

ENVIRONMENTAL IMPACT ASSESSMENT

FOR

THE PROPOSED SULPHONATION PLANT WITH THE PRODUCTION
CAPACITY OF 72 TPD OF LABSA

BY

M/s. Power Soaps Private Limited

AT

Pondicherry Industrial Promotion Development & Investment Corporation
Limited (PIPDIC) Industrial Estate, Sedarapet,
Villianur Commune Panchayat, Pondicherry district, Puducherry

EXECUTIVE SUMMARY



Project Proponent
M/s. Power Soaps Pvt. Ltd.
Puducherry



EIA Consultant
M/s. Vimta Labs Limited
Hyderabad / Coimbatore
QCI/NABET Accredited EIA Consultant

JANUARY 2017



1.0 INTRODUCTION

Power Soaps Private Limited (herein after referred to as PSPL) proposes a manufacturing unit to synthesize *Linear Alkyl Benzene Sulphonic Acid* (LABSA) at Plot nos. B - 41,42,43,44, 45, 46, 47, 59, 60, 61, 62, 63, 64 & 65, Pondicherry Industrial Promotion Development & Investment Corporation Limited (PIPDIC) Industrial Estate, Sedarapet, Villianur Commune Panchayat, Pondicherry District, Puducherry. Power Soaps intends to produce 72 TPD (18,000 TPA) of 96% LABSA using Linear Alkyl Benzene (LAB) and Sulphuric Acid. The estimated total project cost is about INR. 575 Lakhs.

As per Environmental Impact Assessment Notification, dated 14th September 2006, the proposed Sulphonation plant project falls under Schedule. No. 5(f) - Synthetic Organic chemicals industry (dyes & dye intermediates; bulk drugs and intermediates excluding drug formulations; synthetic rubbers; basic organic chemicals, other synthetic organic chemicals and chemical intermediates) and categorised under '**A**' for which Environmental Clearance (EC) from Ministry of Environment, Forests & Climate Change (MoEF&CC) is necessary.

In order to assess the environmental impacts due to the proposed project, Environmental Impact Assessment (EIA) report has been prepared. In line with EIA notification dated 14.09.06, a TOR meeting was held for determining Terms of Reference (TOR) on 01.04.2016 for the preparation of the EIA report for the proposed project. Based on the TOR condition given by MoEF&CC vide its letter no. F.N J-11011/32/2016-IA II(I) dated 11.05.2016, the EIA report has been prepared.

2.0 BRIEF DESCRIPTION OF THE PROJECT

The proposed plant site is located in Sedarpet village, Villianur Commune Panchayat, Pondicherry district, Puducherry. The details of environmental setting are given in **Table - 2.1**. The index map of the plant site is shown in **Figure-2.1**. The topographical feature of the study area within 10 km radius of proposed site is depicted in **Figure-2.2**. The aerial view of the proposed project is shown in **Figure-2.3**.

TABLE - 2.1
ENVIRONMENTAL SETTING IN 10-KM RADIUS

Sr. No.	Particulars	Details			
1	Site-coordinates & elevation	Corner	Latitude	Longitude	Elevation
		A	12°00'10.19"	79°45' 19.21"	39 m AMSL
		B	12°00'09.91"	79°45' 21.72"	41 m AMSL
		C	12°00'06.50"	79°45' 20.63"	42 m AMSL
		D	12°00'07.43"	79°45' 18.07"	40 m AMSL
2.	Climatic conditions (Based on IMD, Cuddalore)	Annual Mean Max Temp : 37.1 °C (Summer) Annual Mean Min Temp : 20.6 °C (Winter) Annual Total Rainfall : 1298.4 mm			
3.	Land use of the project site	Industrial land (PIPDIC Industrial Estate, Puducherry)			
4.	Nearest Highway	NH 66 - 3.3 km, East			
5.	Nearest Railway station	Villianur R.S. - 9.2 km, South			
6.	Nearest Air Port	Pondicherry - 7.3 km, SE			



Sr. No.	Particulars	Details
7.	Nearest Sea Port	Chennai Port - 134.1 km, NE
8.	Nearest Habitation	Sedarapet - 0.7 km, WSW Acharampattu - 1.4 km, ENE Akasampattu - 1.4 km, North Panjavadi - 1.8 km, NE Puducherry - 11.7 km, SE
9.	Surface water bodies	Turuvai lake - 2.2 km, North Ousudu lake - 3.2 km, South Pulichapallam lake - 3.4 km, North Katrambakkam lake - 5.0 km, North Katterikuppam lake - 6.0 km, West Kodur lake - 6.6 km, NE Pambai river - 8.8 km, SW Gingee river - 9.0 km, SSW Kaliveli lake - 10.1 km, NE Bay of Bengal - 10.3 km, ESE Velrampet Lake - 11.2 km, SE Thengaithittu Estuary - 12.9 km, SE Chunnambar River - 14.1 km, SE
10.	Seismicity	Seismic Zone - II (Zone factor, Z = 0.10) as per IS:1893-2002
11.	Hills/Valley	Nil in 10-km radius
12.	Archaeologically important places	Nil in 10-km radius
13.	Ecologically sensitive zones like Wild Life Sanctuaries, National Parks & biospheres	Ousudu bird sanctuary - 3.2 km, South
14.	Reserve Forest /protected Forest	Ousudu bird sanctuary - 3.2 km, South
15.	Defence Installations	Nil in 10-km radius
16.	Socio-economic factors	No resettlement and rehabilitation involved



Environmental Impact Assessment for the Proposed Sulphonation Plant (72 TPD of LABSA) by M/s. Power Soaps Private Limited at PIPDIC's Industrial Estate, Sedarapet, Puducherry

Executive Summary

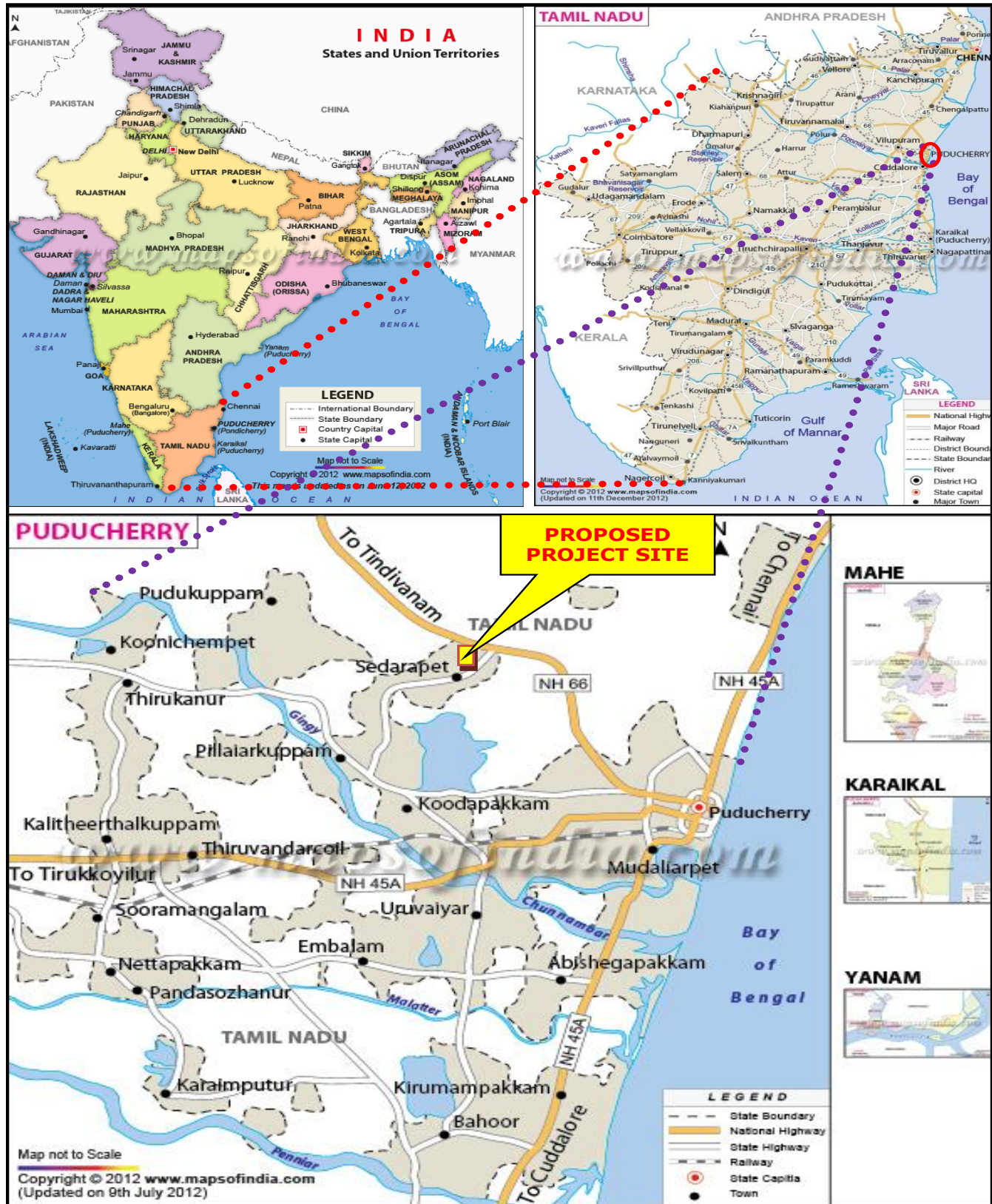
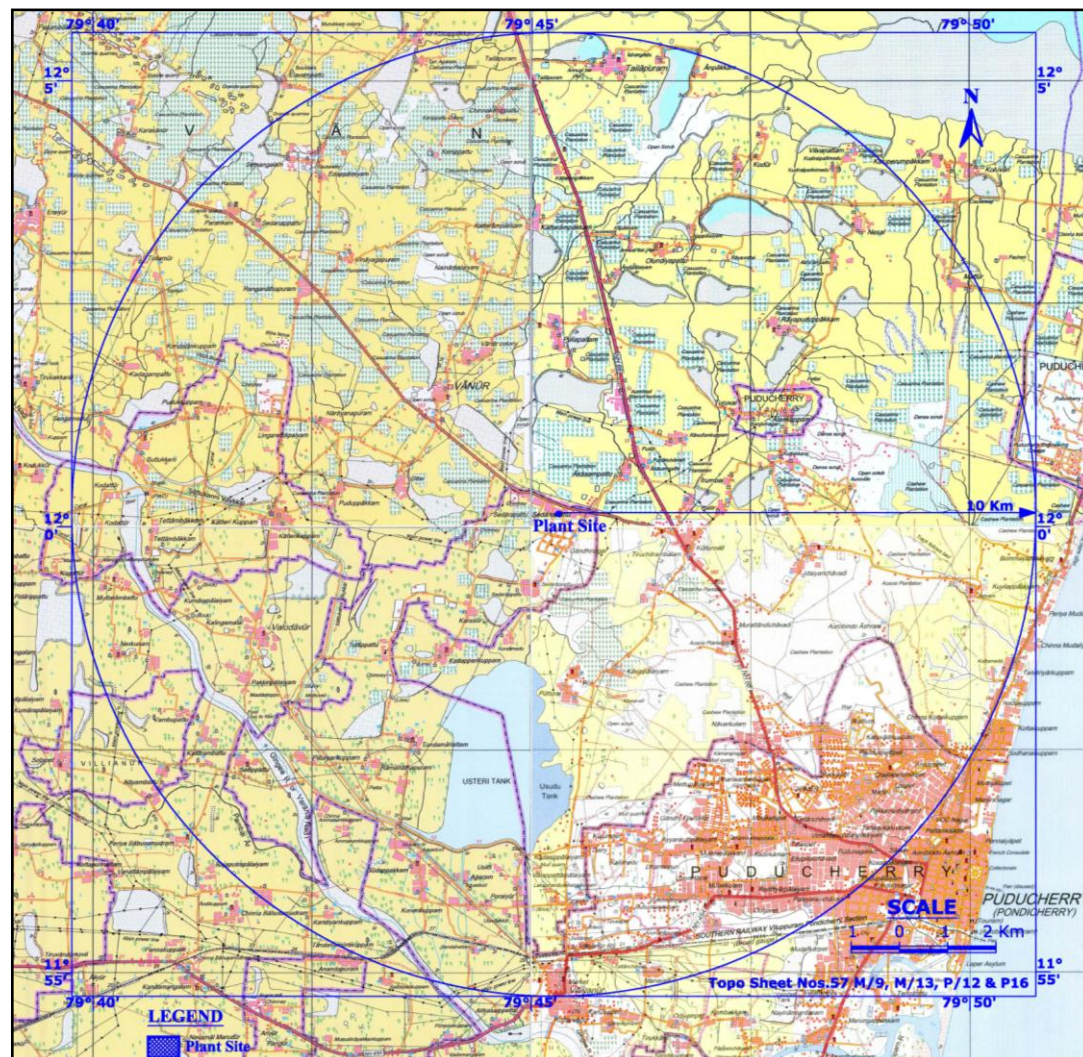


FIGURE - 2.1
INDEX MAP OF THE PROJECT SITE



CONVENTIONAL SYMBOLS		
Express highway: with toll; with bridge; with distance stone		
Roads, metalled: according to importance		
Roads, double carriageway: according to importance		
Unmetalled road. Cart-track. Pack-track with pass. Foot-path		
Streams: with track in bed; undefined. Canal		
Dams: masonry or rock-filled; earthwork. Weir		
River: dry with water channel; with island & rocks. Tidal river		
Submerged rocks. Shoal. Swamp. Reeds		
Wells: lined; unlined. Tube-well. Spring. Tanks: perennial; dry		
Embankments: road or rail; tank. Broken ground		
Railways, broad gauge: double; single with station; under constr.		
Railways, other gauges: double; single with distance stone; do.		
Mineral line or tramway. Kiln. Cutting with tunnel		
Contours with sub-features. Rocky slopes. Cliffs		
Sand features: (1) flat. (2) sand-hills (permanent). (3) dunes (shifting)		
Towns or Villages: inhabited; deserted. Fort		
Huts: permanent; temporary. Tower. Antiquities		
Temple. Chhatri. Church. Mosque. Idgah. Tomb. Graves		
Lighthouse. Lightship. Buoys: lighted; unlighted. Anchorage		
Mine. Vine on trellis. Grass. Scrub		
Palms: palmyra; other. Plantain. Conifer. Bamboo. Other trees		
Areas: cultivated; wooded. Surveyed tree		
Boundary, international		
state: demarcated; undemarcated		
district; subdivision; tahsil or taluk; forest		
Boundary pillars: surveyed; unlocated		
Heights, triangulated: station; point; approximate		
Bench-mark: geodetic; tertiary; canal		
Post office. Telegraph office. Overhead tank		
Rest house or inspection bungalow. Circuit house. Police station		
Camping ground. Forest: reserved; protected		
Spaced names: administrative; locality or tribal		
Hospital. Dispensary. Veterinary: Hospital / Dispensary		
Aerodrome. Helipad. Tourist site		
Power line: with pylons surveyed; with poles unsurveyed		

FIGURE - 2.2
STUDY AREA OF THE PROJECT SITE (10 KM RADIUS)
SURVEY OF INDIA TOPOSHEET NOS: 57 M/9, M/13, P/12 & P/16

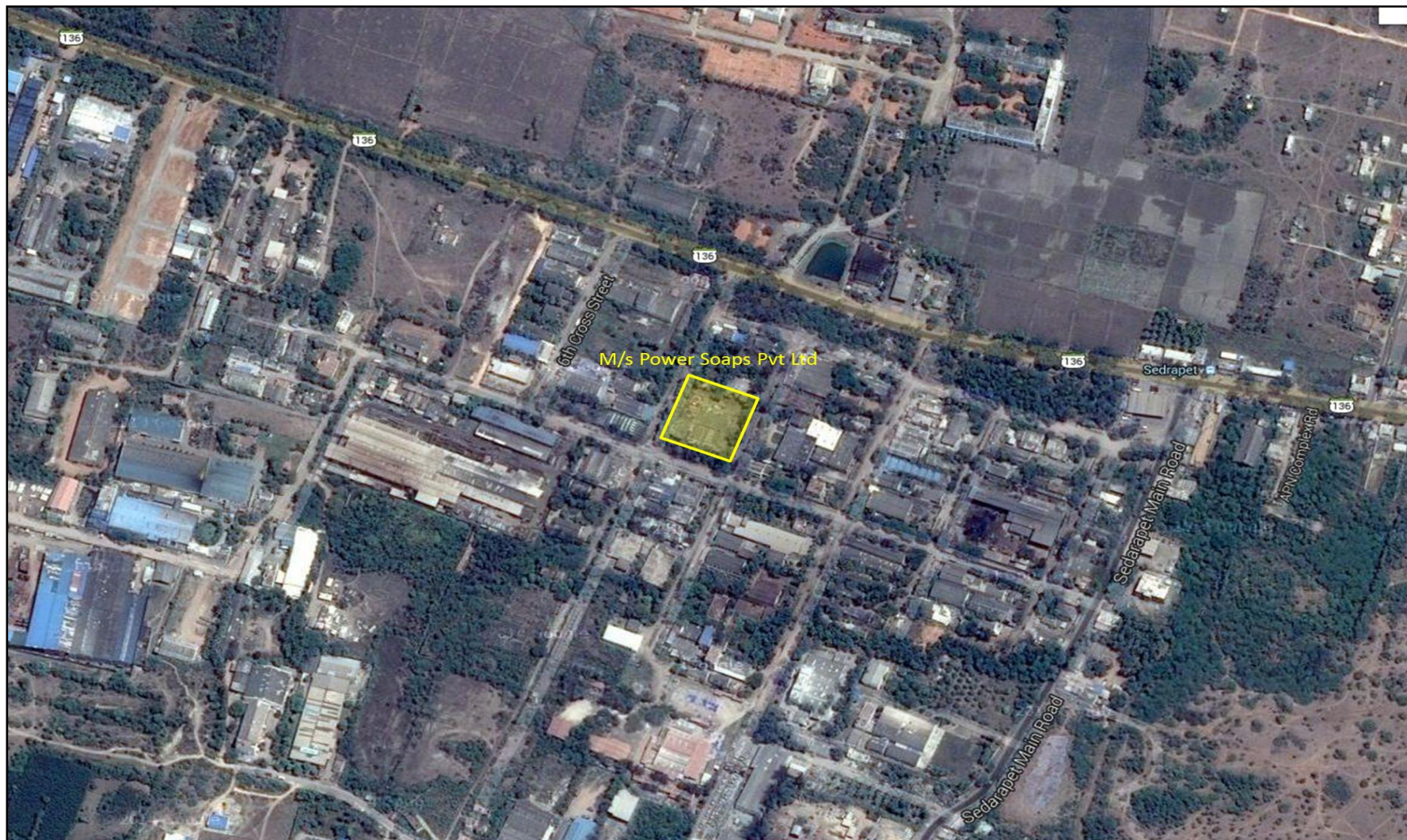


FIGURE - 2.3
AERIAL VIEW OF PROPOSED PLANT SITE



2.1 Land Requirement

The total land available under the ownership is 0.907 ha (2.24 acres). The land is already an industrially specified area and thus there will not be much change in the present land use at the proposed project site. The land break-up details are given in **Table-2.2**.

TABLE - 2.2
DETAILS OF LAND USE BREAK-UP

Sr. No.	Plant Facilities	Area (ha)	Percentage (%)
1.	Production facilities	0.234	25.80
2.	Storage Building & Tank farm	0.136	15.00
3.	Greenbelt Development	0.250	27.56
4.	Open area	0.287	31.64
	Total	0.907	100.0

Source: PSPL

2.2 Raw Material Requirement

The major raw materials required for the proposed sulphonation plant are Linear Alkyl Benzene and Sulphur. The Sulphur will be stored in the sulphur yard storage with dyke wall of area 116.0 m². The raw material requirement details and their sources are given in **Table-2.3**.

TABLE - 2.3
DETAILS OF RAW MATERIALS REQUIREMENT

Sr. No.	Material	Quantity	Source	Transportation	Storage Facility
Raw Material					
1.	Organic Alkylate	55.44 TPD	Chennai	By Road	Closed Steel Tank
2.	Sulphur	8.28 TPD	Jamnagar, Gujarat	By Road	Sulphur Yard Storage with Dyke wall
Other Chemicals					
3.	Caustic Soda Lye	50 TPA	Tamil Nadu, Maharashtra	By Road	S. Steel Tank

Source: PSPL

2.3 Manpower Requirement

The manpower required for the proposed plant will be 35 nos., which includes manager, admin staffs, supervisor and workers.

2.4 Power and fuel Requirement

The total power required for the proposed plant is about 900 KVA, which will be met from the state grid. To meet the emergency power requirement during the grid failure, a diesel generator set having capacity of 1000 KVA is proposed. The fuel required in the plant is only High Speed Diesel (HSD), which is used as fuel in generators. The requirement of HSD is about 250 lit/hr.



2.5 Water Requirement

The one time water requirement for the proposed project will be 48.5 KLD and the daily fresh water requirement will be 30.4 KLD. The domestic requirement of 1.5 KLD will be met from PIPDIC and for industrial process requirement of 28.9 KLD the water will be met from the authorized private Supplier. The water requirement details for the proposed project are presented in **Table-2.4**.

TABLE - 2.4
DETAILS OF WATER REQUIREMENT

Sr. No.	Purpose	Quantity (KLD)
One Time Water Requirement		
1	Cooling tower make-up	32.0
2	Scrubber make-up	8.0
3	Softener/Demineralization Plant	7.0
4	Domestic Requirement	1.5
One Time Water Requirement (A)		48.5
Recirculation/ Reuse of Treated Water		
1.	Demineralization Plant (Recirculation)	6.1
2.	Cooling Tower Reuse	12.0
Total Water Reused (B)		18.1
Daily Freshwater Requirement (A- B)		30.4

3.0 **BASELINE ENVIRONMENTAL MONITORING**

The baseline environmental monitoring for the environmental attributes in the study area were carried out during 1st April- 30th June, 2016. The details of the base line data are represented below.

3.1 Meteorology

The maximum and minimum temperature recorded during the study period are 41.0°C and 24.0°C. The maximum and minimum humidity observed during the study period are 83% and 58% respectively. The predominant wind directions were found to be South (16.3%) and South-east (15.5%). The predominant wind speed was 11.1-19.0 kmph respectively.

3.2 Air Quality

Ambient Air Quality (AAQM) stations were set up in Eight (8) locations. The maximum and minimum concentration for PM₁₀ were recorded as 76.4 µg/m³ and 36.4 µg/m³. The maximum and minimum concentration for PM_{2.5} were recorded as 26 µg/m³ and 9.6 µg/m³. The maximum and minimum SO₂ concentration were recorded to be 14.1 µg/m³ and 6.2 µg/m³. The maximum and minimum NO_x concentration were recorded to be 20.0 µg/m³ and 13.1 µg/m³. The maximum and minimum CO concentration were recorded to be 570 µg/m³ and 384 µg/m³. The maximum and minimum concentrations of all the above parameters were observed at Project Site-AAQ1 and Karasur-AAQ5.

3.3 Water Quality

Six (6) groundwater and two (2) surface water samples covering 10 km radial distance water samples were examined to assess the various parameters to compare the standards



for drinking water as per described IS :10500-2012.

Groundwater Quality

The analysis shows that the pH ranges in between 7.7 to 8.5. The maximum pH of 8.5 was observed at Pudupakkam (GW-3) and the minimum value of 7.7 was observed at Kutturoad (GW-5). The maximum Total Hardness was recorded as 400 mg/l (Kutturoad GW-5) and minimum value was found to be 200 mg/l (Irumbai GW-6). The maximum Total Dissolved solids (TDS) was recorded as 714 mg/l (Karasur GW-4) and the minimum value was recorded as 538 mg/l (Irumbai GW-6). Chlorides were recorded to be 99 to 174 mg/l. Fluorides ranges from 0.2 to 0.7 mg/l whereas nitrates ranges from 0.4 to 30.0 mg/l. Therefore, all above parameters are within the permissible limits.

Surfacewater Quality

The analysis results indicate that pH ranges in between 7.4 to 7.6, which is well within the specified standard of 6.5-8.5. The maximum pH was recorded at Thiruchitrabalam Tank (SW-2) and the minimum value was recorded at Usudu Tank (SW-1). The maximum TDS was observed to be 201 mg/l (Thiruchitrabalam Tank SW-2) and the minimum TDS was found to be 165 mg/l (Usudu Tank SW-1). Dissolved Oxygen was observed to be in the range of 6.0 to 6.2 mg/l. The Chlorides were found to be between 36.0 to 39.0 mg/l respectively. The Heavy metal content is below detectable limits.

3.4 Soil Quality

Six locations within 10-km radius of the plant site were selected for studying the soil quality. Its observed that the pH of the soil range from 7.0-8.1. The Electrical Conductivity was recorded to be 183-747 μ S/cm. The Nitrogen value range between 38.2-79.2 kg/ha. The Phosphorus value range between 28.1-46.3 kg/ha. The Potassium content range between 140-187 kg/ha. The Chlorides were found to be 50.2-319 mg/kg.

3.5 Noise Level Survey

The noise monitoring has been conducted for determination of ambient noise level at ten (10) locations in the study area. The day and night noise levels were monitored in the study area. The day time noise level for the industrial and residential zone were observed to be 58.5 dB (A) and 45.2 – 53.3 dB (A) respectively. The maximum noise level during day time was observed at Project Site (N1) and the minimum value was observed at Kutturoad (N8).

The night time noise level for the industrial and residential zone ranges from 53.8 dB (A) to 54.7 dB (A) and 40.1 dB (A) to 44.8 dB (A) respectively. The maximum night time noise level was recorded at Project Site (N1) while the minimum value was observed at Thiruchitrabalam (N7). The noise levels were found to be well within the norms specified by CPCB.

3.6 Ecological Studies

Ecological sampling was carried out at four (4) terrestrial locations and two (2) aquatic locations within the study area. 322 plant species were recorded and no rare plants are found around the proposed plant site. The area did not record the presence of any critically



threatened or endangered plant species. The records of Botanical Survey of India and Forest department also did not indicate presence of any high endemic or vulnerable species in this area. On the basis of field studies and secondary sources, there are faunal species belonging to Schedule-I of Wildlife Protection Act, 1972, present in the study area.

3.7 Demography and Socio-economics

The study area has a population of 6,07,629 as per 2011 census. The males and females constitute 50% each, of the total population. The average literacy rate of the people in the study area is found to be 73%. The main workers, marginal workers and non-workers constitute 41.63%, 8.0% and 58.0% of the study area population respectively.

In the study area about 25.34% population belong to Scheduled Castes (SC) and 0.71% belong to Scheduled tribes (ST) indicating that about 26.05% of the population in the study area belong to socially weaker sections.

3.8 Land Use Pattern

As per satellite imagery records, the built-up area occupies 17.9% of the total area. 14.2% land is occupied by water bodies. Crop land constitutes about 62.3% land in the study area. 5.6% land in the study area is found to be waste land.

From the 2011 Census data, the irrigated land is calculated to be 5547.56 ha and un-irrigated land covers 7511.09 ha in the study area. There is 1035.34 ha of cultivable waste land in the study area. The land not available for cultivation is 4951.15 ha.

4.0 **ANTICIPATED ENVIRONMENTAL IMPACTS AND MANAGEMENT PLAN**

4.1 **Construction Phase**

Air Quality

During construction phase, suspended particulate matter will be the main pollutant, which would be generated from the site development activities. As most of the construction equipment will be mobile, the emissions are likely to be fugitive. The dust generated will also be fugitive in nature, which can be controlled by suitable mitigation measures like sprinkling of water and development of green cover.

Mitigation Measures:

- Sprinkling of water shall be done at frequent intervals by using the truck mounted sprinklers along the roads and work zone areas to reduce the fugitive dust.
- Construction equipments shall be maintained and serviced regularly such that the gaseous emission from these equipment are maintained within the design specifications.
- To reduce the emission of SO₂ and NO_x during the construction phase, attempts shall be made to utilize the electrically powered machinery, as electrical power is available within plant site.
- Adopting good housekeeping practices will help in control of fugitive emission.
- The trucks and other vehicles shall be maintained and serviced regularly to reduce air emissions.



Water Quality

The wastewater generation during the construction period will be from the sanitary units provided for the workers. This wastewater will be treated in septic tanks and discharged into soak pits. Hence, there will not be any impact on the water regime due to discharge of sanitary treated wastewater.

Mitigation Measures:

The earthwork, if required, will be avoided during rainy season and will be completed during summer season. Stone pitching on the slopes and construction of concrete drains for storm water to minimize soil erosion in the area will be undertaken. Also development of green belt in and around the plant site will be taken up during the monsoon season. In-plant roads will be paved.

Noise Quality

The major sources of noise during the construction phase are vehicular traffic, operation of construction equipment like dozers, scrapers, concrete mixers, cranes, pumps, compressors, pneumatic tools, saws, vibrators etc. The operation of these equipments will generate noise ranging between 70-85 dB (A) near the source. These noises will be generated within the plant boundary and will be transient in nature.

Mitigation Measures:

Equipments will be maintained appropriately to keep the noise level within 85-dB (A). Wherever possible, equipment will be provided with silencers and mufflers. Construction activities will be restricted to day time only. Further, workers working in high noise areas will be provided with necessary protective devices e.g. ear plug, ear-muffs etc.

Soil Quality

No blasting is envisaged for either leveling or foundation work. The proposed construction & erection activities will not result in loss of topsoil. Apart from much localized construction impacts at the plant site, no significant adverse impact on soil in the surrounding area is anticipated.

Mitigation Measures:

- After completion of the construction phase, the surplus earth shall be utilized to fill up the low lying areas, the rubble shall be cleared and all un-built surfaces will be reinstated;
- Green belt development and related activities shall be taken up so that plantation will grow to adequate height by the time of plant commissioning;
- Species selected for plantation shall be fast growing and they shall be adaptable to local conditions. Their ability to combat localized pollution is the prime factor for their selection and placement in the planting grid/pattern. Most of the varieties shall be eco-friendly i.e. generate lot of oxygen while helping reduce/absorb gases and dust;
- Entire plant will be aesthetically landscaped and natural gradient shall be maintained as much as possible;
- Plantation outside the plant premises and in the near by villages shall be encouraged by supplying free saplings to the villagers.



Ecology

The proposed plant site is already notified as an Industrial area. Therefore, no major loss of biomass is envisaged during construction phase. A good green belt is available and even proposed within the plant premises. As the land required for the proposed plant is industrial use, there may not be any significant impact on soil and agriculture in the general area. Trees will be planted under greenbelt development to compensate the vegetation loss during construction.

4.2 Operational Phase

Air Quality

Impacts on Air Quality

Sulphur dioxide (SO₂) is the main pollutant in the sulphonation process. So the incremental ground level concentrations of SO₂ from the proposed process have been estimated by using dispersion modeling. The details of the stack emission from the proposed plant is shown in **Table-4.1**.

TABLE - 4.1
DETAILS OF STACK EMISSIONS FROM THE PROPOSED PLANT

Parameters	Units	Stack-1
Stack attached to	---	Sulphonation Plant
Stack Height	m	38.0
Stack diameter	m	0.45
Temperature	°C	30
Exit Gas velocity	m/s	7.75
Flow rate	Nm ³ /hr	5431
Sulphur dioxide	g/s	5.28

From the modeling results, the resultant ground level concentrations of SO₂, after the implementation of the proposed project, is found to be 18.6 µg/m³. This indicates that the SO₂ concentration is likely to be well within the prescribed limit for residential and rural zone, even after the proposed plant comes into operation.

Mitigation Measures:

- The SO₂, acid mist and other volatile gases coming from the sulphonation process will be cleaned by taking the gases first through an ESP to remove the acid mist, followed by alkali scrubber to remove the SO₂ gas contaminants.
- Highly improved ceramic packing will be used in towers for proper absorption.
- Sharp bends will be avoided in the design to avoid leakage and usage of good quality materials in fabrication will be ensured.
- Proper online SO₂ analyzer at the stack outlet point and ambient air quality monitoring stations in the corners of the industry will be installed.



Water Quality

Impacts on Water Resources

The one time water requirement will be 48.5 KLD and the daily fresh water requirement will be 30.4 KLD. Water for industrial requirement of quantity 28.9 KLD, will be sourced from the private supplier. For domestic requirement (1.5 KLD), the water will be sourced from PIPDIC. Therefore, the impact on the water resources will be insignificant.

Impact on Water Quality

The wastewater generated from the processes and auxiliary facilities will be treated in Effluent Treatment Plant and sanitary wastewater will be treated in the Septic Tank followed by dispersion trench. The entire treated wastewater will be reused for industrial process and green belt development. No wastewater will be discharged outside the plant premises. Hence, there will be no impact on the water regime due to the effluents from the proposed project.

Mitigation Measures

- The effluent generated from the various processes will be 14.3 KLD, which will be treated in the proposed ETP and reused for cooling tower make up (12.0 KLD) and greenbelt maintenance (2.3 KLD).
- The Condensate return (6.1 KLD) from the boiler after evaporation and steam loss will be recirculated to the demineralization plant, until there is any source of contamination or dissolved solids contained within the system.
- Appropriate rainwater harvesting structures will be constructed within the premises to conserve water resources and rainwater in the proposed project.

Noise Quality

Impacts on Noise Quality

The main noise generating sources are blowers, centrifugal pumps, compressors and stand by DG sets. The noise levels at the source for these units will be in the range of 80 – 90 dB(A). The noise dispersion from the plant units has been computed based on the mathematical modeling. The predicted noise levels at the boundary due to various plant activities are ranging between 30.0 to 54.0 dB (A). It is seen from the simulation results that the incremental noise levels do not contribute to violation of CPCB standards.

Mitigation Measures:

- All the design/installation precautions as specified by the manufacturers with respect to noise control will be strictly adhered to;
- Provision of acoustic enclosure for the equipment like DG set;
- Selection of low noise equipment like closed type Compressor, isolation of noisy equipment from working personnel;
- Personnel working in noise generation areas will be provided with ear muffler;
- All rotary equipment like fans, blowers, pumps and compressors will be of low noise design;



Soil Quality

The impact on the topsoil will be confined to the main plant area. The air borne fugitive dust from the plant is likely to be deposited on the topsoil in the immediate vicinity of the plant boundary. Good green belt development has been envisaged to further arrest the fugitive emissions.

Impact due to Solid Waste

The solid waste generated from the proposed sulphonation plant will be spent catalyst, sulphur ash and ETP sludge. The sulphur sludge (3.3 kg/day) generated will be deposited in sulphur melter process. The spent catalyst (0.3 TPA) will be generated during the turnaround time of the plant i.e., when the plant is shutdown for annual maintenance jobs. For every shut down about 300-kgs/annum of spent catalyst will be generated.

Solid Waste Management

- The spent catalyst removed during annual shut-down will be collected in HDPE Bags, packed in drums and will be sent to the supplier for reconditioning.
- The sulphur ash (0.7 TPA) and sulphur sludge (3.3 kg/day) will be collected in HDPE Bags, stored in hazardous waste storage room and it will be disposed in the secured land fill facility located at Gummidipoondi.
- The scrubber residue (4.5 TPA) generated will be concentrated and reused in detergent industry.

Impact on Ecology

Impacts on Terrestrial Ecology

The impact on terrestrial ecology may occur due to emission of gaseous pollutants like SO₂, SPM and NO_x. The main sources of air pollution from the proposed project would be the stack attached to sulphonation plant and the main pollutant is Sulphur dioxide only. The incremental concentrations predicted from the air dispersion modeling simulations are well within the permissible NAAQ limits (2009). Hence, no impact is envisaged on the surrounding terrestrial ecology.

Impact on Aquatic Ecology

Since the unit will be operating on zero discharge process and no perennial nallahs or streams are present in the study area, no adverse impact on aquatic ecology is envisaged.

Impact on Migratory Paths for Wild life

As per the Forest Working Plans, there are no identified migratory paths for major and minor wild life in the project site and the study area. The identified avi-fauna, which are observed in the project site and in the study area, are local migrants only. Therefore, the proposed plant operations are not likely to have any adverse impact on the paths for avi-fauna.



Socio-economic Impacts

The proposed project will be carried out in a notified Industrial area (PIPDIC). Hence no impact on external human settlements is envisaged. The proposed activities will provide indirect employment to persons of different skills. The local population is the largest beneficiary among the employees.

5.0 ENVIRONMENTAL MONITORING PROGRAMME

The environmental monitoring program 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 CPCB/PPCC. The frequency of air, noise, ground water sampling and location of sampling will be as per the directives of Pondicherry Pollution Control Committee.

5.1 Cost Provision for Environmental Measures

The capital cost of the project is about Rs. 575 Lakhs. It is proposed to invest about Rs. 35-Lakhs, i.e. 6.0 % of the capital cost on pollution control, treatment, green belt development, rainwater harvesting, environmental monitoring systems and others. The break-up of the investment is given in **Table – 5.1**.

TABLE-5.1
COST PROVISION FOR ENVIRONMENTAL MEASURES

Sr. No.	Description of Item	Capital Cost (Rs. in Lakhs)	Recurring Cost (Rs. in Lakhs)
1	Air pollution control systems	13.0	1.6
2	Water pollution control system	9.0	1.4
3	Environmental Monitoring	5.0	0.8
4	Greenbelt development, rainwater harvesting and others	8.0	1.2
Total		35.0	5.0

6.0 DISASTER MANAGEMENT PLAN

To tackle the consequences of a major emergency inside the factory or immediate vicinity of the factory, a Disaster Management Plan has to be formulated and this planned emergency document is called "Disaster Management Plan".

The objective of the Industrial Disaster Management Plan is to make use of the combined resources of the plant and the outside services to achieve the following:

- Effect the rescue and medical treatment of casualties;
- Safeguard other people;
- Minimize damage to property and the environment;
- Initially contain and ultimately bring the incident under control;
- Identify any dead;
- Provide for the needs of relatives;
- Provide authoritative information to the news media;
- Secure the safe rehabilitation of affected area;



6.1 Occupational Health and Safety Measures

Occupational health needs attention both during construction and erection and operation and maintenance phases.

Erection Phase

The occupational health problems envisaged at this stage can mainly be due to constructional accident and noise. To overcome these hazards, in addition to arrangements to reduce it within TLV's, personal protective equipment should also be supplied to workers.

Operation and Maintenance

The problem of occupational health, in the operation and maintenance phase is due to noise hearing losses. Suitable personnel protective equipment should be given to employees. Full fledged hospital facilities should be made available round the clock for attending emergency arising out of accidents, if any. All working personnel should be medically examined at least once in every year and at the end of his term of employment.

7.0 PROJECT BENEFITS

The proposed plant will result in improvement of infrastructure as well upliftment of social structure in the area. It is anticipated that the proposed project will benefit the locals in two phases i.e, construction phase as well as operational phase of the proposed plant.

7.1 Construction Phase

An indirect employment for about 120 peoples will be created by the proposed project during the construction phase, which will last for over 6 months from the start of project execution activities at site. These construction workers will be taken from the study area to the extent possible.

7.2 Operational Phase

The total manpower required for the proposed project during the operation phase will be about 35 persons for direct activities and about 60 persons for indirect activities which would be mainly sourced from local community in and around the study area and few technical persons will be employed from outside area.

7.3 Corporate Social Responsibility Policy

M/s. PSPL has developed the policy in consonance with Section 135, Companies Act 2013 on CSR and in accordance with the CSR Rules notified thereof by the Ministry of Corporate Affairs, Government of India in 2014. The budgetary allocation for the CSR activities is given in **Table-7.1**.



TABLE-7.1
CORPORATE SOCIAL RESPONSIBILITY ACTION PLAN

Sr. No.	Activity	Investment (Rs. In Lakhs)
1	Tree Plantation	1.0
2	Safe drinking water for nearby Villages	3.8
3	Bus Shelters at nearby villages	3.0
4	A medical camp with free medicine for nearby poor villagers	1.5
5	Distribution of free note books for poor and financial help for meritorious poor students	5.0
Total		14.4

Source: PSPL

8.0 CONCLUSION

The proposed plant will have certain level of marginal impacts on the local environment. However, development of this project has certain beneficial impact/effects in terms of providing employment opportunities during both constructional and operational phases.

Thus, it can be concluded that with the judicious and proper implementation of the pollution control and mitigation measures, the proposed project will be beneficial to the society and will help reduce the demand – supply gap of LABSA. It will also contribute to the economic development of the region in particular and country in general.