Executive Summary

For

Proposed Expansion of LPG bottling plant, 2 X 900 MT LPG Mounded Storage Vessels and 1 x 60 Station Flexi carousel of 25,000 MT/M bottling capacity by Bharat Petroleum Corporation Limited at Sanaswadi, Shirur,Pune.

Applicant: BHARAT PETROLEUM CORPORATION LIMITED.

Prepared By:

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1. INTRODUCTION & BACKGROUND

Bharat Petroleum Corporation Limited (BPCL) is an Indian state-controlled oil and gas company headquartered in Mumbai, Maharashtra. BPCL has been ranked 225th in the Fortune Global 500 rankings of the world's biggest corporations for the year 2012. BPCL, with an equity base of Rs. 723.08 Crore, is a leading player in the Petroleum Sector in the country. BPCL currently has Refineries at Mumbai and Kochi with a capacity of 12 Million Metric Tonnes per Annum (MMTPA) and 9.5 MMTPA respectively for refining crude oil. BPC's subsidiary at Numaligarh has a capacity of 3 MMTPA.

Oil marketing companies have projected an increase in demand of Liquefied Petroleum Gas (LPG) in future due to increase in its domestic use. The demand is likely to increase substantially over the years to come. Even in the present scenario, it is very difficult to meet the market demand at Pune and its neighbouring districts by Bharat Petroleum Corporation Limited. As per directive of the Ministry of Petroleum and Natural Gas, Government of India, different Oil companies are required to augment / construct new facilities to meet the growing demand.

M/s. Bharat Petroleum Corporation Limited, (A Govt. of India Enterprise), Working under the aegis of Ministry of Petroleum is having an establishment for Storage and bottling of Liquified Petroleum Gas (LPG) at Pune LPG bottling Plant. LPG Plant is under operation at Plot No. 1069/70/71/72/73, Shikrapur-Chakan State Highway-55, Village: Sanaswadi, Taluka: Shirur Dist. Pune. Now, BPCL intends to enhance Storage capacity of LPG (Additional storage vessels) to cater growing demand in Pune and nearby districts.

BPCL (Shirur) proposes for expansion LPG bottling plant with installation of 2 x 900 MT capacity of Mounded storage facility and installation of 1 x 60 Station Flexi carousel for LPG cylinder filling 25,000 MT/M bottling capacity; which will cater growing demand of LPG in Pune and its neighbouring districts in Maharashtra state. The project seeks prior Environmental Clearance from SEIAA, Maharashtra, under Category 'B' in the Schedule 6(b) Isolated storage and handling of hazardous chemicals.The proposal was considered in the 142nd State Expert Appraisal Committee(SEAC-1, Maharashtra) Meeting, held on 13th-14th September, 2017 at Mumbai. (Sr. No: 09, Proposal Unique No: 0000000657 and the terms of reference (ToR) was issued mentioning the condition to conduct Public Hearing Consultation.

M/s ABC Techno Labs India Private Limited (ABC Techno Labs), NABET Accredited Environmental Consultant Organisation, has been engaged by M/s Bharat Petroleum Corporation Limited (BPCL) to carry out Environmental Impact Assessment studies for the proposed expansion of LPG bottling plant.

Need of Installation of LPG Bottling Plant at Shirur, Pune.

- LPG demand in Pune district and it's surrounding area.
- Encouragement through Pradhan Mantri Ujjwal Yojana (PMUY scheme)
- Provision of clean cooking fuel to the rural women/customers.

1.1 PROCESS DESCRIPTION:

The Existing capacity of plant is 2,100 MT storage capacity with 2 x 24 station carousel (LPG Bottling/Filling: 15,000 MT/M).

- BPCL proposes to provide LPG Storage in the form of:
- 2 x 900 MT, Mounded Vessel i.e. 1,800 MT.
- Provision of *1 x 60* Station Flexi carousel for filling LPG cylinders.
- The cylinders will be distributed through LPG Dealers in various markets of Pune and its neighboring districts in Maharashtra State.
- ***After expansion the total capacity will be 3,900 MT with 25,000 MT/M Bottling capacity.***

Table No. 1: Existing and Proposed capacities

S.No	Existing	Proposed	Total Capacity after expansion
LPG Storage capacity	2,100 MT	1,800 MT	3,900 MT
LPG Bottling capacity	15,000 MT/M	10,000 MT/M	25,000 MT/M
Carousel station	2 x 24	1 x 60 (flexi)	

1.2 **Receipt of LPG:**

LPG from Uran LPG plantwill be received through bullet trucks, they will be unloaded through LPG compressors & stored in horizontal mounded bullets of capacity 2 x 900 MT (total 1,800 MT). There are 8 nos of Tank Lorry Decantation Bays for the purpose of unloading bullet trucks and the product will be stored in mounded storage vessels (2 x 900 MT LPG storage capacity).

Table no. 2: Details of LPG Mounded Storage Vessels of Shirur Plant.

Tank No.	Product	Tank Diameter	Tank Length	Class	Tank Type	Tank Capacity
Existing LPG Storage Bullets						
B001	LPG	5.0	30	A	BULLET	300 MT
B002	LPG	5.0	30	A	BULLET	300 MT
B003	LPG	5.0	30	A	BULLET	300 MT
B004	LPG	6.0	45	A	BULLET	600 MT
B005	LPG	6.0	45	A	BULLET	600 MT
Proposed LPG Storage Bullets						
B006	***LPG***	***7.0***	***56***	***A***	***MSV***	***900 MT***
B007	***LPG***	***7.0***	***56***	***A***	***MSV***	***900 MT***

1.3 Dispatch:

The cylinders of LPG various capacities 14.2kg, 19kg, 47.5kg & 85 kg are filled, loaded in truck lorries and dispatched by road ways in Pune and its neighbouring districts in Maharashtra.

1.4 Power Requirement:

SN	Particulars	Energy Required	Source	DG Set Capacity (KVA)	DG Set Qty. (no.)
1	Construction Phase	40 kVA	MSEDCL	350	3
2	Operation Phase	600 kVA	MSEDCL (Maharashtra State Electricity Distribution Company Limited)	250	3
				830	1

1.5 Water Requirement:

Total water requirement at the LPG bottling plant is 4 KLD during construction phase, which will be met through the bore well at onsite. During Operation phase the plant will require 15 KLD of fresh water. The water will be provided by bore well located at site.

1.6 Manpower Requirement:

S.No .	Particulars	Labour
1	Construction Phase	35
2	Operation Phase	20

1.7 Fire Fighting Facilities:

The fire fighting facilities/ safety systems tools/equipments chart is given below:

Fire Fighting Facilities at the plant	No./Quantity
Fire Extinguisher (10kg) DCP Type	: 100 Nos.
Fire Extinguisher (75kg) DCP Type	: 9 Nos.
Fire Extinguisher (4.5 kg) CO_2 Type	: 12 Nos.
Fire Extinguisher (6.5 kg) CO_2 Type	: 2 Nos.
Sand Bucket (9 Liter's)	: 20 Nos.
Water Storage Capacity	: 2500 KL X 3 nos.
Deluge Valves (Sprinklers)	: 17 Nos.
Main Fire Pump (615 kL/hr)	: 3 Nos.
Jockey Pump (30 KL/hr)	: 2 Nos.
Deluge Valve with heat Detector	: 17 Nos.
Water Monitors	: 34 Nos.
Fire Hydrant	: 22Nos.
Hose Box	: 23Nos.
Fire Hose	: 58Nos.
Jet Nozzle	: 27 Nos.
Fog Nozzle	: 2 Nos
Universal Nozzle	: 2 Nos
Water Curtain Nozzle	: 2 Nos.
Pressurised fire hydrant system	Available

Other necessary facilities to support Fire Fighting during emergency like:
Internal communication: page phone, VHF hand sets, public address system
External communication: landline and mobile
Warning system for fire: 1 no. electrical siren with 3 km range and 7 hand siren with range 1 km. are available at the plant.

2.0 DESCRPTION OF ENVIRONMENT:

Study Period, Area & Monitoring/Sampling Locations

The baseline environmental study has been conducted for the study area of 10 Km radial distance from site for the period of 3 months i.e. Pre Monsoon (02/05/2017 to 31/05/2017) and Post Monsoon Seasons. (12/10/2017 to 12/12/2017).

Total eight ambient air samples, 9 water samples (3 surface water and 6 ground water)and four soil samples were collected. Noise monitoring was carried out at eight locations.

2.1 Ambient Environment:

The ambient air quality is determined at 8 locations.

1) The PM10 maximum and minimum concentrations for PM10 were recorded as 105 µg/m3 and 49.45 µg/m3 respectively. The maximum concentration was recorded at Jategaon khurd and the minimum concentration was recorded at Talegaon Dhamdhere.
2) The maximum and minimum concentrations for $PM_{2.5}$ were recorded as 47 µg/m3 and 21 µg/m3 respectively. The maximum concentration was recorded at Darekar wadi and the minimum concentration was recorded at project site
3) The maximum and minimum SO2 concentrations were recorded as 11.2 µg/m3 and 4.2 respectively. The maximum concentration was recorded at the Shikrapur and the minimum concentration was recorded at Bhiwarewadi.
4) The maximum and minimum NOx concentrations were recorded as 42 µg/m3 and 20 µg/m3. The maximum concentration was recorded at Bhiwarewadi and the minimum concentration was recorded at project site and wadhu bk.
5) The Methane hydrocarbons and Non-Methane hydro carbons were very absent in the study area.

All values were found within prescribed NAAQS 2009.

2.2 Noise Environment:

Noise can be defined as an unwanted sound. The locations were identified for ambient noise monitoring in the study area. The daytime varied from 43.1 dB (A) Leq to 56.4 dB (A) Leq and night time noise varied of 37 dB (A) Leq to 51 dB (A) Leq. Both daytime noise and night time noise was within the limit:

2.3 Water Environment:

In order to establish the baseline water quality, 6 ground water and 3 surface water samples were collected and analyzed in the study area. The analysis result for ground water samples were within drinking water limit as per IS 10500: 2012. Details of analysis result are given in the EIA report.

2.4 Soil Quality:

Soil samples were collected from 4 locations in the study area and analyzed for physico-chemical characteristics. Soil quality was found to be normal. Details of analysis result are given in the EIA report.

2.5 Land Use/Land Cover of the Study Area:

Land use pattern of the study area covering 10 km radius includes about 23 percent of land is under non-agricultural usage i.e. forest, land under non-agricultural use, cultivable waste, permanent pasture and miscellaneous trees and groves.

2.6 **Biological Environment:**

The ecological study of the area has been conducted within 10 km radius of the project site in order to understand the existing status of flora and fauna to generate baseline information.
Flora: 34 species of Trees, 6 species of Shrubs, 4 species of climber, grass were identified.
Fauna: 7 species of mammals, 2 species of Reptiles, Avifauna: 9 species were identified within the Study Area, 3 species of aquatic fauna were identified.

2.7 Socio-economic Environment:

Analysis of the demographical statistics, based on Primary Census Abstract, 2011 & field survey reveals that the study area has a total population of 1,13,410 in the study area.

- Out of the total population, Scheduled Caste is 10,393(9.16%) and Scheduled Tribe is 2,155(1.90%) According to 2011 census Pune district
- The literacy rate of the total population is worked out to 84,058 (74.12%). Male literacy 47,132 (56.07%), and female literacy is 36,926 (43.93%)
- The total population of main worker, marginal worker and non-worker category are 52,823 (46.58%), 2,973(2.62%) and 57,616 (50.80%) respectively.
- Sex ratio (number of females per thousand of males) in the region is recorded 894indicating male population is marginally higher in the region as compared with the female.
- Total Child population in the study region (Census 2011) is worked out as 14974(13.20%) out of which 8129(54.29%) are boys and 6845(45.71%) girls.

3.0 ANTICIPATED ENVIRONMENTAL IMPACTS & MITIGATION MEASURES

3.1 Land/Soil Environment Impact Mitigation

During the construction of the new LPG bottling plant with 2 x 900 MT LPG storage capacity in horizontal mounded bullets, there will be a small amount of construction wastes, such as, metal cutting, oil, grease and debris, which may contaminate soil at the site of construction. However, the extent of contamination will not be significant. These wastes will not normally contaminate ground water. Their impact on soil and surface water will be restricted to the construction period in small area around the construction site during heavy rainfall only.

During operation phase of LPG plant no process waste will be generated. About 5 kg solid wastes will also be generated from office and canteen. Used oil will be generated at the time of maintenance of DG sets. For collection, management and disposal of solid and hazardous wastes from the BPCL LPG plant, necessary mitigation measures will be taken at the LPG Plant.

3.2 Water Quality

The construction phase may result in minor soil erosion from the LPG plant site, as it will clear of ground flora and excavation for construction of two mounded vessels. The runoff from the construction site during rainfall may cause some increase in the quantity of suspended solids and turbidity in the runoff in natural drain. However, this impact will be of temporary nature and may not last as soon as excavated soil established and construction debris are disposed of properly.

- Only, 4 KLD water will be required in construction phase. It will be withdrawn from bore well at site.
- 0.5 KLD sewage will be generated during the operation phase. 10 CMD of effluent will be generated which will be treated in 12 CMD of ETP.

3.3 Air Quality

A certain amount of particulate matter will be generated during the construction phase of additional two LPG mounded storage vessels at LPG plant. However, the suspended particulate matter in ambient air as a result of construction activities may be relatively coarse and will be settled within a short distance. Therefore, the impact will be restricted within the close vicinity of the construction activity. Further, for construction of additional two LPG mounded storage vessels at LPG plant, construction activities will be taken place for 1 year only, therefore, impacts will be observed for short period and reversible in nature.

During operation of existing LPG plant after expansion, there will not be any process emission sources. No emissions will be generated during the bottling operations as the entire bottling process is carried out closed circuit through piping from storage area to filling shed.

Very small quality of fugitive emissions of hydrocarbon may result from unloading hose, faulty bottling, leaking cylinders and minor leaks. Gas detectors have been placed at the LPG plant at strategic locations to detect concentration of hydrocarbon in the premises. DG sets installed at LPG Bottling plant are operated occasionally in case of power failure and these are not regular source of gaseous emissions.

LPG Lorrie and trucks have pollution under control (PUC) certificates. Regular maintenance of LPG Lorrie and trucks is ensured.

3.4 Noise Quality

During the construction phase, cold cutting of metal sheets, bending, hammering, erection of equipment, vehicle movement, DG sets may be major sources of noise generation during construction of proposed LPG mounded storage vessels at LPG bottling plant. Relatively high noise levels will be generated during construction phase.

No regular noise generation is expected due to the operation of LPG bottling plant after proposed two additional LPG mounded storage vessels. DG sets are to be operated only during grid power failure.Equipment specification and installation of acoustic enclosure with DG sets ensure low level of noise generation. All the LPG Lorries and trucks are essentially fitted with silencers to control noise generation.

Peripheral green belt on approx 40,468 Sq.m is available around the LPG plant, which will act as noise barrier.

4.0 SITE ANALYSIS

As project will be constructed within the existing premises of the same LPG bottling plant at Shirur, no alternative analysis needed. Adequate space is available for expansion of the plant

4.1 ENVIRONMENTAL MONITORING PROGRAMME

- The following will be monitored on a regular basis during operation phase to ensure that a high level of environmental performance is maintained:
- Ambient air monitoring for PM10, PM2.5, SO2 and NOx will be carried out during the operational phase within site premises and nearby villages, location of downwind direction, once every season.
- Groundwater sample from site or nearby location once every season.
- Post project sampling and effect on baseline data generated during construction and operation.
- The general effectiveness of pollution control measures shall also be monitored as per PCB guidelines.

4.2 RISK ASSESSMENT & DISASTER MANAGEMENT PLAN

Hazard identification, HAZOP and risk assessment for LPG plant including proposed two mounded vessels have been carried and risk mitigation measures have been spelled to enhance safety at the BPCL plant, Shirur.

5.0 PROJECT BENEFITS:

- Implementation of the "Ujwala" scheme by PMO & MOPNG (Ministry of Petroleum and Natural Gas).
- No displacement of people hence no impact on the habitation.
- The proposal will ensure the continuous LPG supply to the users.
- The project will generate indirect employment and business opportunities in the region.
- The project will be beneficial and important to the Society and country.
- Improvement in direct and indirect means of livelihoods of local population.
- Improved local and regional economy.
- The proposed project leads to the improvement in physical and social infrastructure, employment potential and other tangible benefits to the people.
- We will protect the environment from deforestation by increasing the LPG consumers in rural areas

6.0 ENVIRONMENTAL MANAGEMENT PLAN

- Environmental Management Cell

  Existing BPCL LPG plant have full-fledge Safety and Environmental Protection (S&EP) cell at corporate level to take care of any environmental issue at its LPG plant. BPCL will designate one of its official for implementation of EMP during construction of proposed installation of mounded storage vessels. This official will be responsible for day-to-day environmental affairs including implementing monitoring programme.

- Environmental Training

  To achieve the objective of pollution control, it is essential not only to provide best pollution control system but also to provide trained manpower resources to operate the same.

- Reporting And Monitoring System

  The reporting system will operate linearly with the person who is at the lowest level of the implementation system to the project management and shall report to Territorial Manager of Shirur LPG Plant of BPCL.

  For the proposed expansion of BPCL Shirur by installation of two mounded vessels, all reporting to the Territorial Manager of BPCL will be on weekly basis. The BPCL's Environmental Management Cell will be responsible for preparing targets for each of the identified mitigation measures.

  Photographic records will also be established to provide useful environmental monitoring tools. A full record will be kept as part of normal contract monitoring.

  Budgets For Implementation of EMP And Monitoring Plan

  The budget for implementation of mitigation measures and environmental management plan to mitigate the potential adverse environmental impacts during operation phase has been estimated as capacity cost Rs 44.5 Lakhs and recurring expenditure as Rs 13.5 Lakhs.

7.0 Corporate Social Responsibility

Bharat Petroleum Corporation Limited is Public Sector Company. Therefore Corporate Social Responsibility program are undertaken as per Government of India guidelines.

8.0 PROJECT COST & TIME:

The total project cost is 75 crores. The proposed project will be completed within 24 months approx fromthe date of obtaining all approvals/ NOC's for the project.

9.0 CONCLUSION:

The overall impact of the proposed project is beneficial as any adverse impacts on air, noise, water, land and ecological environment are insignificant and the socio-economic benefits are predominantly positive. All the relevant safety norms with latest technology have been incorporated in the proposed MSV. In view of the above, it may be concluded that the proposed project in totality may be considered environmentally safe.