



**M/S AHIR SALT & ALLIED
PRODUCTS PVT. LTD.**

**Executive Summary of Environmental
Clearance & CRZ Clearance for Revival of
Existing Jetty with Liquid Storage
Terminal, Pipeline, road connectivity,
Railway line and sidings at Mithirohar
near (Kandla), Gandhidham, Kutch**

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Kadam

Environmental Consultants
www.kadamenviro.com

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EXECUTIVE SUMMARY

1.1 Introduction about the Project

M/s Ahir Salt & Allied Products Private Limited is located in Kandla Port area. Among this M/s Ahir Salt have 1317.56 acre land under lease, from Government of Gujarat for salt production. Out of this lease area, 94.56 acre land will be converted as back up area for jetty development and already applied for conversion of the lease area of 94.56 acre land for Port purpose. As per gazette notification of GOG, Mithi Rohar port limits are provided Chapter 2. ASAPPL proposes revival of existing jetty with liquid storage terminal, pipeline, road connectivity, railway line and sidings. Proposed Jetty to handle 0.30 MMTPA liquid cargo and 0.60 MMTPA solid cargo. Overall water front length of the jetty will be 230 meter.

Details of liquid & solid storage terminal and pipe line route are prescribed below:

Table 1: Total Cargo Storage Capacity and Pipeline Route Details

S. No.	Chemicals	No. of Tanks	Storage Tank Capacity in KL	Total in KL
1	Liquid cargo: Chemicals Class A/B/C or Unclassified chemicals such as Acetone, Benzene, EDC, Ethyl alcohol, Hexane, IPA, Methanol, Solvent Naphtha (C9), Toluene, ACN, N-Butanol, Phenol, Aniline Oil, Cyclohexanone, Nonene, Para Xylene, LDO, FO, Crude oil, Fuel oil, Motor Spirit, Kerosene, Aviation fuel, HSD, Lubricating Oil, Naphtha, Furnace Oil, Low Sulphur heavy stock, MEK, MIBK, Butyl acetate, IBA, Ortho xylene	9	2916	26244
	Total (A)	9	2916	26,244
2	Edible Oil and Non-edible Oil	11	2916	32078
		8	1866	14928
		1	1568	1568
		15	1178	17670
	Total (B)	35	-	66,244
3	Total (A+B)	44	-	92,488

Table 2: Details of Solid Cargo

Chemicals	Storage Capacity in MT
Solid Cargo: Salt, Coal, Sulphur, Rock Phosphate, Minerals, Scrap, Fertilizer, Other Bulk Cargo, Timber logs	2,40,000

Table 3: Pipeline Details

S. No	Area	Diameter	No. of Pipe	Pipeline Length
1	Proposed terminal to Proposed jetty	12"	12	~1000 m
2	Proposed terminal to railway siding	10"	2	~1000 m
3	Proposed terminal to Y junction of KPT Jetty	10"	1	~3000 m
		12"	1	~3000 m
		8"	1	~3000 m
		14"	1	~3000 m
		12"	1	~3000 m
		10"	1	~3000 m

1.2 Project Details

Power Requirement

The required power shall be sourced from PGVCL, Two Generator Sets shall be provided as standby arrangement, 250 KW for Jetty area and 1500 KW for back-up area

Stack Details

S. No.	Stack Attached to	Capacity	Stack Nos.	Type of Fuel used	Fuel consumption
1	D. G. Set-1	250 kW	1	HSD	41 kg/hr
2	D. G. Set-2	1500 kW	1	HSD	246 kg/hr

Water Requirement

Total water consumption is estimated to 45 KLD for the entire plant and the total wastewater generation from the proposed unit will be 35 KLD including domestic sewage and washing effluent.

S. No.	Description	Water consumption in KLD	Wastewater generation in KLD	Remark
1	Domestic	30	25	To STP and use for on land irrigation
2	Washing	10	10	To ETP and use for on land irrigation
3	Gardening	0	Nil	Recycled water from STP
4	Firewater	5	0	-
	Total	45	35	

Wastewater Disposal

The wastewater generated from the washings will be treated in ETP (10 KLD capacity) and treated water will be used for gardening, while the domestic sewage will be treated in STP (25 KLD capacity) and treated sewage will be used from on land irrigation to reduce the fresh water demand.

Solid & Hazardous Waste Details

The non-hazardous waste like paper, plastic, metal and wooden waste will be handed over to authorized reprocessors. Hazardous waste will be generated of used oil, Oil waste, ETP sludge and pigging waste. For disposal of Hazardous/Incinerable waste, ASAPPL has taken provisional certificate from Saurashtra Enviro Projects Private Limited (SEPPL). The used oil will be sold to authorized vendors.

Cost of Project

Total estimated cost for the proposed revival of jetty is INR 242,46,10,290 out of which INR 160,53,98,790 will be for back-up area and INR 81,92,11,500 will be for construction of jetty.

1.3 Description of Environment

The baseline environmental quality was assessed through field studies within the impact zone for various components of the environment viz. land, air, noise, water, ecological environment and socio-economic environment with specific reference to environmental aspects, which may have a bearing on the impacts of the proposed project. The baseline environmental quality was assessed in one season i.e. summer 2015 by Kadam Environmental Consultants.

Land use

The study area covers a distance equal to 10 km from the project boundary. Salt pans are the most dominant land use class in the study area. The considerable part within study area has been occupied by terminals and ware houses have been classified as industrial land use. It is concluded that the project would lead to change in land Use from salt pan to built up land.

Air Environment

The ambient air monitoring work was carried out in the month of April, 2015 to June, 2015. Six locations were selected for ambient air quality parameters. Observations shown from the results are as follows:

- At various locations, average concentration of PM₁₀ was observed to be varying from 35 to 52 µg/Nm³. An average concentration of PM₁₀ levels are well within the permissible limits for all locations.
- An average concentration of PM_{2.5} levels was observed to be in range of 12 to 18 µg/Nm³ which is less than the permissible limits for all locations.
- An average concentration of SO₂ levels was observed to be in the range of 8.6 to 9.6 which is within the specified limit of CPCB.
- NO_x levels were observed to be in the range of 14.2 to 16.8 which is within the specified limit of CPCB.

Noise Environment

Noise readings were taken at five different locations within the study area near-by sensitive locations. Noise levels were observed lower except on the high way due to vehicular traffic. Noise will not increase level appreciably during construction phase or operation phase as existing jetty had noise level well below the industrial range of OSHA specifications.

Water Environment

Ground Water Quality

The grab samples were manually collected and analyzed as per APHA Standard Methods (20th Edition, 1998) for the parameters given in the EIA Manual of MoEF (January 2001). Two locations were selected for groundwater sampling.

It was observed from the groundwater analysis report that, all the parameters are within the permissible limit.

Surface Water Quality

The grab samples were manually collected and analyzed as per APHA Standard Methods (20th Edition, 1998) for the parameters given in the EIA Manual of MoEF (January 2001). Only one sample has been collected from surface water as surface water body coming in the study area are dry due to less monsoon.

Soil Environment

Sampling locations within 10 km radial distance from the project site of study area were identified for collection of soil samples. Assessment of soil physical properties revealed that porosity ranged from 50 to 59 % and WHC (water holding capacity) varied from 27.50 to 59.10 %, while soil permeability ranged from 11.8 to 25.2 mm/hr. Very low to medium permeability indicates silt loam to sandy texture of soils and presence of exchangeable sodium, which hampers permeability of soil. Over all soil quality data reveal that soil amendments like organic manure and acid forming agents like sulphur or iron pyrites and growing of salinity/sodicity tolerant plant spp. is required for green belt development.

Biological Environment

Terrestrial

Most of the area on the left side of approach road towards jetty is salt pans. Landward of these creek, there exist a vast inter tidal zone of marshy land with the sparse mangrove vegetation. Due to hyper salinity no vegetation grows in such lands other than mangroves and salt tolerant halophytes species. The vegetation mostly comprises of open scrub vegetation. *Prosopis juliflora* (Jangali Babul) is observed to be dominant in the study area. No forest land comes under study area. The vegetation type is subtropical coastal thorny scrub jungles with trees predominantly moist deciduous type but rarely evergreen. The natural vegetation is scarce, scattered and open. In all other areas, the trees are dominated by *Acacia nilotica* and *Prosopis juliflora*.

Marine/ Coastal

A total of 29 species representing 15 genera of Phytoplankton were recorded during survey. Species composition showed that genera like *Chaetoceros*, *Ceratium*, *Pleurosigma*, *Nitzschia*, *Biddulphia*, and *Rhizosolenia* were dominant in terms of number of species represented. A total of 12 genera/groups of zooplankton were recorded during this survey. Species composition showed that all the genera were represented by a single species except genera like *Euchaeta*, *Paracalanus* and other crustacean species which were represented as individual. Benthic population density in all the four stations varied from 125 to 325/ m². The maximum benthic population has been recorded in intertidal zone which were dominated by crustaceans and in subtidal it was dominated by polychaetes.

1.4 Anticipated Environmental Impact Identification, Prediction & Mitigation Measures

Air Environment

During Construction Phase

During construction phase, for equipment/ material movement trucks and trailers shall be deployed from manufacturer's locations. Due to the movement of vehicles for transportation of construction material required during construction phase, marginal increase in the levels of particulate matter (PM), carbon monoxide (CO) and hydrocarbons (HC) are envisaged. However, this increase in concentration of pollutants would be of temporary in nature and localized.

During Operation Phase

Impact on ambient air during operation phase would be due to;

- SO₂ , NO₂ , PM₁₀ emission due to operation of DG sets of various capacity using HSD as fuel;
- Particulate matter from activity like loading /unloading, stacking of solid cargo at site;
- VOC and Hydrocarbon emission due to conveying/transferring, storage of liquid cargo at site;
- Emission of Coal Storage Yard

Mitigation Measures

Mitigation measures for air quality impacts during construction phase:

- All vehicles delivering construction materials to the site shall be covered to avoid spillage of materials and maintain cleanliness of the roads.
- Attenuation of pollution/protection of receptor through greenbelt/green cover.
- Regular monitoring of air pollutant concentrations.
- All trucks shall be PUC Certified from time to time.
- All Storage yard shall be covered.

Noise Environment

The proposed project related activities will lead to emission of noise that may have minor impact on the surrounding communities in terms of minor increase in noise levels. The potential impacts on noise level may arise out of the following:

- Noise from machinery/equipment
- Noise from vehicle/traffic
- DG Sets

Mitigation Measures

Mitigation measures for noise will include the following:

- Acoustic Enclosures on all major equipment in the plant will be provided for noise attenuation
- Workers will also be provided with suitable personal protective equipment (PPE) such as earmuffs and earplugs
- Rotation of workers
- High noise generating areas would be identified and tags marked.
- Green belt will be developed to reduce noise

Water Environment

In the proposed project water will be available from GWIL. The water will be mainly used for domestic, washing and fire water make up. The major requirement of water is for domestic purpose. For reducing the fresh water demand, treated water will be completely recycled and reuse for gardening. So natural water sources will be conserved and quality of water sources will not pollute due to proposed project activities. Hence no major impact on surface water quality and sources will be envisaged.

Mitigation Measures

Following mitigation measures will be implemented to reduce surface water related impacts:

- Fresh water demand will be reduced by recycling and reuse of treated water and avoiding the leakage of raw water at various source.
- For greenbelt development, provide drip irrigation /sprinkler system to reduce the fresh water requirement.
- Proper operation and maintenance of effluent treatment plant will be done to ensure meeting specified standards.
- No discharge of untreated waste water on land to avoiding leakages;
- Use of spill control measures, mechanical handling, PPE's shall be mandatory while handling the chemicals as well as handling and treatment of liquid and solid waste.
- Separate drainage for storm water and effluent will be provided to avoid any contamination of surface water sources;
- All chemical and fuel storage, handling areas will be provided with proper bunds to avoid run-off contamination during rainy season.
- Implementation of Rainwater harvesting scheme in nearby village which is non-saline.

Soil Environment

Impact Identification

Construction waste and solid waste will be generated. Leakage and spillage of chemicals during transportation.

Mitigation Measures

- Excavation work may increase soil erosion, take care to maintain soil level.
- Dredging may deteriorate soil quality, dispose it at the earmarked space.
- Accidental oil spillage may contaminate soil, decontaminate by using organic manures coupled with a bacterial spp Pseudomonas.
- If soil becomes alkaline use acid forming agents like iron pyrite or sulfur

Biological Environment

Impact Identification

- Site specific disturbance to normal faunal movements at the site
- Site specific disturbance to Greater flamingos and herons
- Site specific loss of primary productivity and destruction of benthos
- Spill residue will contaminate sub tidal and intertidal benthic habitat and loss of fishery

Mitigation Measures

It's salt pan and mudflat area with no vegetation except few halophile species. However Greenbelt / plantation will be developed in periphery of the project boundary, which will improve floral and faunal diversity of the project area. Piling should be done in closed vessels to minimize the impact. The impact will be temporary during the construction period only and structures such as embankments, piles and landing quay would provide additional habitats for some benthic organisms to settle and grow. Structures such as embankments, piles and landing quay would provide additional habitats for some benthic organisms to settle and grow. Proper care should be taken during waterfront maintenance and marine environmental monitoring should be done periodically

Socio-Economic Environment

- The proposed activities shall generate indirect employment in the region due to the requirement of workers, supply of raw material, auxiliary and ancillary works, which would marginally improve the economic status of the people.
- The activities would result in an increase in local skill levels through exposure to activities.
- As the existing loose / soft surface roads, may be upgraded to facilitate the movement of the heavy equipment required, the project in turn would lead to improvement in transport facilities.

1.5 Occupational Health Management

- Medical checkup should be carried out
- During construction and operation phase proper care should be taken, appropriate PPEs should be provided to site workers and staff members,
- ASAPPL has already developed and implement a spill management plan to prevent risk of spill which may cause health problem. The same practice should be continued after proposed expansion.
- Safety training should be provided to all the employees and contract workmen

1.6 Risk Assessment & Disaster Management Plan

Consequences in terms of fire, explosion and toxic scenarios due to partial or full rupture of storage tanks and pipelines and recommendation of risk mitigative measures. Disaster Management Plan (DMP) has also been delineated covering onsite and offsite emergency scenarios.

The hazards associated with the various units have been identified and categorized based on the computation of Fire and Explosion Indices. Maximum Credible Accident (MCA) analysis has been carried out to arrive at the hazard distances for fire and explosion scenarios. Accidental scenarios such as jet fire, pool fire and toxic effects in case of partial and full rupture of storage tanks and pipelines have been taken as worst case scenarios.

The damage distances for storage tanks as well as pipelines are computed by using DNV based PHAST 7.0 and 7.1 software at various atmospheric stability classes and wind velocities. The distances are tabulated at different heat radiation levels for fire scenario and at overpressure levels for explosion scenarios. The effective distances for toxic chemicals are given at IDLH concentrations. The damage contours have been plotted on plot plans to study the effect on the adjacent units.

Safety Measures to be adopted for Storage Facilities

- All storage tanks should be constructed as per applicable ASTM / API Code.
- All storage tanks should have level monitoring system to arrive at actual quantity of chemicals stored.
- All tanks should be provided with level indicators.
- Remote operated valves should be provided at the tank outlet nozzles to shut off from control room.
- Safety valves with safety hatch should be provided on each tank as per design code.
- UPS system for control room & instrument systems should be provided.
- Leak detectors & alarm system should be provided.
- Regular training should be provided to operators for safe plant operations & emergency shutdown procedures.
- Periodic inspections of storage tanks should be done

1.7 Hydrodynamic Modeling

The model domain, covering the proposed area of development, was reproduced in the MIKE 21 FM hydrodynamic model. The entire Kandla creek system extending up to Surajbari from Phang and Sara, Nakti creek and Hansthal creek are reproduced in the model. The MIKE 21/3 Oil Spill Model is used for modelling the oil discharged or accidentally spilled in lakes, estuaries, and coastal areas or to the open sea. Advanced 21/3 modeling techniques were used to simulate the water hydrodynamics and oil weathering and transport in the Kandla region. Calibration and verification of this module is done with hydrodynamics and sediment transport studies carried out separately. The study has indicated the movement of oil spill towards Phang and Sara creek system beyond the port area. Since, Phang and Sara creeks are shallow and no major aquatic life and mangroves prevail around these creeks, spillage if at all occur may not have any adverse impact in the region due to heavy wind and prevailing hydraulic conditions all along.

1.8 Environmental Management Plan (EMP)

The Environment Management Plan (EMP) is prepared with a view to facilitate effective environmental management of the project, in general and implementation of the mitigation measures in particular. The EMP provides a delivery mechanism to address potential adverse impacts and to introduce standards of good practice to be adopted for all project works. For each stage of the programme, the EMP lists all the requirements to ensure effective mitigation of every potential biophysical and socio-economic impact identified in the EIA. For each impact or operation, which could otherwise give rise to impact, the following information is presented:

- Role of ASAPPL and its contractors;
- A comprehensive listing of the mitigation measures (actions) that ASAPPL shall implement;
- The parameters that shall be monitored to ensure effective implementation of the action;
- The timing for implementation of the action to ensure that the objectives of mitigation are fully met.

1.9 Conclusion

It can be concluded on a positive note that after the implementation of the mitigation measures and environmental management plans, the project activities during the construction and operation phase would have manageable & largely reversible impacts on the environment, and on balance, the project would be beneficial to surrounding communities and the region.



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CONTACT DETAILS

Vadodara (Head Office)

871/B/3, GIDC Makarpura, Vadodara, India – 390 010.
E: kadamenviro@kadamenviro.com; T: +91-265-3001000

Delhi / NCR

Spaze IT Park, Unit No. 1124, 11th Floor, Tower B-3, Sector 49, Near Omaxe City Center Mall, Sohna Road,
Gurgaon, India – 122 002
E: delhi@kadamenviro.com; T: 0124-424 2430-436