EXECUTIVE SUMMARY

OF

ENVIRONMENTAL IMPACT ASSESSMENT REPORT

FOR PUBLIC HEARING

OF

EXPANSION PROJECT

PROPOSED BY

ALKYL AMINES CHEMICALS LIMITED

PLOT NO. D-6/1, D-6/2
MIDC KURKUMBH, DIST. PUNE
STATE: MAHARASHTRA

FOR

MANUFACTURING OF AMINE DERIVATIVES AND SPECIALTY (INTERMEDIATES) CHEMICALS, BYPRODUCT AND A NEW PRODUCT

PREPARED BY

GOLDFINCH
One-stop Environmental Solution...

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July 2014

Alkyl Amines Chemicals Limited (AACL) is a global supplier of amines and amine-based chemicals to the pharmaceutical, agrochemical, rubber chemical & water treatment industries. AACL proposes the expansion of existing chemical manufacturing facility with 34,400 MT/ Annum at Plot nos. D – 6 / 1 and D – 6 / 2, MIDC, Kurkumbh, Taluka Daund, District Pune, Maharashtra. The existing production capacity is 45,116 MT/Annum. The proposed land is ad measuring 27, 6498 Sq. meters.

The proposal by M/s Alkyl Amines falls under category 5(f) of schedule and needs prior environmental clearance. It is stated that 5(f) industries located in a notified industrial area are classified under category B and would be appraised by State Level Expert appraisal committee/ impact assessment authority. Public hearing is required as directed by SEAC in their 82nd meeting to consider Alkyl Amines application based on MoEF's new OM dated 16.05.2014.

The proposal by Alkyl Amines Chemicals envisages measures to prevent/reduce accidents and proper management to control environmental impacts. Hence it may be concluded on a positive note that this project will be beneficial to all and also to the country

1.0 Project Description

AACL has proposed an expansion of manufacturing of Amine Derivatives and Specialty (Intermediates) Chemicals, byproduct and manufacturing of one new product. The production of finished products will increase by 15000 MT / Annum, intermediate products which will be used for manufacturing finished products will go up by 15000 MT/ Annum and New & Byproducts by 4400 MT/yr. at the existing manufacturing unit at Kurkumbh MIDC.

1.1 Location of the Project

The manufacturing plant is located at the existing Plot no. D– 6/1 & D– 6/2 at Kurkumbh MIDC, Dist: Pune, State: Maharashtra – 421 506. Site specific details are as below:

Geographical location	Latitude : 18° 24' 11.21" N Longitude: 74° 30' 39.86" E Elevation: 2080 ft (634 m) above Mean sea level (MSL).
Nearest town, city, District	Daund, Dist. Pune

Nearest railway station	Daund railway station (12 km)

1.2 Size or Magnitude of Operation

Alkyl Amines has proposed manufacturing of 34,400 MT/Annum products of Amine Derivatives and Specialty (Intermediates) Chemicals, byproduct and one new product. This is an expansion project. List of proposed products are given below:

Table [1.1]: List of Proposed Products

Sr. No.	Class	Product Name	Capacity in TPA
1	Specialty Intermediates	Acetonitrile	5000
2	Aliphatic Amine Hydrochlorides	Dimethyl Amine Hydrochloride powder (DMA HCl)	10000
3	Aliphatic Amine Hydrochloride 50% solution	Dimethyl Amine Hydrochloride (DMA HCl) 50 % solution (used to manufacture DMA HCl powder)	15000
4	New Products	Sodium Acetate Aqueous Solution	3400
5	By – Product	Spent Caustic Solution	1000
	Total		**34400**

1.3 Power Requirement

AACL has proposed power requirement of 700 KWH, available through supply from MSEB.

Additional 243 lt. /Hr. of HSD will be used to run the new additional DG set of capacity 1000 KVA.

1.4 Fuel Requirement

Baggase/ Coal & FO is used as fuel for existing boilers. Additional 3.0 MT/day of FO will be used to run the new proposed TFH with stack height of 31m.

1.5 Water Requirement

Existing water requirement of 1841 CMD will be sufficient and no additional quantity is needed. This is achieved as the industry has reduced the cooling tower consumption and hence make-up water requirement by the use of air coolers. Also heat recovery is done for the steam system which has increased condensate recovery and reduced the steam consumption thereby reducing boiler water consumption.

Table [1.2]: Water Balance

Particulars	**Consumption (CMD)**			**Loss (CMD)**			**Effluent (CMD)**		
Water Requirement	Existing (a)	Proposed (b)	Combined (a + b)	Existing (a)	Proposed (b)	Combined (a + b)	Existing (a)	Proposed (b)	Combined (a + b)
Process	108	0	108	48 to product + water of reaction (-)80	water of reaction (-) 10	48 to product + water of reaction (-) 90	140	10	150
Washing	11	0	11	0	0	0	11	0	11
Boiler feed make up	180	0	180	Evap 164	0	Evap 164	B/D 16	0	B/D 16
Cooling tower m/up	1482	(-) 210	1272	Evapn 1242	Evapn (-) 210	Evapn 1032	240	0	240
DM Regeneration	10	0	10	0	10	10	10	(-) 10 To Psychometric evaporator	0
Domestic	39	(+) 10	49	0.5	0.5	1.0	38.5	9.5	48.0
Fire Hydrant System	11	0	11	11	0	11	0	0	0
Gardening	0	200	200	0	200	200	0	0	0
Total (A)	***1841**	**(-) 0**	***1841**	**1385.5**	**(-) 9.5**	**1376**	**Industrial 417.0 Domestic 38.5**	**Industrial 0.0 Domestic 9.5**	**Industrial 417.0 Domestic 48.0**
Fresh Water Requirement	**1841**	**0**	**1841**						
Note: * Includes condensate recycle									

2.0 Description of the Environment

Baseline environment incorporates the description of the various existing environmental settings within the area encompassed by a circle of 10 km radius around the proposed project site. Based on the model Terms of References (ToRs) published by the SEAC for this category and after giving due consideration to various aspects of the project, field studies were conducted during March, April & May 2013 and secondary data was collected to establish baseline conditions for the EIA studies.

Figure [1.1] & Table [1.3] illustrate Air, Water, Soil and Noise monitoring locations and specific parameters of significance. The samples were collected from various locations around the periphery of the plant. The sampling details have mentioned in the below table.

Figure [1.1] Schematic Diagram of the Sampling Locations

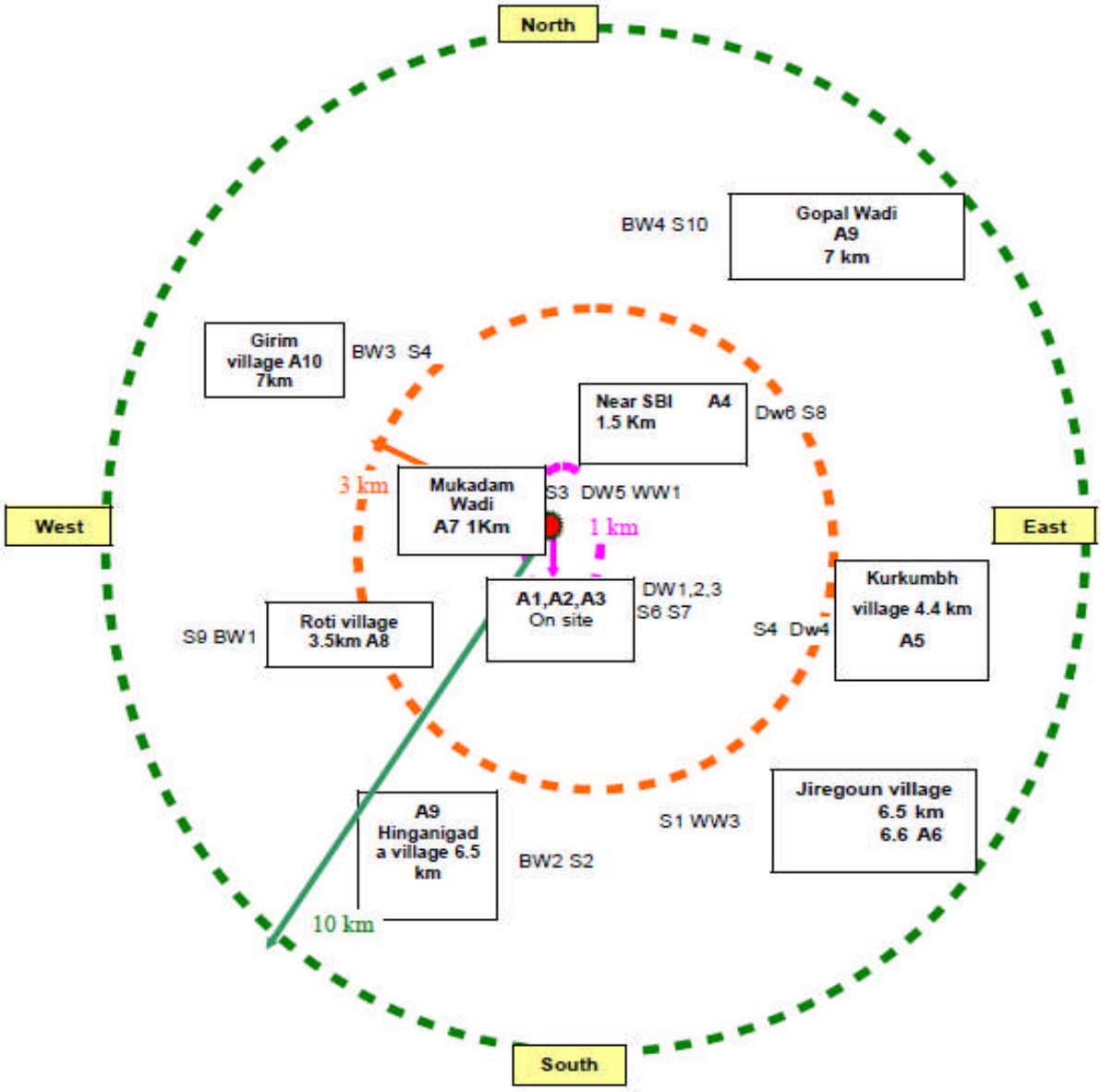

Table [1.3]: Sampling Locations

Sr. No.	Name of Place	Air	Water		Soil	Noise Level Ambient
			Surface	Ground		
1.	Near Ethyl plant	√				√
2.	Near Firefighting plant	√				√
3.	Near Admin Bldg	√				√
4.	Near SBI Bank	√				√
5.	Kurkumbh village	√			√	√
6.	Jiregaon village	√		√	√	√
7.	Mukadam wadi	√		√	√	√
8.	Roti village	√		√		√
9.	Hinegada Village/ Gopal Wadi	√		√	√	√
10.	Girim Village	√		√	√	√
11.	Mastani Talao		√	√		
12.	AACL- kurkumbh Main gate		√			
13.	AACL- kurkumbh Canteen		√			
14.	AACL- kurkumbh Admin		√			
15.	Kurkumbh MIDC		√			
16.	Mukadamwadi MIDC		√			
17.	SBI bank MIDC		√			
18.	Alkan Plant				√	
19.	SBI Bank				√	

2.1 Ambient Air Quality

Ambient air was sampled at nine locations selected and each station was sampled for continuously 24 hrs once in each 3 months.

Particulate Matter

From the study it was observed that, the PM10 and PM2.5 concentrations in the study region is varied in the range of 13.8 – 77.7 µg/m^3 and 8.6 – 50.08 µg/m^3 respectively. The highest concentrations for both PM10 and PM2.5 among the locations was observed near ethyl plant, high concentration may be due to windblown dust, unpaved road etc. The PM_{10} concentrations for all locations were observed to be below stipulated standards for NAAQS (**24 hourly PM_{10} = 100 µg/m^3, 24 hourly $PM_{2.5}$ = 60 µg/m^3**)

Gaseous Pollutants

The concentration of SO_2 and NO_x ranged between 2.75 – 53 µg/m^3 and ND – 22 µg/m^3 respectively. Highest concentration of SO_2 was found at Girim village. However, highest concentration of NO_x was found near Admin building among all the locations. The levels of the gaseous pollutants were below stipulated National Ambient Air Quality Standards**. (24-hourly is SO_2 & NO_x is 80 µg/m^3).**

2.2 Water

Surface and ground water (bore well water) were sampled at 8 stations. 15 Parameters were monitored and found to be within the prescribed regulatory limits.

Surface Water

From the study it is seen that surface water of SBI MIDC was found to be of good quality. However, Mastani Talao has found higher TDS than limits prescribed by IS 10500 for drinking water and is not suitable for drinking purpose. Among all the locations water quality was found to be good and all the parameters were found within limits prescribed by IS 10500.

Ground Water

From the study it is seen that ground water of Roti village was found to be of good quality. However, ground water from Girim village shows higher TDS and total hardness was also found highest among all the locations studied.

2.3 Noise

Measurements made at noise level monitoring stations and at sensitive receptors, it was found that the noise levels are well under the prescribed limits. The Industrial prescribed limit during day time is 75 dB and during night time it is 70 dB whereas, the recorded readings were between 58.7-69.5 dB during day time and 58.3-68.9 dB during night time.

2.4 Land Environment

2.4.1 Geography

The activity of this project is in the midst of a study area, which is spread in Kurkumbh industrial area in district Pune. The town is mostly flat terrain, with hills rising 600 m (2,000 ft) to the south of the town near Kurkumbh. Daund is located on the southern bank of Bhima River, a major river in Maharashtra. The river creates the Ujjani reservoir around 25 km (16 m) southeast of the town.

2.4.2 Climate

The climate of Daund is generally hot and dry, and the area receives scant rainfall. Lakes like Warvand, Kasurdi and Motoba fall in this Taluka.

Climate classification: Project site features a semiarid climate.
Temperature: Annual maximum and minimum temperatures in Kurkumbh ranges from max.38^{o}C & min.10^{o}C with the most comfortable time to visit in the winter October to February.
Rainfall: Most of the rainfall occurs in the monsoon season from June to September. Average annual rainfall is 375 mm.

2.4.3. Classification of Soil

The basic type of soil found in the area varies from red, brown & black. The black type of soil is found in the eastern part. The fertility of the soil increases as it goes from red to black.

2.4.4. Baseline Status of Soil

Soil quality of present site of AACL is slightly alkaline and is not suitable for germination and crop cultivation. Amount of phosphate and Potassium was not found between the minimum required ranges. Study shows that land cover in study area is of moderate quality.

As the land selected for expansion of chemical manufacturing unit of AACL is located in MIDC area and not a prime agricultural land, quality of soil interpreted only to explore existing base line status of soil of the selected study area. Care has been taken by proponent that due to operation of the project soil quality of the study area will not get adversely affected.

2.5 Biological Environment

In view of the need for conservation of environmental quality and biodiversity, study of biological environment is one of the most important components for environmental impact assessment

Flora & Fauna

Total 39 species of plants were observed within the 1km range of the project site which includes 30 species of trees, 5 species of herbs (herbs + grass) and 4 species of shrubs. The species observed during the survey were processed and compared against IUCN 2011 Data

list and Checklist of Rare, Endangered & Threatened Plants of Maharashtra, released by BSI-ENVIS in 2011. No species which can be classified as endangered, rare or vulnerable was observed during the study in 1km range.

2.6 Socio-Economic Environment

Demographic Distribution

Daund had a population of 41,907 Males constitute 51.23% and Females constitute 48.77% of the population. Daund has an average literacy rate of 74.12%, higher than the national average of 74.04%. Male literacy is 79% and female literacy is 69%. In Daund, 13.2% of the population is under 6 years of age. Kurkumbh village had total population of 4480 out of that 2796 Males constitute 62.41 % and 1684 Female constitute 37.58 % of total population.

Economy

Primary crops include wheat, sugar cane, oranges and sweet limes. Daund has a large working class population and the primary occupation is farming. MIDC provides employment for the people. Daund is currently being developed as a hub for Pharmaceutical Industries.

Corporate Social Responsibility

As per provisions of The Companies Act, 2013, AACL has constituted a CSR Committee of Directors consisting of Ms. Tarjani Vakil (Chairperson), Mr. Yogesh M. Kothari and Mr. Kirat Patel, as members. AACL has recognized the fact that, beyond the day to day conduct of its business, as a responsible corporate citizen it has to discharge its duties towards the larger society in which it operates. Some of the core areas identified by the Company are Education, Health, Environment, women empowerment etc. The expected CSR expenditure for the year 2014-15 is Rs.55 lacs.

During the year 2013-14, AACL has continued with various community development activities in and around the rural areas situated in Kurkumbh as well as Patalganga Complexes and elsewhere as identified by our Corporate Social Responsibility Cell. The activities included:

- Constructing class rooms/supplying furniture/equipment/ uniforms/ books etc. required by schools and other institutions in and around rural areas in Kurkumbh and Patalganga.
- Conducting Career Guidance Workshop for 10^{th} and 12^{th} Students.

- Facilitating dialogue with various constituents, establishments and departments concerned with environment, safety and social welfare, with a view to achieve co-ordination and co-operation in successful implementation of the program.
- Tree Plantation programs in and around both the Complexes of the Company and also nearby village (for environmental protection) helping to minimize the global warming scenario.
- Promoting and sponsoring activities in the areas of Safety, Health and Environment, Education, Sports and Cultural Activities in co-ordination with other agencies.
- Encouragement of research activity in the country by instituting the "Alkyl Amines Young Scientist Award" through ICT, Mumbai.
- Provision of water tankers to the villages near Kurkumbh.

3.0 Anticipated Environmental Impacts and Mitigation Measures

3.1 Ambient Air

3.1.1 Particulate Matter

Dust will lead to an increase in the background Suspended Perticulate Matter (SPM) concentration of the area, if proper control measures are not adopted. However, this will be temporary and reversible in nature and restricted to smallare and for short duration. Proper upkeep and maintenance of vehicles, sprinkling of water on roads are some of the measures that would greatly reduce the impacts during the operation phase during transportation of raw and finished products.

3.1.2 Gaseous Emission

The impacts on air environment due to emission of gaseous from stacks depend on the type of fuel used and may extend to far distances depending on meteorological conditions. Emissions from the proposed unit along with anticipated amount of discharge are shown in Table 1.4.

Table [1.4]: Details of Air Pollutants

Sr. No.	Pollutant	Source of Emission	Proposed Limit	MPCB limit
1.	SPM	Process /Boiler/ D.G. Set	<150 mg/nm3	<150 mg/nm3
2.	SO_2	Boiler/ D.G. Set	<2.7 kg/ day	<834.5 kg/day
3.	NO_2	Boiler/ D.G. Set	<50 ppm	<50 ppm
4.	Ammonia	Process	<50 ppm	<50 mg/nm3

Gaseous Emissions from Stack

In the proposal there is a stack for TFH of 1200000 kcal/hr., consumption of fuel (FO) will be 125 kg/hr. Stack height for new TFH will be 31 M (Above ground level). 243 Lit/hr. Of HSD will be used to run one unit DG set of capacity 1000 KVA for backup power supply during failure of power supply from MSEDCL. Stack height for DG will be 7.82 M. Process vents will be connected to scrubber.

AACL will install a comprehensive control system consisiting of control equipments as is warranted with reference to generation of emission and operate and maintain the same continuously so as to achive the level of pollutants to the prescribed standards.

3.2 Water Resources

There will be NO additional water requirement for the proposed activity. The water is already available from existing water works of MIDC.

At present AACL is consuming 1272 CMD as cooling tower makeup. For the proposed expansion AACL have planned to install Fin Type cooling towers rather than the conventional Induced draft towers. These cooling towers have much lower evaporation losses. So though the cooling capacity in terms of TR will increase, the makeup water needed will be even lower than the existing makeup water quantity. AACL estimates that 210 Kl water per day will be saved by this up gradation. Out of 210 KLD of water saved AACL plans to divert 200 Kl / day for gardening and 10 KLD will be used to meet the increased requirement for domestic purposes. There is no additional water requirement for the process, washings & other utilities. So there will be no additional demand for water from MIDC for the proposed expansion. The existing consented water of 1841 CMD will suite the purpose.

Effluent generated will be treated in existing ETP plant consists of Primary, secondary and tertiary treatment units. Finally treated wastewater will then let out in the CETP.

Of the 417 KLD of effluent generated after the proposed expansion 256 is generated as Boiler and cooling tower blow down which has negligible pollution load. This non- polluted stream will not be loaded to the secondary biological treatment, however will be checked for pH (which should be between7.0 to 8.5) before being let out in the CETP along with the effluent treated in the full-fledged ETP. The wastewater due to the process and washings is 417 – 256 = 161 KLD which can be adequately treated in the existing Primary and

secondary treatment of capacity 200 KLD.

3.3 Noise Levels

- The noise levels will be below MPCB prescribed limits. All operating personnel are well acquainted with their respective operations and personnel protection equipment's will be provided to the operators in utility area.

- In house monitoring will be done regularly inside and outside the factory. The noise levels will always be within Maharashtra Pollution Control Board limits for industrial activity and AACL will ensure 100% compliance record.

- This being a Chemicals Manufacturing plant with multiple machineries involved, most of the machinery are going to be installed inside the enclosed buildings which helps in Noise Reduction of up to 20 dB due to the Concrete walls. The process plants and the reactors are installed out in the open, but their Noise Level was measured at 87 dB, which is fairly low considering that these plants are placed at least 100 to 150 meters within the boundary of the plot. Therefore, it is highly unlikely that the Sound pollution level (SPL) of the Environment surrounding the Project site could be affected by this source.

- Proper noise barriers, acoustic enclosures will be provided on noise generating equipment's like D G sets and cooling towers to minimize noise.

3.4 Soil/Land Quality

The project proponents will take all the precautions to make its solid waste areas impervious to water and leach-ate migration. This will avoid soil contamination. It follows that soil quality will not be adversely impacted by proposed production activity. The unit set up is in industrial area hence no change in land use.

Hazardous Waste

Hazardous waste will increase due to proposed expansion viz. distillation residue will increase by 10.0 MT / Annum, spent Organic Solvents will increase by 10.0 MT / Annum and Inorganic Salts from DM plant blow down will increase by 330.0 MT / Annum.

As per the HW rule (M&H and Trans boundary movement) 2008, all the hazardous waste are being sent to CHWTSDF at MEPL Ranjangaon established with support of MIDC & MPCB. The hazardous waste container will be labeled and record book will maintain as a safety measure and to control any leakage to soil and water. The impact on soil quality will be NIL due to

disposal of hazardous waste, as they are not dumped straight into the land.

3.5 Green Belt Development

In and around the industry, green plantation has already started. The area of green belt development within the factory premises is approximately 60,000 sq. M. There are already about 5,570 nos. of tree existing inside the premises. In addition there are 967 trees planted outside the boundary wall. This is much more than the required limit of 5 trees per 100 m2.

4.0 Environmental Monitoring Program (EMP)

EMP is planed such that the mitigation measures should be put in place to reduce the adverse impacts likely to result from the implementation of the project. Apart from the regular monitoring, Post – Project Monitoring Plan (PPMP) is proposed to monitor the ambient environmental quality after the commissioning of the project. The frequency of monitoring of various parameters will be increased as per the requirement after the project goes on schedule.

Following program schedule has been suggested for effective monitoring of the environmental parameters:

Table [1.5]: Suggested Monitoring Program

Sr. No.	Type	Locations	Parameters	Period and Frequency
1	Ambient air Quality	Project site 2 locations	Criteria Pollutants: SO_2,NOx, RSPM, NH_3 •	24-hr average samples every quarter during operation
2	Stack emission Monitoring	Stack of Boilers and DG sets 6 nos.(3 Existing + 3 Proposed)	•SO_2, NOx, RSPM,NH_3 and hydrocarbons	24 hr average every quarter.
3	Workplace Monitoring	Proposed ACN plant, DMA HCl powder Plant	•RSPM, HCl, ACN ,NH_3,	For TLV, Once in two months
4	Ambient noise	Project site 2 locations	•dB(A) levels	Hourly Day and Night time Leq levels every quarter during Operation phase.
5	Treated effluent quality	Influent, bioreactor, final treated water before disposal.	•General parameters like pH, COD, TSS, BOD, MLSS, MLVSS	Once every day. Twice a week.
6	Surface water quality	3 stations around project Site	•Physical and Chemical Parameters.	Once a month.
			•Bacteriological parameters.	Once in 3 months
			•Heavy metals and toxic constituents.	Once in 3 months
7	Ground water quality and depth of water table	3 piezometer stations around the factory site for ground water monitoring to ensure no contamination	•Physical and chemical parameters: Total Organic matter Concentration	Once a month.
			•Bacteriological Parameters.	Once in 3 months
			•Heavy metals and toxic Constituents.	Once in 3 months
8	Terrestrial ecology	Flora and fauna in and around the site	•The health and the density of the vegetation, forest cover	Once a year
9	Aquatic ecology	Aquatic organisms in the nearby water body	•Ensure no fish kill in the nearby water body.	Once a year
9	Waste characterization	Storage area	Physical and chemical composition	Annual by CHWTSDF

5.0 Additional Studies

Risk Assessment and Disaster Management Plan

Rapid development has posed wide-ranging hazards threatening safety and health of people. Accidents may adversely affect the environment and the people living in the vicinity. These accidents can be minimized to a great extent by proper procedures, handling and training. The proposed project of AACL is also complying statutory requirements under section 7A & B and chapter IV A of Factories Act, 1987 and manufacture, storage and import of Hazardous Chemicals Rules Under Environment (Protection) Act, 1986. Hence, the present EIA report also covered following studies. EIA report also concluded following studies.

Hazard Identification	Risk Assessment
Risk Analysis & Emergency Plan Planning	Risk Management & Insurance
Disaster Management Plan	Onsite Emergency Plan

The key Focus Areas include:

- Public Concern
- Commitment & Accountability, Performance measurement
- Hazard Assessment, Engineering Practices
- Training
- Emergency preparedness & Mock-drills
- Industrial Hygiene and Occupational Health
- Reduction, evaluation, implementation & monitoring of waste and its inventory.
- Supporting others
- Ground water protection and monitoring
- Carrier safety
- Risk assessment, reduction and management
- Guidance across supply and distribution chain
- Performance appraisal of vendors & contractors
- Emphasis on safer and greener technology
- Go beyound legal compliance

Table [1.6]: Hazop Study

NODES	1. Acetonitrile Plant. 2. DMAHCL 50% Solution Plant. 3. DMAHCL Powder Plant. 4. Sodium Acetate Plant. 5. ETP.
HAZARDOUS EVENTS	Number of hazardous events identified 159 5 Hazardous events having risk rating 20 to 25 range considered for consequence analysis.
POTENTIAL FAILURE CASES WITH SIGNIFICANT CONSEQUENCES.	**STORAGE AND HANDLING** ➢ Fire/ explosion hazard at Acetonitrile storage installation. ➢ Spill/ fire hazard at Acetic acid storage installation. ➢ Reactivity/ compatibility hazards due to accidental mix up. ➢ Spill and Ammonia release at Ammonia storage installation. ➢ Spill and toxic gas release at Hydrochloric Acid tank installation. **PROCESS OPERATIONS** ➢ Explosion hazard at reactor due to uncontrolled reactions. ➢ Health hazard due to vapors emissions at work place. ➢ DMA gas release due to piping failure. ➢ Fire explosion hazard due to static charge in handling of solvents.
MCA. (Maximum Credible Accident).	➢ Ammonia release followed by fire/ explosion. ➢ Spill of Acetic Acid followed by pool fire. ➢ Acetonitrile release followed by fire/ explosion. ➢ Spill of Hydrochloric Acid and release of Hydrogen Chloride gas. ➢ Release of DMA gas followed by fire/explosion.

➢ **Work Environment**

Under the Factories Act Section 59 (6), regular workplace monitoring is required in any factory in which toxic chemicals are used or given of. Work place monitoring of the existing plant is regularly done and will be continue further for expansion project. Work Place Air Monitoring Report of the existing chemical Facility for the last Year is mentioned below:

Location	Parameter	Concentration	T.L.V./Unit
Acetonitrile Drumming	Acetonitrile	ND	60 PPM
Acetonitrile Plant	Ammonia	0.25 – 1.2	25 PPM
DMA HCL powder plant	PM10	22.0 - 48.5	100ug/m3
Amines HCL Solution plant	Hydrochloric Acid	3.7 -6.9	7.2 mg/m^3
At Methanol Storage Tank	Methanol	N.D	1000 PPM

6.0 Project Benefits

Both tangible and non-tangible benefits will result from this activity. Alkyl's commitment to customer satisfaction by delivering quality products and services has helped it to become one of the world's leading amine manufacturers. Alkyl Amines Chemicals hopes to create significant export markets, to the tune of 30% of its turnover in the first 3 years. This will create foreign exchange earnings for the country and help increase GDP.

7.0 Environmental Management Plan

Environmental Management Plan (EMP) includes the protection, mitigation and environmental enhancement, measures to be implemented to nullify the adverse impact on the environment.

Table [1.7]: Environment Management Plan

Sr. No.	Particulars	Proposed Equipment , Method
1.	Air Pollution Control	•The emissions from Process & fuel stacks - Stack with Adequate height.
2.	Water Pollution Control	•The waste water will be treated in Effluent /Sewage Treatment Plants. •The source of water supply is MIDC.
3.	Noise Pollution Control	• No Demolition involved. Construction for short duration and Fabrication part is more. • Acoustic enclosures to D G set as per manufacturers design.
4.	Environment Monitoring and Management	For the effective implementation of the EMP, an Environmental Management System (EMS) will be established at the proposed project. The EMS will include- • An Environmental Management cell • Environmental Monitoring Program • Personnel Training • Regular Environmental Audits and Corrective Action • Documentation – Standard operating procedures • Environmental Management Plans and other records
5.	Occupational Health	Cleanliness of all workplaces will be emphasized upon. Sufficient and suitable lighting arrangements will be provided in all working areas. Effective provisions of drinking water at convenient places will be made for the work force. Apart from the above provisions, the health of all personnel will be consistently monitored for occupational diseases through medical checkups at regular intervals carried out by a registered medical practitioner. Regular Work Place monitoring will continue to take care of work environment in turn safety of persons working in it.
6	Green Belt	Green belt area : 60,000 sq.m There are already about 5570 Nos. of tree existing inside the premises. In addition there are 967 tree planted outside the boundary wall.
7	Hazardous Waste Management	•Segregation category wise and disposed to CHWTSDF. •Disposal of Haz. Waste: Shall be send to CHWTSDF, •Disposal of non-biodegradable Solid Waste: shall be sale to Authorized Party. •Disposal of biodegradable Waste: Shall be used as manure for gardening.

Project Cost and Expenditure for Environmental Activities

Environmental Cost benefit Analysis produces more efficient decision by increasing monetary values of the life, health and natural resources. In order to assess the pros and cons of any particular regulatory standard for proposed activity, cost- benefit analysis seeks to translate all relevant considerations into monetary terms.

The anticipated details of capital expenditure and extrapolated values of recurring expenditure are indicated below

Table [1.7]: EMP Cost

Sr. No.	Particulars	Capital cost (Rs. lacs)		Recurring cost / year (Rs. lacs)	
		Existing	Proposed (Additional)	Existing	Proposed (Incremental)
1	Air pollution control	500	50	52.19	55.0
2	Water Pollution control	147	50	47.01	51.50
3	Noise pollution control	20	10		--
	Env. Monitoring and management	--	--	4.0	6.0
4	Occupational health	30	21	19.37	35.80
5	Green belt	10	--	5.0	6.0
6	Non-hazardous & Hazardous Waste Disposal	--	--	76.61	77.0
7	Hazardous waste storage	0	--	0.50	0.60
8	Work Place Monitoring	14.5	15	3.5	5.0
9.	CSR activities	15			55
	Total	**736.5**	**146**	**208.68**	**292.6**

8.0 Conclusion

The industry will manufacture Amine Derivatives and Specialty (Intermediates) Chemicals, which is in good demand for pharmaceutical, agrochemical, rubber chemical & water treatment industries. The rising demand for amines has also given rise to competition from foreign players. The proposed expansion will also help check the competition from foreign players. The finished goods will be sold in domestic market and will be exported to the Regulated International Market as per demand.

Project activity will not disturb the environmental setting because AACL have proposed all preventive and mitigation measures required for pollution prevention. Land selected is in notified Industrial estate. Trees will be planted and not cut down. No Rehabilitation issue is involved. There will not be problematic waste materials as all will be utilized/safely disposed.

- The proposed expansion will meet the growing demand of amine based chemicals

- It will help to cut the supply of imports from foreign countries thus saving currency and at the same time will earn valuable foreign currency by export of products at lower cost to the users.

- There would be considerable saving in energy resources on account of transportation.
- Socio-economic benefits due to creation of direct/indirect employment. Moreover due to project other direct and indirect business will be benefited.
- No air pollution, the Flue gas emission from boiler will be left out through stack. The stack with adequate height as per CPCB norms will be provided.
- Industrial wastewater will be treated in existing ETP of sufficient capacity within the premises. The domestic wastewater generated is being treated in septic tanks followed by soak pits. However, separate STP will be provided as directed by SEAC. The treated wastewater will reuse for gardening.
- The noise generation will be reduced due to the measure provided in Environmental Management plan.
- The risk associated is identified by conducting risk assessment, HAZOP and recommendations of the same will be implemented. Moreover on site emergency plan will be prepared to tackle the emergency when it arises.

Alkyl Amines group believes in **"Sustainable Development"** and take care that no pollutants should release in the environment from manufacturing process.

Alkyl's commitment to customer satisfaction by delivering quality products and services has helped it to become one of the world's leading amine manufacturers. The Company is in the business of manufacturing and marketing various aliphatic amines, amine derivatives and other speciality chemicals for the last 30 years.

AACL is law abiding, ISO 9001, 14001 and 18001 certified company. Also company is **Responsible Care Signatory** and in the process of preparing & getting certified by Indian Chemical Council (ICC) for granting **Responsible Care Logo**. Company considers safety and health of all the stakeholders and the protection of the environment in the sustainable measure to be one of their core values.
The company is committed to:

- Implement the **AACL Responsible Care Management System that integrates Environmental, Health and Safety considerations** into daily business practices.
- Improve the Safety of process and reduce the Hazard and quantity of Wastes through our commitment to Pollution Prevention.

- Ensure that all products and intermediates are properly registered, comply with applicable regulatory requirements and are safely used for their intended purposes.
- Provide our employees and other stakeholders with appropriate information necessary for their understanding of the Environmental, Health and Safety aspects of our operations and products, our safety, health and environmental performance and the contribution of our products in enhancing the quality of life.
- The ultimate vision is zero accident, injuries and harm to the environment.

Thus, it can be concluded on a positive note that after the implementation of the Mitigation Measures and Environmental Management Plan, the normal operation of Alkyl Amines Chemicals Ltd. unit will have negligible impact on environment and will benefit the Country as a whole.