M/s. Kalyan Dombivali Municipal Corporation, Kalyan, Dist. Thane.

EXECUTIVE SUMMARY FOR PROPOSED 350 TPD INTEGRATED WASTE MANAGEMENT FACILITY AT UMBARDE, KALYAN, THANE DISTRICT, MAHARASTRA.

[7(I) CATEGORY B]

BY

ABC TECHNO LABS INDIA PVT. LTD.

ABC Techno Labs®
India Private Limited
(Accredited by NABL, NABET, MOEF)
(An ISO : 9001, ISO : 14001 & OHSAS : 18001 Certified Company)

EXECUTIVE SUMMARY

1. INTRODUCTION

M/s. Kalyan Dombivali Municipal Corporation, Kalyan has proposed to develop Sustainable Common Municipal Solid Waste Management Facility. The proposed project will executed at Village Umbarde, Kalyan. The facility will consist of Segregation of mixed solid waste, conversion of biodegradable waste into compost & disposal of non-biodegradable waste into the sanitary landfill. It requires Environmental Clearance from State Environment Impact Assessment Authority (SEIAA)/Ministry of Environment and Forest & Climate change (MoEF&CC) under Category 'B' in the Schedule 7 (i) of EIA Notification 2006 to commence the activity.

In this regard, the proposal for the proposed project has been appraised in the 124th of State Level Expert Appraisal Committee (SEAC), Maharashtra held on 30th March-2016.

2. PROJECT DESCRIPTION

The location of project site is given in the **Figure 1.**

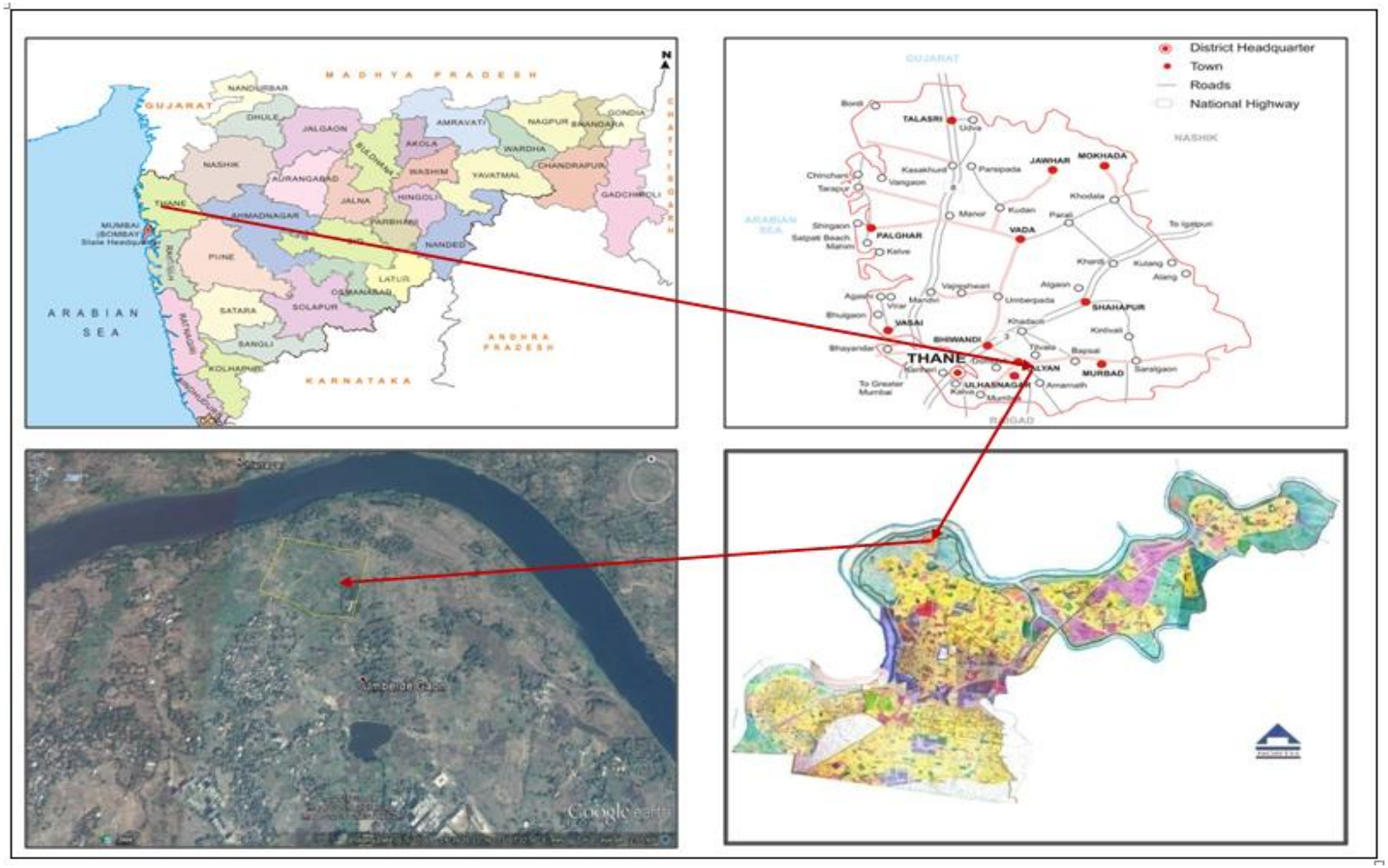

Figure 1: Location Map of the project site

Figure 2: Satellite Image of the Project site

2.1 ENVIRONMENTAL SETTINGS OF TALEGAON SITE

Table 1 : Environmental Settings of the Project Site

Sl. No.	Particulars	Details
1	Latitude	19°16'37.98'' N
2	Longitude	73°07'26.14'' E
3	Site Elevation above MSL	6 m amsl
4	Topography	Undulating terrain.
5	Present land use at the site	Reserved Land for MSW disposal facility
6	Nearest National /State highway, District road/Approach road	National highway: NH – 3 connecting Mumbai & Nashik – 3.0 km (NW) from the project site District/Approach road: Umbarde road, near (S) to the project site
7	Nearest railway station	Kalyan Jn – 6.0 km (S)
8	Nearest airport	Chhatrapati Shivaji International Airport 50 km (SW)
9	Water body	Ulhas River – 500 m (N) Walduni River – 3.11 km (E) Kala Talao – 3.5 km (S)
10	Archaeologically important places	Nil in 10 Km radius
11	National parks / Wildlife Sanctuaries	Nil in 5 Km radius
12	Reserved / Protected Forests	Nil in 5 Km radius
13	Seismicity	Seismic zone-III
14	Defense Installations	Nil in 5 Km radius
15	Flood Area	Nil in 5 Km radius
16	Prominent wind direction	The prominent winds blowing in the study area are of summer season, mostly from NE.

3. NEED FOR THE PROJECT

POPULATION PROJECTIONS AS PER THE MASTER PLAN

The population projections for the city of Kalyan & Dombivli are based as per the Draft Development Plan for Kalyan City by the KDMC. The Demographic Projections for Kalyan & Dombivli were done with an objective to assess the Demographic Projections from 2011-2040. The results of projections are classified as I (high) and II (realistic). The higher scenario expects the population to increase by alternative I (high) from 12 lakh inhabitants 2011 to 34 lakh in 2040.

Table 1. 1: Future Population Projections

Sr. No.	Year	Population
1	2011	12,47,321
2	2015	17,67,734
3	2020	20,52,000
4	2025	23,78,830
5	2030	26,91,427
6	2035	30,45,103
7	2040	33,95,129

Municipal Solid Waste management, to reduce the impact on the environment, requires an integrated approach involving components such as collection from various generators, segregation at source, recycling of the waste, reuse and disposal, etc. Healthy environment demands an integrated approach that involves complementary use of a variety of practices to handle the Municipal Solid Waste, stream safely and effectively with the least adverse impact on human health and the environment. Integrated approach would be adopted to dispose the Municipal Solid Waste generated in the city as the approach amalgamates three stages of Municipal Solid Waste Management. The adoption of this approach would streamline the collection of Municipal Solid Waste from diverse generating points in the city and transporting them to the treatment facilities where it would be separated and disposed accordingly.

The integrated approach is critically important for the Municipal Solid Waste management to work efficiently. A well integrated approach captures the primary collection, secondary collection, treatment and disposal. In addition to all this, an integrated approach would reduce the littering on streets; enhance the cleanliness of the city, and increase the viability, profitability and sustainability of Municipal Solid Waste systems through their impact on increasing incomes, employment while reducing pollution levels.

Umbarde facility is part of one of such integrated system. The facility includes a Bio-stabilization facility and a 350 TPD Sanitary landfill with a leachate treatment plant.

3.1 Project Description

POPULATION PROJECTIONS AS PER THE MASTER PLAN

The population projections for the city of Kalyan & Dombivli are based as per the Draft Development Plan for Kalyan City by the KDMC. The Demographic Projections for Kalyan & Dombivli were done with an objective to assess the Demographic Projections from 2011-2040. The results of projections are classified as I (high) and II (realistic). The higher scenario expects the population to increase by alternative I (high) from 12 lakh inhabitants 2011 to 34 lakh in 2040. .

Table 2: Salient Features of the Project

<table>
<tr><th>Item Description</th><th>Details</th></tr>
<tr><td>Project Proposal</td><td>A Municipal waste facility of 350 TPD is proposed to curb the growing demand of waste disposal of growing Kalyan Dombivli population.</td></tr>
<tr><td>Location</td><td>Kalyan Dombivli Municipal Corporation
Shankerrao Chowk, Kalyan (west), Dist. Thane</td></tr>
<tr><td>Land Requirement & its break up for land use</td><td>Land
<table>
<tr><th>Sr.no.</th><th>Land details</th><th>Proposed area (in m^2)</th><th>Proposed area (in %)</th></tr>
<tr><td>1.</td><td>Sanitary landfill</td><td>35206</td><td>54.65</td></tr>
<tr><td>2.</td><td>Windrow Composting</td><td>3350</td><td>5.20</td></tr>
<tr><td>3.</td><td>Green Belt</td><td>6600</td><td>10.24</td></tr>
<tr><td>4.</td><td>Open Area</td><td>8000</td><td>12.42</td></tr>
<tr><td>5.</td><td>Internal Roads</td><td>1800</td><td>2.79</td></tr>
<tr><td>6.</td><td>Admin office</td><td>1760</td><td>2.73</td></tr>
<tr><td>7.</td><td>Parking Area</td><td>900</td><td>1.40</td></tr>
<tr><td>8.</td><td>Labour crèche</td><td>1600</td><td>2.48</td></tr>
<tr><td>9.</td><td>Tipping & Pre-sort shed</td><td>1120</td><td>1.74</td></tr>
<tr><td>10.</td><td>Monsoon shed</td><td>2002</td><td>3.11</td></tr>
<tr><td>11.</td><td>Refinement shed</td><td>1998</td><td>3.10</td></tr>
<tr><td>12.</td><td>Panel Room</td><td>90</td><td>0.14</td></tr>
<tr><td colspan="2">Total</td><td>64426</td><td>100</td></tr>
</table></td></tr>
</table>

<table>
<tr><td>Man power requirement</td><td>Construction phase – 70 Nos. per day
Operation phase – Skilled: 13, Unskilled: 20</td></tr>
<tr><td>Power requirement & Source</td><td>25.0 MW
Source Maharashtra State Electricity Distribution Corporation Limited (MSEDCL)</td></tr>
<tr><td>Backup power supply</td><td>DG set Capacity – 125 KVA.

Fuel- High Speed Diesel.</td></tr>
<tr><td>Water requirement & Source of supply</td><td>
<table>
<tr><th>Sr.no.</th><th>Purpose</th><th>Water Requirement/day</th></tr>
<tr><td>1.</td><td>Domestic</td><td>6 KL</td></tr>
<tr><td>2.</td><td>Gardening</td><td>10 KL</td></tr>
<tr><td>3.</td><td>Bacteria preparation</td><td>7.5 KL</td></tr>
<tr><td>4.</td><td>Process</td><td>50 KL</td></tr>
<tr><td></td><td>TOTAL</td><td>73.5 KL</td></tr>
</table>
</td></tr>
<tr><td>Wastewater generation, treatment & disposal</td><td>
<table>
<tr><td>Sl. No</td><td>Utility</td><td>Total Cum/day</td><td>Remarks</td></tr>
<tr><td>1</td><td>Domestic</td><td>4 m^3/Day</td><td>Septic tank/soak pit</td></tr>
<tr><td>2</td><td>Lechate</td><td>15 m^3/Day</td><td>Will be treated in Lechate Treatment Plant of 20 m^3/Day capacity & treated effluent will be used for spraying on</td></tr>
<tr><td></td><td>Total</td><td>14 KLD</td><td></td></tr>
</table>
</td></tr>
<tr><td>Air Pollution Sources and Control Measures</td><td>
<table>
<tr><th>Source</th><th>Air Pollution Control Measures</th></tr>
<tr><td>DG set – 125 kVA
(Fuel : HSD)</td><td>will be installed with vent of 10 m.</td></tr>
</table>
</td></tr>
<tr><td>Solid waste generation & Management</td><td>
<table>
<tr><th>Description of waste</th><th>Quantity</th><th>Management</th></tr>
<tr><td>Municipal Solid waste</td><td>15 kg/Day Dry & wet waste.</td><td>Waste will be disposed at site itself.</td></tr>
</table>
</td></tr>
</table>

Project Cost	**Rs. 16. Cr.**

4. BASELINE ENVIRONMENTAL STATUS

The study area is of 10 km radial distance from the project site. All the monitoring has been completed in various locations within the study area during the period of March 2016 to May 2016. The findings of the baseline environmental status of the land, Meteorology, Air, Noise level, Ecological Environment, Socio-economic conditions are presented in the report and interpreted with reference to environmental standards.

4.1. Temperature

April and May are the hottest months in the district. Maximum temperature during these months often rises to 34°C. December and January are the coolest months, when average monthly temperature falls as low as 23°C. The daily temperature comes down and night temperature become steady, as terrestrial heat is unable to escape due to the water vapor present in the atmosphere.

4.2 Rainfall

The Western part of the district adjacent to the West coast is a hilly area having forest cover, due to which the rainfall intensity is more. Most of this rain is brought by the South West monsoon winds and about 87% of rain falls during the monsoon months. The monsoon arrives in the month of June, with the maximum intensity of rainfall during month of July followed by August. The average annual rainfall is 2818 mm.

4.3 Ambient Air Quality

The ambient air quality monitoring was carried out at the selected locations. The purpose of the estimation of background pollutant concentration was to assess the impact of the proposed project on the ambient air quality. The parameters chosen for assessment of air

quality were Particulate Matter (PM10 and PM2.5), Sulphur Dioxide (SO2) and Oxides of Nitrogen (Nox).

4.4 Ambient Noise Level

Ambient noise levels monitored at four different locations it was observed that the maximum and minimum recorded values at Day and Night time were 55.23 dB (A) & 48.12 dB (A) and 49.92 dB (A) and 42.36 dB (A) respectively which indicate that they are within the prescribed limits.

4.5 Water Quality

Water sampling has been conducted to establish baseline water quality in the study area. Water analysis was carried out for physical and chemical parameters as per the methods prescribed in IS and "Standard Methods for the Examination of Water and Wastewater (American Public Health Association).

The pH of ground water in the study area is 6.87 to 7.9 and TDS values were found to be in the range of 180 – 250 mg/L and.

4.6 Soil Quality

The present study of the soil quality establishes the baseline characteristics and this will help in future in identifying the incremental concentrations if any, due to the operation of the proposed Project. The sampling locations have been identified with the following objectives;

- To determine the baseline soil characteristics and
- To determine the impact of proposed project on soil characteristics

Soil samples were collected from eight locations. It has been observed that the pH of the soil was ranging from 3.5 – 4.9 indicating the soils are slightly acidic in nature. Conductivity of the soil ranges from 725 to 755 µS/cm. The analysis results indicate that the soil is not contaminated.

4.7 Ecology

Ecology in essence is the study of the living and non-living components, interaction of community and the environment and exchange of material (energy and nutrient) between living and non-living parts.

The ecological study has been conducted to establish the prevailing baseline ecological data in terms of terrestrial & aquatic biodiversity status in the project influenced area & to identify, quantify the impacts associated with the proposed project on the prevailing ecology & to advocate suitable mitigation measures for the same.

4.8 Socio- Economic

The assessment of socio economic environment forms an integral part of an EIA study. Socio -Economic status of the population is an indicator for the development of the region. Any developmental project of any magnitude will have a bearing on the living conditions and on the economic base of population in particular and the region as a whole. Similarly, the proposed activities will have its share of socio-economic influence in the study area. The section delineates the overall appraisal of society relevant attributes. The data collection for evaluation of impact of proposed project on socioeconomic aspects in the study area has been done through primary household survey and through the analysis of secondary data available for study area.

5. PREDICTION OF IMPACTS AND ITS MITIGATION MEASURES:

5.1 Impacts on Air

The principal potential source of air quality impact arising from the construction of the proposed project is fugitive dust generation. The dust, measurable as Suspended Particulate Matter and Respirable Suspended Particulates would be generated as a result of construction activities. The potential dust sources associated with construction activities are loading and unloading of the materials, top soil removal, travel over unpaved roads and wind erosion etc. Among all the construction activities, site formation has the highest potential for causing dust nuisance to the nearby air sensitive locations. Exhaust emissions

from vehicles and equipment deployed during the construction phase is also likely to result in marginal increase in the levels of SO2, NOX, SPM, CO and un-burnt hydrocarbons. The impact is generally confined to the project area and is expected to be negligible outside the plant boundaries.

Mitigation Measures

- Water sprinkling on main roads in the project area to suppress dust, this will help to reduce 50% of dust from the exposed surface.
- Temporary tin sheets of sufficient height (3m) will be erected around the site of dust generation or all around the project site as barrier for dust control.
- Tree plantations around the project boundary will be initiated at the early stages by plantation of 2 to 3 years old saplings, regular watering will be done, so that the area will be moist for most part of the day.

5.2 Impacts on Water

The impacts associated with the surrounding water environment due to the above activities during construction phase are site/surface run off, which if not managed properly may get mixed with the local water courses or percolate & pollute the ground water.

Mitigation Measures

- During site development activities necessary precautions such as channeling of surface run off will be done, so that the runoff water from the site gets collected to working pit.
- During construction activity all the equipments washed water will be diverted to working pit to arrest the suspended solids.

The used/spent oil/lubricants used for various construction equipments will be stored in a demarcated waste storage area & will be disposed off to CHWTSDF/ authorized recycler.

5.3 Impacts on Noise Environment

The construction activities which may create high levels of noise are as follows:

i Concrete mixer

ii Plant erection

iii Movement of vehicles

iv Foundation works

v Operation of construction equipments

The noise generated due to various activities in the construction camps may affect workers and there is a risk of hearing disorder in the workers.

Mitigation Measures

- Construction works will be carried out only during day time.
- The workers near noise producing machine and noisy area will be provided with ear plugs.
- Construction equipment and vehicles will be maintained in good running condition.

Provision of noise reduction gadgets and personal protective equipments to workers.

5.4 Impacts on Land and Ecological Environment

The proposed construction activities will change the existing land utilization and other facilities. This may affect the land environment. The impact of dust emission from the materials used for construction and solid waste generation during construction is very high on the land environment. The top soil which is rich in organic content and improves the water holding capacity of the soil will be affected. Basic inorganic nutrients present in the soil in adequate amount are required for healthy growth of vegetation. Thus it is important to preserve the soil from soil pollution.

b) Mitigation Measures

- All fine materials will be covered during transportation while carrying them to the site to prevent dusting and spilling.

Green belt plantation will be taken up around the plant boundary

6. ENVIRONMENTAL MONITORING PLAN

Post project environmental monitoring is important in terms of evaluating the performance of pollution control equipment installed in the project. The sampling and analysis of the environmental attributes will be as per the guidelines of Central Pollution Control Board.

Sl.No	Particulars	Monitoring Frequency	Duration of Sampling	Important Monitoring Parameters
1	**Ambient Air Quality Monitoring**			
a	Project site	Once in a 3 months	24 hour continuously except CO	PM10, PM2.5, SO2, NOx and CO
2	**Stack Monitoring**			
a	DG set	Once in a 3 months	30 min	SO2, NOx, SPM, Co, CO2, Temperature, Flow rate and velocity of gas
3	**Ambient Noise Level**			
a	Near DG set	Once in 3 months	8hr continuously with 1hr interval	Noise level (dB)
4	**Ground / Drinking water Quality**			
a	Ground water at project site	Once in 3 months	Grab Sampling	Parameters specified under ISO: 10500, 1993
5	**Sewage Quality Monitoring**			

a	ETP Inlet	Once in a week	Grab Sampling	Physical, Chemical and Biological parameters specified under IS: 2490:1982
b	ETP Outlet			
6	**Soil Quality**			
a	At the green belt area	Once in a year	Samples collected from three different depths viz., 30cm, 60cm and 100cm below the surface.	Parameter for soil quality: pH, texture, electrical conductivity, organic matter, nitrogen, phosphate, calcium, potassium and magnesium.
7	**Flora and Fauna**	Once in a year	-	Number of plants and animal species
8	**Health**	Regular Check ups	-	All relevant parameters including HIV

7. ADDITIONAL STUDIES

The preliminary risk assessment of the plant has identified no hazardous events. Events identified for offsite facilities are estimated to occur at extremely low incident frequencies and/or not to significant levels of consequence. Management of hazardous event scenarios and risks in general can be adequately managed to acceptable levels. An effective Disaster Management Plan (DMP) to mitigate the risks involved has been prepared. This plan defines the responsibilities and resources available to respond to the different types of emergencies envisaged.

The need for the sophisticated techniques for evaluating hazards depends on the result of Preliminary Hazard Analysis. Various techniques for evaluation hazards are:

- Hazard and Operability Study (HAZOP)
- Accident Consequence Analysis
- Event Tree Analysis
- Fault Tree Analysis
- Failure Modes, Effects and Criticality Analysis.

7.3 PUBLIC HEARING:

Public hearing Exempted by SEAC as since proposed site is reserved for CMSWMF in DCR of Kalyan-Dombivali.

8. PROJECT BENEFITS

Employment

The major benefit due to the proposed project will be in the sphere of generating temporary employment for substantial number of personnel. For the construction phase of the project, local people in the surrounding area will be employed. Hence, the proposed project will benefit locals to a great extent.

Landfill Benefit:

Landfills minimize the natural impact of solid waste on the environment by the following ways:

- Isolation of inert waste through containment
- Elimination of polluting pathways

9. ENVIRONMENT MANAGEMENT PLAN

An Environmental Management Plan (EMP) is a site specific plan developed to ensure that the project is implemented in an environmentally sustainable manner where all contractors and subcontractors, including consultants understand the potential environmental risks arising from the proposed project and take appropriate actions to properly manage the risk. EMP also ensures that the project implementation is carried out in accordance with the design and the mitigative measures as recommended in the Environment Impact Assessment study to reduce the adverse impacts during the project's life cycle. The plan outlines existing and potential problems that may adversely impact the environment and recommends corrective measures where required. Also, the plan outlines roles and responsibility of the key personnel and contractors who are charged with the responsibility to manage the proposed project site and its surroundings.

The EMP is generally:

- Prepared in accordance with the approved ToR given by SEAC and in compliance with the rules and requirements of Maharashtra Pollution Control Board;
- To ensure that the proposed facilities are operated in accordance with the design;
- A process that confirms proper operation through supervision and monitoring;
- A system that addresses public complaints during construction and operation of the facility and take appropriate corrective action plans to overcome those unwanted situation; and
- A plan that ensures remedial measures is implemented immediately

The key benefits of EMP are that it provides the organization with means of managing and improving its environmental performance thereby allowing it to contribute to better environmental quality. The other benefits include cost control and improved relations with the stakeholders. EMP includes four major elements;

- Commitment & Policy
- Planning
- Implementation
- Measurement & Evaluation

10. CONCLUSION

Based on the environmental assessment, all possible environment aspects have been adequately assessed and necessary control measures have been formulated to meet with statutory requirements, in the preparation of the EIA-EMP. The increasing demand on energy necessitated a global search for alternative energy resources. Biogas is an energy carrier with multiple options in it's energetically use. Herein biogas gains relevance for an emerging and oil dependent economy such as India. Depending on the biogas industry development biogas may play an important role in contributing an indigenous source of energy to the overall demand and reduces the dependency on imported fossil energy. Thus, the proposed project is a welcome development and may be accorded environmental clearance.