

EXECUTIVE SUMMARY

M/S. INDIAN OIL CORPORATION LTD

(Construction of New LPG Bottling Plant)

Indane LPG Bottling Plant, Umiam, Near Shillong, Ri-Bhoi, Meghalaya



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PREPARED BY

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1.0 INTRODUCTION

1.1 *Back Ground*

The Indian Oil Corporation Limited (IOCL), a Central Public Sector Undertaking attached to Ministry of Petroleum and Natural Gas, Govt. of India is proposing to construct New LPG Bottling Plant of Bottling capacity 30 TMTA in Meghalaya. IOCL is the prestigious Fortune 'Global 500' listing Indian company and one of the premier PSUs engaged in the production and marketing of its products in the country. To cater requirement of petroleum products, IOCL has installed LPG Bottling Plants in almost all states of our country to meet demand of Domestic LPG Cylinders.

M/s. IOCL has appointed SV Enviro Labs & Consultants, Visakhapatnam for preparation of EIA/RA Reports for proposed project in order to seek Environmental Clearance. SV Enviro Labs & Consultants is a QCI-NABET accredited EIA consultancy for “Isolated storage & handling of Hazardous Chemicals”.

1.2 *Structure of EIA Report*

The EIA report has been prepared and aligned as per “Generic Structure of EIA/EMP/RA Report” required by the MoEF&CC, Govt. of India as per the general condition stipulated in the EIA notification. The salient features of the report have been projected by identifying the environmental and ecological stressors. The impact assessment has been presented by making compliance with the threshold limit of the environmental and ecological stressors and other norms available through government or non-government agencies.

The Environmental Impact Assessment Documentation has been prepared in terms of EIA notification of the MoEF&CC dated 14-9-2006, as amended on 1st Dec 2009, 4th April 2011 and as per approved Terms of Reference for seeking Environmental Clearance for M/s Indian Oil Corporation Limited, Construction of new LPG Bottling Plant situated at Umiam (V), Ri-Bhoi (D), Meghalaya, India falling under category “B”.

1.3 *Project Proposal*

IOCL, Meghalaya proposes to establish new LPG plant for bottling and storage facilities at Umiam (V), Ri-Bhoi (D), Meghalaya. The proposed storage capacity is 3x150 MT LPG, while bottling capacity is 30 TMTA.

The LPG bottling plant will be operated in two shifts/day and 300 days/year to achieve the targeted production by making use of facilities listed.

1.4 Project Location

The Proposed project is located at Umiam (V), Ri-Bhoi (D), Meghalaya, India. The project area falls under

Latitude : 25°40'52.60"N

Longitude : 91°54'33.51"E

2.0 EXECUTIVE SUMMARY

The Executive Summary covers the following chapters in brief:

1. Project Description
2. Description of Environment & Identification of Impacts and Mitigation Measures
3. Significance & Project Benefits
4. Environmental Management Plan

2.1 Project Description

Goal and Objectives:

The goal of the project is to attain rural penetration of IOCL bottled LPG Cylinders in the State of Meghalaya in a Safe & Environmental friendly way, and the objectives to attain this goal would be construction & operation of 3x150 MT Mounded Storage Vessels, Bottling Capacity of 30 TMTPA LPG Cylinders by following all applicable Safety & Environmental Regulations prevailing in the region.

Proposed Facilities

The salient features of the project proposed to construct 3x150 MT Mounded Storage Vessels, Bottling Capacity of 30 TMTPA LPG Cylinders in an area of 17.0 Acres is as follows:

Table: 1 Proposed Infrastructure at M/s IOCL LPG Bottling Plant

Sr. No.	Description	Size, M ²
1.	Security Room at Gate - 0	12M x 5M
2.	Security Room at Gate – 1	6M x 5M
3.	Security Room at Gate - 2	6M x 5M
4.	Control Room cum S&D	25M x 8M
5.	Office building (2 storey)	10M x 10M
6.	PMCC	10M x 20M
7.	DG Room	10M x 10M
8.	Car Scooter Parking	5M x 20M
9.	Canteen, Amenity & Contract Labour Change Room (2 storey)	10M x 8M
10.	Store	24M x 10M
11.	U/G Water Tank	10M x 8M
12.	Fire Pump & Air Comp. House	25M x 10M
13.	3 Nos. Fire Water Tank	11.25M x 16MØ
14.	HSD	15M x 15M
15.	Cylinder Deshaping Unit	5M x 5M
16.	Cylinder Scrap Yard	15M x 10M
17.	Scrap Yard	10M x 10M
18.	Loading Overhang for Trucks	9M x 12M
19.	Loading Shed	12M x 16M
20.	Filled Cylinder Shed	10M x 25M
21.	Connecting Platform	16M x 5M
22.	Empty cum Filling Shed	90M x 25M
23.	Unloading Shed	12M x 16M
24.	Unloading Overhang for Trucks	9M x 12M
25.	LPG Pump/Compressor House	30M x 8M
26.	Cooling Tower	3M x 3M
27.	Mounded Storage Vessel	3 x 150 MT
28.	Tanker Lorry Decanting Unit (4 Bays)	24M x 15M

29	Drivers Rest Room	--
30	Bulk Truck Parking Area	--
31	Packed Truck Parking Area	--

- Fire Fighting system is consists of automatic sprinkler system will be provided at all LPG handling areas/sheds covered with network of hydrants & monitors as per requirement of OISD-144
- Hydrant network as above shall further be extended for storage vessels area.
- Ring Main Hydrants will be provided with Fire Hydrants & Monitors at strategic locations as per OISD-144

2.2 *Description of Environment & Identification of Anticipated Impacts*

Description of baseline environmental status and the impact on the existing environment after construction and operation of the proposed project have been detailed with respect to the following components of the environment. The existing status of important environmental components and impact of project activities on them is summarized below.

Land Environment:

The proposed Mounded bullets shall be installed in an area of 17.0 acres available. Hence there is no change in land use pattern.

There is minor quantity of solid and hazardous waste generation due to the proposed project and will be handled scientifically due to this there may not be any adverse impact on land is envisaged. Land use pattern and landscape will not be altered due to the construction & operation of the proposed facilities at barren/scrub area.

To characterize the nature of soil, samples from five locations in different directions within the study area were collected and characterized.

The pH of the soil is an important property; vegetation cannot grow in low and high pH value soils. The normal range of pH in the soils is 6.0 to 8.5. The pH values in the study area are varying from 6.89 to 7.62 indicating that the soils are falling in neutral to slightly alkaline soil.

Air Environment:Existing Ambient Air Quality

The baseline ambient air quality status in the study area is characterized using the following sources of data:

- Ambient air quality monitoring at eight sampling locations within the study area.
- Meteorological data collected during the study period

To evaluate the baseline ambient air quality status, one season data was generated at eight locations in and around the bottling plant including residential & rural area for a period of three months from *January, 2018 – March, 2018*. During the monitoring period the concentration of air pollutants namely PM₁₀, PM_{2.5}, SO₂, NO_x, CO, HC and VOC in ambient were measured.

The highlights of the results are as below:

Summary of Analysis of Ambient Air Quality in the Study Area

Parameter	PM10($\mu\text{g}/\text{m}^3$)					PM2.5($\mu\text{g}/\text{m}^3$)				
Monitoring Station	No. of samples	Maximum	Minimum	Mean	98 th percentile	No. of samples	Maximum	Minimum	Mean	98 th percentile
A1	26	63.4	48.3	56.7	63.0	26	35.6	23.9	29.4	35.0
A2	26	59.0	43.9	52.3	58.6	26	31.6	19.9	25.4	31.0
A3	26	62.3	47.2	55.6	61.9	26	34.5	22.8	28.3	33.9
A4	26	57.9	42.8	51.2	57.5	26	30.7	19.0	24.5	30.1
A5	26	60.1	45.0	53.4	59.7	26	32.5	20.8	26.3	31.9
A6	26	56.8	41.7	50.1	56.4	26	29.8	18.1	23.6	29.2
A7	26	61.2	46.1	54.5	60.8	26	33.4	21.7	27.2	32.8
A8	26	64.5	49.4	57.8	64.1	26	36.7	25.0	30.5	36.1
NAAQS	100($\mu\text{g}/\text{m}^3$)					60($\mu\text{g}/\text{m}^3$)				

Parameter	SO ₂ (µg/m ³)					NO _x (µg/m ³)					CO(mg/m ³)				
Monitoring Station	No. of samples	Maximum	No. of samples	Maximum	Minimum	Mean	98 th percentile	Minimum	Mean	98 th percentile	No. of samples	Maximum	Minimum	Mean	98 th percentile
A1	26	17.7	26	19.8	13.5	15.7	18.95	11.3	13.6	16.8	26	0.23	0.15	0.18	0.23
A2	26	15.7	26	15.5	9.1	11.4	14.6	9.3	11.6	14.7	26	0.14	0.11	0.12	0.14
A3	26	17.1	26	19.2	12.9	15.1	18.4	10.7	13.0	18.4	26	0.19	0.11	0.15	0.18
A4	26	15.3	26	14.9	8.5	10.8	13.9	8.9	11.2	14.4	26	0.13	0.11	0.11	0.13
A5	26	18.0	26	18.0	11.7	13.9	17.2	11.7	13.9	17.2	26	0.15	0.11	0.13	0.15
A6	26	14.9	26	14.3	7.9	10.2	13.4	8.5	10.8	13.9	26	0.12	0.11	0.11	0.12
A7	26	16.5	26	18.6	12.3	14.5	17.8	10.1	12.4	15.5	26	0.17	0.11	0.13	0.16
A8	26	18.3	26	20.4	14.1	16.3	19.6	11.9	14.2	17.4	26	0.25	0.17	0.20	0.24
NAAQS	80(µg/m ³)					80(µg/m ³)					4.0(mg/m ³) at 1 hr Monitoring				

From the monitoring results, it may be concluded that the concentration of the air pollutants, as stated above, are well within the limits specified under NAAQS for industrial, rural and residential areas.

Source of Air Pollution:

Operation of the bottling plant involves only storage and handling of LPG which does not lead to process specific emission of air pollutants into atmosphere. The entire operation of receipt, storage and filling in cylinders is carried out under closed circuit and leak proof system so as to restrict any emission of hydrocarbon vapours into the atmosphere. However, intermittent sources of air pollutants are limited to DG Sets and fire Water pumps which are operated only in case of power failure during working hours and during mock fire drills only (once in a month) respectively. Hence, installation of proposed Mounded Bullets shall not impart any adverse impact on existing air environment.

Noise Environment

Ambient noise levels were measured at eight locations in and around the plant site. Noise levels varied from 52.4 to 54.9 Leq dB(A) during day time and 41.9 to 44.2 Leq dB(A) during night time.

An over view of the above results indicate the noise levels in the study area are well within the prescribed limits of CPCB.

Water Environment:

To evaluate the existing water quality, 08nos of ground water and 02 no's of surface water samples were collected from different locations around the site and characterized for relevant parameters.

Surface water quality results are summarized below:

- pH of the surface water collected was neutral with pH ranging from 7.1 -7.3
- TDS was found to be 47 mg/l to 59 mg/l. The tolerance limit of 1,500 mg/l as per IS:2296
- Total hardness was found to be 29 mg/l to 34mg/l
- Presence of Nitrate was recorded as <0.1 in both locations

- DO was observed as 6.6 mg/l to 6.7 mg/l
- Total coliform in water was 66 MPN/100ml to 74 MPN/100ml The likely source of bacteriological contamination was due to the proximity to residential area
- All the heavy metals were found to be within below detectable limits.

Summary of Groundwater quality:

The pH limit fixed for drinking water samples as per IS: 10500 is 6.5 to 8.5. During the study period, the pH of the groundwater was found varying between 6.7 and 7.0.

The desirable limit for total dissolved solids as per IS: 10500 is 500 milligrams per liter (mg/l). In groundwater samples collected from the study area, the total dissolved solids (TDS) were found to be varying between 18.3mg/l and 24.9 mg/l. The TDS of all the samples were below the permissible limit of 2000 mg/l.

The desirable limit for Chloride is 250 mg/l as per IS:10500. The Chloride levels in the groundwater samples collected in the study area were ranging from 4.2 to 6.4 mg/l.

The desirable limit as per IS: 10500 for hardness is 300 mg/l where as the permissible limit for the same is 600 mg/l. In the groundwater samples collected from the study area, the hardness was found to be varying from 7.0mg/l to 9.1mg/l.

Fluoride is the other important parameter, which has the desirable limit of 1 mg/l and permissible limit of 1.5 mg/l. In the groundwater samples of study area the fluoride values were found to be within a range of 0.27 mg/l to 0.36 mg/l.

All the heavy metals in all samples were found to be below the permissible limits.

Total Coliform ranging from 6 to 15 MPN/100ml.

An overview of the results obtained reveals that none of parameters were found above the permissible limits of IS: 10500 Drinking Water Standards.

Water Consumption:

The project proposal is only for installation of 3 x 150 MT Mounded storage vessels. The water consumption due to the proposed project shall be 5.0 KLD for domestic purpose and 5 KLD for cylinder washings.

Waste water Generation:

The quantity of waste water generation under normal operation of the plant is 8.0 KLD. Sanitary waste water is being disposed to STP and rest of the non-sanitary waste water (due to mock drill, once in a month) will be treated and reuse for green belt development.

Biological Environment:

The proposed facilities shall be installed in the vacant land available within the premises of bottling plant. There is no point and non-point source of emission or discharge of pollutants hence, no adverse impact on the biological environment is envisaged due to the proposed project activities and operation. Moreover, a considerable area of the plant has already been brought under green belt which provides food and habitat for birds and smaller mammalian species. Thus, significant positive impact on fauna is foreseen.

Socio-Economic Environment:

The development due to proposed project will have temporary impacts on local socio-economic condition of the people residing in the area. The construction of Mounded storage vessels would provide temporary employment, which may consist of locals too. This would improve the socio-economic condition of the local population. The operation of the proposed project would result in positive impacts such as industrial and economic development and generation of indirect employment opportunity.

2.3 *Analysis of Alternative (Technology & Site)*

IOCL has mastered the art and technology for installation of Mounded Storage Vessels. The LPG department of marketing division from IOCL has earned a good credential of Mounded Storage Vessels. The technology adopted by IOCL for installation of Mounded Storage Vessel for storage of LPG is a fail-safe technology and as such no alternative

technology was considered for providing such facilities. Since, the proposed MSV will be within available site hence, alternate site selection is not relevant.

2.4 *Environmental Monitoring Programme*

A monitoring schedule with respect to Ambient Air Quality, Waste Water Quality, Noise Quality prepared to meet CPCB/State PCB.

2.5 *Additional Studies*

Additional studies such risk analysis, DMP and HAZOP is required for the proposed project. Salient features of the studies are as under:

Impact on local infrastructure such as road network etc

Transport requirements will arise during the construction phase due to the movement of both the personnel and materials. The proposed site is well connected to the roads.

Compensation package for the people affected by the proposed project:

The installation of 03 nos. of Mounded Storage Vessels for storage of bulk LPG shall be carried out at Umiam (V), Ri-Bhoi (D), Meghalaya.

The closest village to the proposed site is Umiam. The major occupations of population are industrial workers. The proposed facility does not envisage any displacement of population and no resettlement of population.

Hence, the proposed project does not involve any issue with respect to Resettlement & Rehabilitation and does not come under purview of RR Policy.

Proposed plan to handle the socio-economic influence on local community:

For installation of 03nos of mounded storage vessels, about 100 construction workers would be required during construction phase. For unskilled jobs, it would be ensured that only local workers are engaged for carrying out construction jobs. This would impart positive impact on the socio-economic condition of the local area. For skilled jobs, only marginal number of workers is likely to be engaged. In view of the size of population residing within 5 km radius, no additional study is required to assess the impact of marginal number of workers coming from outside area.

2.6 *Risk Analysis*

Risk Assessment for the proposed project has also been carried out and necessary safeguard measures have been discussed in chapter -7. The proposal is for installation of 3 x 150 MT Mounded Storage Vessels which is considered to be intrinsically safe. The installation of the Mounded Storage Vessels will not enhance the risk profile of the plant.

2.7 *Significance & Project Benefits of the Project*

This project proposed to construct 3x150 MT Mounded Storage Vessels, Bottling Capacity of 30 TMTPA LPG Cylinders in an area of 17 Acres.

Primarily the new plant project at Meghalaya was envisaged for catering customer demand in future years and to save in logistics.

Indian Oil Corporation Ltd. (IOCL) has envisaged setting up a LPG FILLING CUM BOTTLING PLANT at Meghalaya. Bottling Plant of 30 TMTPA capacity is required to meet the demand of packed LPG cylinders by financial year 2020-21. If the process of Plant construction is started now, then we will be in a position to complete the Plant by 2019-20 and Bottling will get stabilized by 2020-21.

Project Benefits:

- Availability to Clean Energy for domestic consumption
- Employment generation
- Socio-economic development of the area

2.8 *Environmental Management Plan*

Environmental Management Plan (EMP) is planning and implementation of various pollution abatement measures for any proposed project. The EMP lists out all these measures for planning phase, construction phase and operational phase of the plant.

Installation of Mounded Storage Vessels for the storage of LPG shall be designed taking into account all the legislations/rules and as per the directives of Environmental Clearance documents.

The control of Environmental pollution during construction phase even though for a shorter period is of vital importance. The required mitigation measures with complete details have been considered in order to develop effective mitigation measures.

The Environmental Management Plan during the operational phase of the plant shall therefore be directed towards the following:

- Ensuring the operation of various process units as per specified OISD guidelines.
- Strict adherence to maintenance schedule for various machinery/equipment
- Good housekeeping practices
- Post project Environmental Monitoring

2.9 Project cost

The total cost of the project – Rs. 73.98 Crores and time of Completion – 24 months from date of granting EC from MoEF/SEIAA.