and tree species will be selected.
12.	Socioeconomic	Influx of people, settlement	Over all positive impact is envisaged. The direct and indirect economic benefits in form of employment, development of ancillaries, and establishment of service facilities.
13.	Occupational Health and safety	Exposure to the physical hazards, biological hazard	All safety measures and safety equipment's will be in place. PPEs will be provided to workers and associated staff.

## **7.0 Project & EMP Cost**

The cost involved in environmental monitoring and management to mitigate the adverse effects will be put on account for the proposed project. The approximate cost for EMP will be 5.0 lakhs.

## **8.0 Conclusion**

- Proposed project does not attract rehabilitation and resettlement of people, since the proposed site is open and vacant.
- Proposed project does not anticipate any adverse impacts on environment.
- Production process is environmentally safe as no any discharge of effluent is envisaged.
- Loss of vegetation and habitat will not be attributed.
- Odor problems will be ensured that material is turned or aerated often enough to maintain aerobic conditions.
- Workplace/ operation hazards, which will be minimized by providing personal protective equipment's, safety precautions, emergency plan & disaster management plan.

Consequently, impacts on air, water, land and ecological environments are insignificant and the socio-economic benefits are predominantly positive. Thus, overall project features, process, potential of pollution, pollution prevention measures and environmental management plan proposed by proponent illustrates that proposed project will not have any considerable impacts on environment as well as on socio-economic & ecological conditions of the project area. Therefore, proposed project is environmentally safe.