PRE-FEASIBILITY REPORT

FOR

Capacity Expansion of LPG Bottling Plant from 1063 MT to 1963 MT at UPSIDC Industrial Area, village and P.O. Rati Ka Nagla, Tehsil: Sikandra Rao, Dist: Hathras, Salempur, UP-204212

By

Project Proponent:

M/s. BHARAT PETROLEUM CORPORATION LIMITED

ENVIRONMENTAL CONSULTANT:

VARDAN ENVIRONET

Accredited EIA Consultant Organization by
QCI-NABET ACCREDITATION NO.: NABET/EIA/1619/RA0037
D-142, Sec. 57 Gurugram, Haryana
www.vardan.co.in
E-Mail: *vardanenviro165@gmail.com*
Contact: 0124-4291036, +91 9953147268, 09968967959

26th October 2018

CONTENTS

CHAPTER 1

EXECUTIVE SUMMARY

1.1 NAME OF PROJECT:

Capacity Expansion of LPG Bottling Plant from 1063 MT TO 1963 MT at UPSIDC Industrial Area, village and P.O. Rati Ka Nagla, Tehsil: Sikandra Rao, Dist: Hathras, Salempur, UP by M/s BPCL

M/s. Bharat Petroleum Corporation Limited (BPCL) has planned to enhance storage capacity of existing LPG Bottling Plant by installing (3x300 MT) MSV.

1.2 LOCATION

Corner Coordinates of the Project side

A	27º 39' 55.6" N	78º 14' 52.1" E
B	27º 39' 40.1" N	78º 14' 58.8" E
C	27º 39' 44.4" N	78º 15' 11.7" E
D	27º 39' 56.0" N	78º 15' 07.2" E

The project is located at UPSIDC Industrial Area, village and P.O. Rati Ka Nagla, Tehsil: Sikandra Rao, Dist: Hathras, Salempur, Uttar Pradesh- 204212**. Also, the project falls in notified industrial area of UPSIDC.**

Important Detail of Industrial Area

SNo	HEADING	DESCRIPTION
1	Name Of Industrial Area	Salempur, Hathras
2	Location	State Highway no-33 Sikandrarau to Hathras
3	Industries allowed in these Industrial Area	All Types of Industries
4	Distance from District Head Quarter	28.00 K.M. Hathras City
5	Distance farm Nearest Railway Station	18.00 K.M. (Hathras Railway Station)
6	Distance from Nearest Airport	120.00 K.M. Pt. Deen Dayal Upadhyay Airport Agra
7	Distance from National Highway/State Highway	12.00 K.M. NH-91
8	Major Infrastructure facilities Available	
	(A) Within Industrial Area	Roads, Parks, Drainages, Water Supply, Electricity & Police Chowki
	(B) Outside Industrial Area	Hospital, Post Office, Banks, Police out Post & Markets
9	Major Units in Industrial Area	M/s Bharat Gas, M/s Mahan Milk food Products, M/s Alfa Milk food Product Ltd., M/s Saksenija Oil Mill
10	Address of Regional Offices	Regional office, Talanagli Sector-1st, Ramghat Road, Aligarh
11	Contact Details of R.M.	
	(i) Office land Line No.	0571-2780114
	(ii) Mobile No. of R.M.	9639470498
	(iii) E-Mail I.D. Of R.M.	upsidc_aligarh@yahoo.in

1.3 PROJECT PROFILE

M/s. Bharat Petroleum Corporation Limited (BPCL) has planned to enhance its storage capacity of LPG bottling plant at Salempur from existing 1063 MT to 1963 MT by construction of 3x300 MT MSV's.

1.4 RESOURCE REQUIREMENT

i) Source and quantity of water

Water requirement shall be met through existing bore wells and rainwater harvesting system within the plant premises. Considering present plant activities, Water is only required for Domestic usage and washing of cylinders. The maximum water requirement for domestic use in housekeeping and toilets would be 9 KLD after expansion & Maximum quantity of water required for the washing of cylinders would be 10 KLD after expansion.

So, plant would require total approx. 19 KL/D water after expansion. Fresh Water would be required 11 KLD which shall be used for Process & Domestic purpose and that shall be met by supply of surface water purchase through ground water.

Table no. 1.1: Total Water requirement

	Usage			Discharge		
Particulars	**Existing**	**Proposed**	**Total**	**Existing**	**Proposed**	**Total**
Domestic	**5 KLD**	**4 KLD**	**9 KLD**	**4 KLD**	**3 KLD**	**7 KLD**
Industrial	**5 KLD**	**5 KLD**	**10 KLD**	**4.0KLD**	**4.0 KLD**	**8 KLD**

ii) Power

The Existing and proposed Bottling Plant would require approximately 500 kVA of Electric power. This requirement shall be met from the nearest sub Station of Uttar Pradesh State Electricity Board (UPSEB). Unit has installed DG sets with capacity of 380 KVA (1 No.), 320 KVA (1 No.) and 125 KVA (1 No.).

Sr. No.	Particulars	Existing	Proposed	Total
1.	Electricity	250 KVA	250 KVA	500 KVA
2.	D.G Sets	380 KVA (1 No.), 320 KVA (1 No.), 125 KVA (1 No.)	-	380 KVA (1 No.), 320 KVA (1 No.), 125 KVA (1 No.)

iii) Man power

Existing	Proposed	Total (after expansion)
1.BPCL plant officers- 08no 2.General operators and clerical staffs- 16No 3.Contractual workers-96 no (including security guard)	Direct (in house)- 02 Indirect(contract)-54	176

iv) Cost of the project

The total cost of the proposed project has been estimated at Rs. 28.48 Crores

CHAPTER 2

INTRODUCTION OF THE PROJECT/BACKGROUND INFORMATION

IDENTIFICATION OF PROJECT AND PROJECT PROPONENT:

The LPG plant at Salempur in Hathras District is owned by Bharat Petroleum Corporation Limited. Bharat Petroleum Corporation Limited is a public sector company with a Maharatna Status, and a Fortune 500 & Forbes 2000 company.

Project Proponent:

Proposal Applicant name	Mr. Prakash Meena
Designation	Territory Manager (LPG)
Address	BPCL, UPSIDC Industrial Area, Village & PO-Rati Ka Nagla, Dist-Hathras, Salempur, U.P - 204212
Ph. No	+91 9828486444
Email	Prakashmeena@bharatpetroleum.in

NEED FOR THE PROJECT AND ITS IMPORTANCE TO COUNTRY AND OR REGION:
In view of the recent economic growth & increase in demand of LPG in nearby districts due to launch of "UJJWALA" scheme, need has been felt by corporation to increase the storage & operating capacity of plant so that increasing demand of LPG can be fulfilled.

2.1 BRIEF DESCRIPTION OF NATURE OF THE PROJECT:

M/s. Bharat Petroleum Corporation Limited has LPG bottling plant at Salempur, Tehsil-Sikandra rao, Dist.-Hathras for storage & bottling of LPG for distribution among its consumers. The existing LPG Plant has storage facilities in above ground LPG Bullets of capacity 3 x 150 MT and 1 MSV of 613 MT. Bulk LPG at existing plant is received from Vessel mounted trucks via Road from Dahej, Pipavav, Jamnagar, etc. LPG received from vessel mounted trucks is unloaded and transferred to above ground storage Vessels and bottled in domestic and commercial cylinders to supply to its consumers in the territory.

M/s. Bharat Petroleum Corporation Limited (BPCL) has planned to enhance its storage capacity at Salempur LPG plant from existing 1063 MT to 1963 MT by construction of 3x300

MT MSV's. Operational capacity of plant is also being increased by erection of 1 new 24 station carousel.

Table 2.1: Details of Existing and Proposed Project

S.No.	Particulars	Existing	Proposed	Total
1	Operation Capacity	90 TMT	90 TMT	180 TMT
2	Land Area	39.5 Acres	-	39.5 Acres
3	Storage	1063 MT	900 MT	1963 MT

2.2 DEMAND-SUPPLY GAP

The total sales volume of LPG in the State of UP during the last three years are as under **Table 2.2:**

Table 2.2: Total sales in the State of Uttar Pradesh during the last three years

Year	Sales Volume (TMT)	% Growth over Historical
2013-14	1960	4.5%
2014-15	2166	10.5%
2015-16	2353	8.6%
2016-17	2612	11%

As per Vision 2015 Document of MOP & NG, GOI, the LPG penetration must be increased to achieve 90% penetration of LPG by 2018-19. The current LPG Penetration level in the State of UP is only 65%. The penetration is even lower than 25% in some Districts, which indicates the tremendous potential in terms of increase in growth in LPG Segment.

Therefore, large nos. of regular and Gramin LPG Vitrak distributors are expected to be commissioned during next 2-3 years apart from the demand arising out of PMUY scheme. However, in absence of BPCL's own additional bottling plants, there will be a huge shortfall in the supply of Domestic LPG in the State of UP.

Keeping in view the increasing LPG Penetration level to 90% by 2018-19 as per directive of

MOP&NG and implementation of PMUY Scheme, the projected demand supply scenario is as under:

Table 2.3: The projected demand supply scenario in the State of UP

Year	Projected Sales Volume (TMT)	Production Capacity (TMTPA)	Shortfall (TMTPA)
2016-17	267	240	27
2017-18	369	300	69
2018-19	484	420 (2nd Carousel at Unnao & Gorakhpur)	64

To meet the demand of BPCL, LPG customers and new enrolment under PMUY in the next five years BPCL proposes to set up a new Bottling Plant in the existing premises.

2.3 EMPLOYMENT GENERATION

It is envisaged that the proposed project would generate enough employment opportunity during construction phase and operation phase. For carrying out construction related activities, it is envisaged to engage skilled, semi-skilled and unskilled workers from local area to the maximum extent.

CHAPTER 3
PROJECT DESCRIPTION

3.1 TYPE OF PROJECT

As per EIA Notification, published in Gazette of India, Extraordinary Part-II, Section-3, subsection (ii) of Ministry of Environment & Forest dated 14.09.2006 & subsequent amendments, the proposed project falls in Activity 6(b), category A i.e. for isolated storage & handling of hazardous chemicals. As per the above notification, proposed project will have to obtain environmental clearance from MoEF&CC.

3.2 LOCATION

Nearest railway station/airport along with distance in kms.	Rati Ka Nagla Railway Station is at a distance of about 0.86 km.
Nearest Town, city, district Headquarters along with distance in kms.	Hathras Town is at a distance of 21kms.
Village Panchayats, Zilla Parishad, Municipal Corporation, Local body (complete postal addresses with telephone nos. to be given)	Bharat Petroleum Corporation Limited UPSIDC Industrial Area, Village & Po: Rati Ka Nangla, Tehsil- Sikandra Rao, Dist- Hathras Salempur, UP-204212 Mo-9828486444 Email: prakashmeena@bharatpetroleum.in

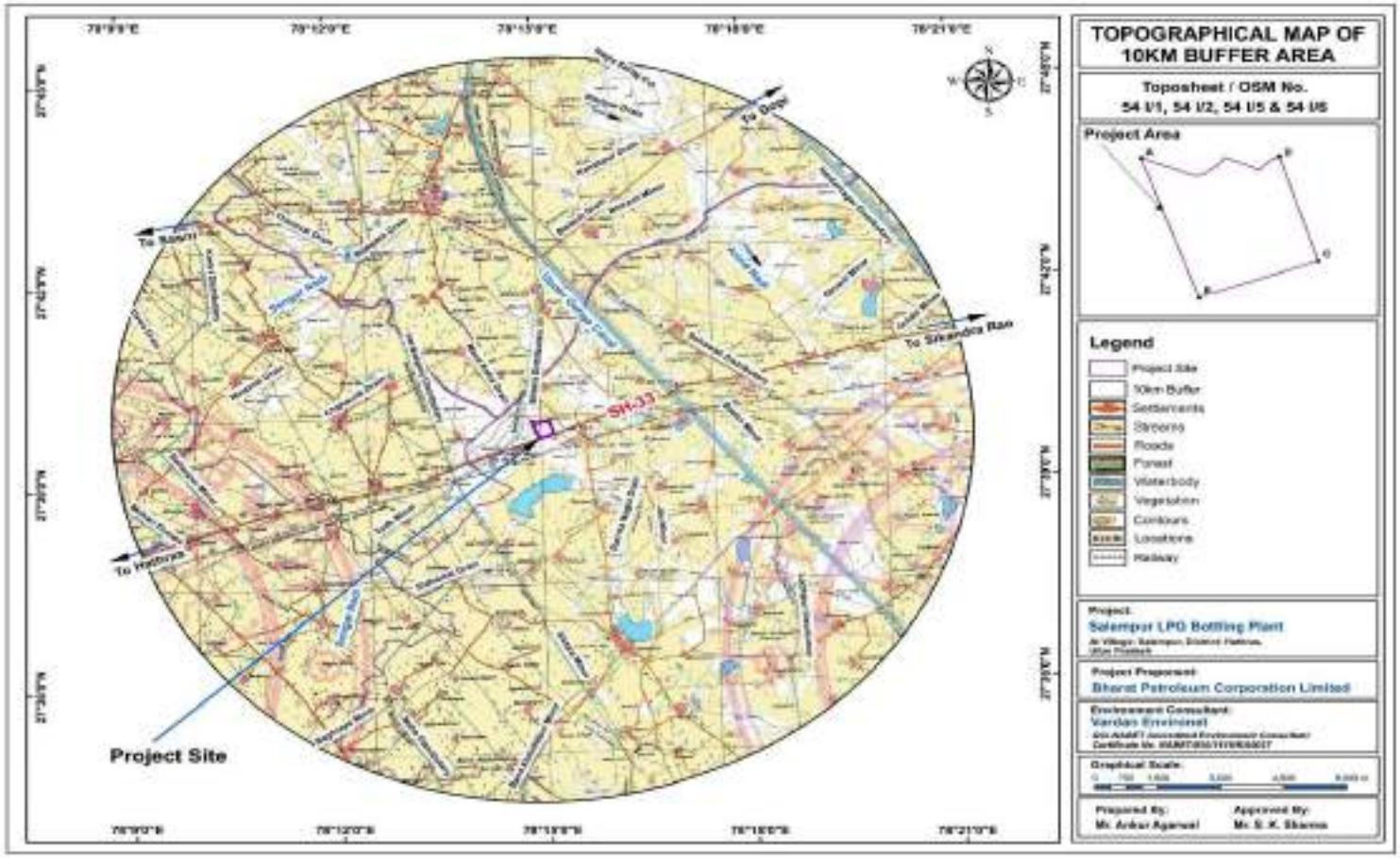

Fig.no.3.1: Site Location

Fig. no.3.2: Google Image of the Project Site

Fig no. 3.3: Location of Salempur LPG Bottling Plant of BPCL in Geographical Map

3.3 PROCESS DESCRIPTION

The plant will function primarily as LPG receipt, storage & bottling unit for filling into cylinders. The plant operations are categorized as,

1. **Receipt of product**

- Receipt of LPG from Dahej, Pipavav and Jamnagar (Gujarat) through Vessel mounted trucks
- LPG transfer to storage Vessels

2. **Receipt of empty LPG cylinders & segregation**

3. **Bottling**

LPG Bottling is carried out in Bottling Shed area having 3 no Carousel (24 point). Existing capacity of cylinder filling is 26000 no per day is done in two shifts.

Total Proposed filling capacity after expansion will be 54000 cylinders per day

- Pumping of LPG to filling shed
- Bottling of LPG cylinders
- Quality check on filled cylinders
- Loading into Trucks

4. **Dispatch**

- Loading of packed cylinders in trucks
- Supply & distribution to markets (through Authorized LPG Distributors)

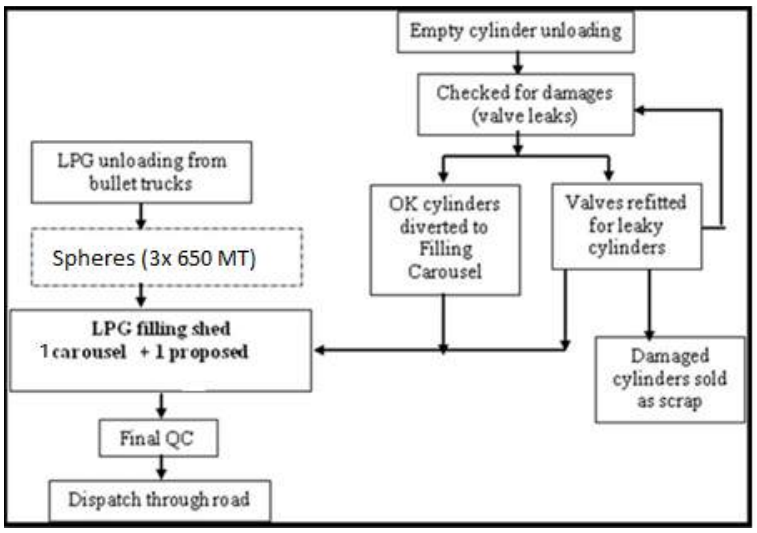

Figure 3.4- Flow Chart of Bottling Plant

The LPG cylinders of various capacities *i.e.* 5 Kg, 14.2kg (domestic purpose), 19kg (commercial purpose), 35kg & 47.5kg (industrial purpose) are bottled at the existing plant and then finally dispatched for consumers.

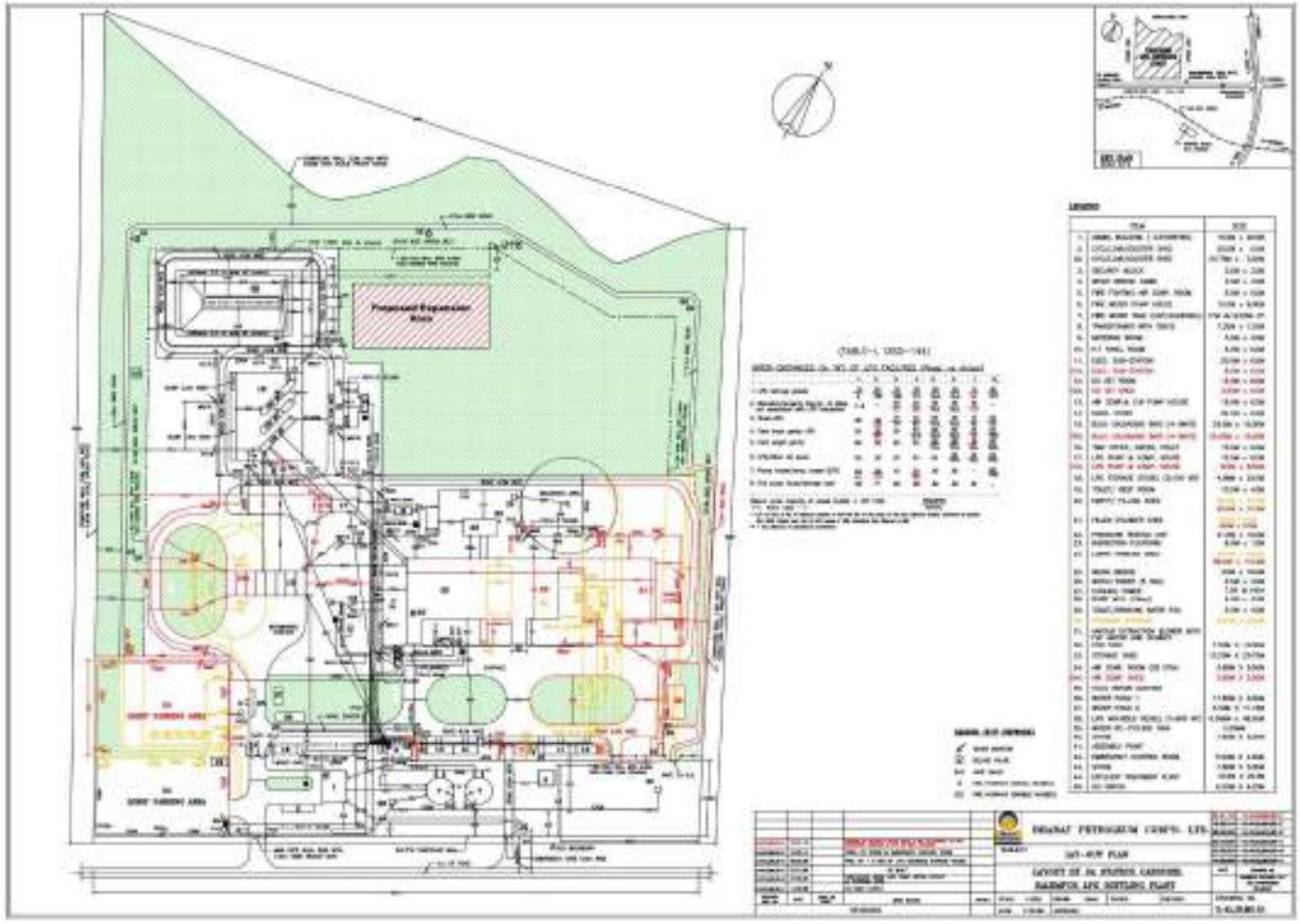

Fig no. 3.5: Layout plan

CHAPTER 4

SITE ANALYSIS

4.1 CONNECTIVITY

The site is well connected with adjacent towns, cities and states for effective movement of goods and services through roadways, airways and railways.

The nearest railway station is Rati Ka Nagla railway station which is at .86 km from the project site. Aligarh (Dhanipur) airport and Agra airport are at 25 kms and 63 kms respectively from the project site.

4.2 LAND USE

Total Plant Area is 39.5 acre (159850.8 sq. meter). Approx. 15.54 acre (62,887.508 sq meter) is green belt area which is around 40% of the total plant area.

Table 4.1: Land use detail of Plant Area

Sl No.	Area Break up	Area in Sq Meter	Area in Acre	% of Area
1.	Total Existing Plant Area	18192.145	4.495	11.37
2.	Total Proposed Area for MSV Installation	3400	0.840	2.13
3.	Total Road Area	24038.33	5.92	14.98
4.	Total Greenbelt Area	62,887.508	15.53	39.31
5.	Total Open Area	51476.014	12.72	32.20
Total Plant Area		**159850.8**	**39.5**	

Table 4.2: Existing Area detail of Plant (Storage, Bottling, Dispatch)

Item		Size	Area in Square Meter
1.	Admin. Building (D. Store yard	15.0M x 20.0M	300
2.	Cycle, Car, Scooter Shed	20.0M x 5.0M	100
2A.	Cycle, Car, Scooter Shed	23.75M x3.20M	76

Item		Size	Area in Square Meter
3.	Security Block	3.5M x 3.5M	12.25
4.	Weigh Bridge Cabin	3.0M x 3.0M	9
5.	Fire Fighting Air Comp. Room	5.0M x 5.0M	25
6.	Fire Water Pump House	15.0M X 8.00M	120
7.	FIRE WATER TANK (CAP=2x2600kl)	17M x12.00M HT	204
8.	Transformer with Fence	7.25M X 7.25M	52.56
9.	Metering Room	3.0M x 3.0M	9
10.	H.T Panel Room	4.0M x 6.0M	24
11.	Elec. Sub-Station	20.0M x 6.0M	120
11A.	Elec. Sub-Station	8.0M x 6.0M	48
12.	Dg Set Room	12.0M x 6.0M	72
12A.	Dg Set Shed	3.50M x 6.0M	21
13.	Air Comp.& C.W Pump House	16.0M x 6.0M	96
14.	Engg. Store	24.0M x 6.0M	1444
15.	Bulk Unloading Bays (4-Bays)	25.0M x 15.00M	375
15A.	Bulk Unloading Bays (4-Bays)	25.00M x 15.00M	375
16.	Time Office, Dress, Toilet	15.0M x 6.0M	90
17.	LPG Pump & Comp. House	15.0M X 8.0M	120
17A.	LPG Pump & Comp. House	8.0M x 8.50M	68
18.	LPG STORAGE VESSEL (3x150 MT)	4.0M¢ X 29.0M	116
19.	Toilet/ Rest Room	10.0M X 4.0M	40
20.	Empty/ Filling Shed	50.0M X 37.5M 95.0M X 37.5M	1875 3610
21.	Filled Cylinder Shed	30.0M X 37.5M 45.0M X 37.5M	1125 1687.5
22.	Pressure Testing Unit	21.0M X 10.0M	210
23.	Inspection Platform	6.0M X 1.0M	6

Item		Size	Area in Square Meter
24.	Lorry Parking Area	85.0M X 50.0M	4250
25.	Weigh Bridge	3.0M x 16.0M	48
26.	WATCH TOWER (5 Nos)	2.0M X 2.0M	4
27.	Cooling Tower	7.50 M HIGH	7.5
28.	Bore Well (2nos)	4.0M X 3.0M	12
29.	Toilet/Drinking Water Fac.	4.0M X 4.0M	16
30	Cylinder Stacking	20.0M X 25.0M	500
31.	Vapor Extraction Blower With FLP Motor and Chimney		
32.	HSD Tank	7.50M X 10.50M	78.75
33.	Storage Yard	10.20M X 20.75M	211.65
34.	Air Comp. Room (35 Cfm)	3.65M X 5.50M	20.075
34A.	Air Comp. Shed	3.65M X 5.50M	20.075
35.	Cold Repair Machine		
36.	Water Pond 1	17.65M X 5.50M	97.075
37.	Water Pond 2	5.50M X 11.1 8M	61.05
38.	LPG MOUNDED VESSEL (1x600 MT)	6.00M X 48.50M	91
39.	Water Re-Cycling Tank	2.00M¢	2
40.	Store	7.60M X 5.50M	41.8
41.	Assembly Point		
42.	Emergency Control Room	5.00M X 4.00M	20
43.	Store	7.60M X 5.50M	41.8
44.	Effluent Treatment Plant	1O.OM X 20.0M	200
45.	Go Switch	6.25M X 6.25M	39.06
46.	Proposed Plant Area	85 M X 40M	3400
Total Plant Area			**18192.145**

4.3 PROPOSED LAND USE PATTERN

The land to be used for Proposed Plant is earmarked on the existing Plant site of BPCL.

Plant Layout showing proposed Site is shown in **Fig 3.3.**

Table 4.3: Land use detail of Plant Area

Sl No.	Area Break up	Area in Sq. Meter	Area in Acre	% Area
1.	Proposed Plant Area	85 M X 40M	3400	2.12

CHAPTER 5

PROPOSED INFRASTRUCTURE

5.1 INDUSTRIAL AREA

The proposal envisages expansion of storage capacity by installation of MSVs amounting to 3x300 MT. The plant area is established in the industrial area of UPSIDC of district Hathras in Salempur, Uttar Pradesh.

5.2 RESIDENTIAL AREA

No residential infrastructure is proposed as locals will be hired.

5.3 GREEN BELT

As per the Regulations. Green belt is proposed to be developed in approx 5.27 Ha. (52751 m²) of area i.e 33% of the total land area. This would not only prevent the fugitive dust emissions but also improve the peripheral appearance of the plant from aesthetics point of view. Unpaved areas, if any, within the plant boundary would be provided with grass cover.

5.4 SOCIAL INFRASTRUCTURE

5.4.1 Development of roads and extension of the existing networks to aid connection

5.4.2 It will develop the area economically and employment opportunities to the local people

5.5 DRINKING WATER MANAGEMENT

The source of water supply will be from existing bore well. Proposed water requirement will be met from existing Borewell. Application for the same will be applied in CGWA

5.6 SEWERAGE SYSTEM

waste water generated from domestic use shall pass through septic tank flowed by Soak pit disposal as quantity of sewerage is low.

5.7 INDUSTRIAL WASTE MANAGEMENT

Industrial Waste Water (generated thru cylinder washing) is treated in Effluent Treatment Plant. Total Waste Effluent would be 8 KLD after expansion which will be treated through existing 10 KLD Capacity Effluent Treatment Plant. Treated effluent reused in factory premises for irrigation of lawns and plantation and washing.

5.8 SOLID WASTE MANAGEMENT

There will be no solid waste generated on site.

5.9 Hazardous WASTE Management

Used Oil & Oil Soaked Cotton waste 200 Litres/Annum will be generated from DG Set operation. Permission of the same has been taken UPPCB.

CHAPTER 6

REHABILITATION AND RESETTLEMENT (R & R) PLAN

The proposed new LPG Bottling plant installation shall be carried out in the existing premises.

Hence, any planning with respect to Rehabilitation & Resettlement is not applicable.

CHAPTER 7

PROJECT SCHEDULE & COST ESTIMATES

The construction work for the project will be initiated after obtaining the Environmental clearance. The total cost of the project will be approximately Rs. 28.48 Crores (2848 Lakhs). The Bottling Plant is estimated to cost INR and the proposed project is estimated to be completed within 27 months from obtaining all the regulatory clearances.

Table 7.1: Land use detail of Plant Area

Sr.no	Particulars	Cost (In lakhs)
1.	Storage Vessels (MSV)	997.60
2.	Civil jobs	598.40
3.	Equipment/Pipe Lines	496.10
4.	Consultancy	62.7
5	Fire Fighting System	71.50
6.	Electrification	171.50
7.	Miscellaneous	450.20
Total Project Cost (Rs. Lakh)		**2848 lakhs**

CHAPTER 8

ANALYSIS OF PROPOSAL (FINAL RECOMMENDATIONS)

8.1 FINANCIAL BENEFITS OF THE PROJECT

Proposed LPG plant will create employment opportunity to local populations and create opportunity to local vendors/ suppliers during construction period and also during operation period. Uninterrupted Supply of cylinders in the market from the proposed plant will solve the problem of LPG shortage near the plant and also stop black marketing of LPG.

8.2 SOCIAL BENEFITS

The proposal for installation of LPG Bottling plant will be able to cater the demand of LPG in nearby areas of Salempur, Uttar Pradesh & also adhere to the Govt. of India initiative of supplying LPG to rural areas and cut down pollution, especially women to be made free from pollution in their kitchen.

- Maintain continuity in supply of LPG gas cylinders to the consumers through distributors and quality of services to the consumers.
- Ease in availability of filled LPG cylinders during crisis period.
- Help to overcome the scarcity of bulk LPG due to huge gap between demand and supply. Increase safety measures for hazard detection and prevention system.
- Storage of LPG in Mounded Bullet is intrinsically and technologically proven safe device.
- Possibility of BLEVE is ruled out in case of storage of LPG in mounded bullets.

CHAPTER 9

ENVIRONMENTAL CONTROL MEASURES

- During construction phase there will be fugitive emissions due to movement of equipment at site, dust emitted during the leveling, grading, earthworks, foundation works and other construction related activities. These impacts will however, be marginal and temporary in nature.
- Periodic LDAR survey shall be carried out to detect & control such measures.
- Sewage generation is envisaged during operation phase and hence STP along with soak pit is proposed to cater the sewage load. Sewage from the administration building will be routed to the septic tanks followed by soak pits and the sludge generated from the septic tank will be dried and used as manure for green belt area.
- Storm water drains and Rain Water Harvesting System are provided at Terminal. These drains carry storm water from Tank dykes/other areas outside the terminal premises in a controlled manner.
- The DG sets shall be acoustically insulated resulting in reduction of noise as per limits prescribed by State Pollution Control Board. The exhaust pipe from DG sets shall be taken above the building as per State Pollution Control norms.
- No process / manufacturing involved. Hence no solid waste generated.
- All conditions & pre-requisites of water and air consents together with certificate to handle hazardous products issued by State Pollution Control Board shall be strictly adhered to.

CHAPTER 10

FIRE & SAFETY MEASURES

Fire Prevention system

The following systems are provided at Salempur Bottling Plant: -

- **GAS MONITORING SYSTEM**:

  The system consists of gas detecting sensors linked to a computerized processing unit and with alarm panels at control room, filing shed, plant manager's cabin as well as security gate having audio / visual alarms and MIMIC Panel to alert the plant personnel. The sensors are located at sensitive or potential hazard areas in the plant.

- **AIR/VAPOUR EXTRACTION SYSTEM:**

  It is a blower with ducts extended to different operating points in filling shed. The blower extracts any leaking LPG vapor from the floor level and cold flares the same to the free atmosphere at the height of 1.5 12 meter from the highest points of eves of the shed. This system is interlocked with filling system, such that the blower must be started before the carousel is started for filling operation. A standby blower is also given to meet situations where one of the blowers is out of order. In this way there is no accumulation of LPG at plant floor level and any minor leaks due to operating operation is immediately evacuated and not allowed to reach the lower explosive limit.

- **REMOTE CONTROL VALVES:**

  These are pneumatically operated quick shut off valves provided on LPG pipelines with actuating points located both remotely and nearer to operating facilities in plant. When actuated, the valves will close within 25 seconds, stopping the flow of LPG in pipelines. In case of leakage of LPG through flange joint or rupture of pipeline, the remote operated valves are operated restricting the leakage of LPG to the sections between two ROVs only and the LPG in upstream area and the storage bullet area is cut off from the leaking point, thereby preventing major leakage or fire. ϖ

- **HIGH LEVEL ALARM:**

  This kind of alarm is installed in storage bullets and other vessels. In case of filling of more than 85 % the alarm will be actuated at Pump Housed which is a manned location.

- **REMOTE OPERATED VALVES:**

  These Installed in storage vessel will close the flow of LPG to vessel. The actuation of REMOTE OPERATED valve and alarm is interlocked with the level of LPG liquid in vessel.

- **EMERGENCY TRIP BUTTONS & MANUAL CALL POINTS:**

  These emergency push buttons are provided at strategic places in the plant. In case of emergency, when the emergency trip button is actuated action takes place as specified in the clause 11.11 of OISD 144 which involves tripping of electricity to all the operating equipment in the hazardous area of the plant, closure of all remote operated valves on

the LPG pipelines and sounding of siren. Operation of manual call point will denote a abnormal situation alerting the plant personnel and will involve the sounding of siren only. These points are provided at strategic locations in the plant.

- **MEDIUM VELOCITY SPRAY SYSTEM:**

  This sprinkle system is provided in the operating areas of hazardous areas of plant like al sheds involving filling, storage and operation on cylinders, tank lorry decantation shed, expose flanges of mounded storage, LPG pump house, etc., as per the specifications given in OISD 144 / 150. Adequate storage of fire water in exclusive above ground tanks is maintained as per the fire water calculation. There is a fire water pipeline system which is constantly kept pressurized with a minimum of 7 kg per centimeter square using jockey pumps which start and stop automatically at preset pressures. The fire water pipeline is connected to the MV spray system through deluge walls where an air water balance is maintained. The MV Spray system is equipped with a quartzoid bulb fire detection system. When the temperature reaches 79º C the bulb will be burst releasing the air water balance at the deluge valve and thereby starting the sprinkling of water. This will reduce the pressure in the pipeline which will start the fire water pumps. Thus, the entire system of fire protection is automatic. In case of actuation of sprinkler either by bursting of quartzoid bulb, or 13 operating sprinklers manually, all plant machineries will trip electrically, electric siren will be sounded, fire engine will be started, all remote operated valve in liquid LPG line will be closed and emergency light will be activated (at night). This system is called Interlocked Shut down System.

- **MUTUAL AID –**

  Mutual Aid agreement will be made with other oil sector units in and around Salempur and larger units in Industrial Area. Fire Fighting Water Calculation for Proposed BP All LPG storage Vessels, Cylinder Storage/ Filling/ Repair Sheds, LPG Pump House, TLD are fully covered by medium velocity water spray system. The main components of the fire water system are: Fire Water Storage Fire Water Pumps Water Sprinkler/ Deluge system. Fire Hydrant/ Monitor distribution piping network.

- **FIRE WATER STORAGE AT SALEMPUR BP:**

  Total two numbers of fire water tanks with capacity of 2600 KL each.

  Total fire water storage at Site are 5200 KL.

- **FIRE WATER PUMPS CAPACITY AT SALEMPUR BP:**

  There will be 3 Fire water pumps of 616 KL per hour capacity. There will be 2 Jockey pumps with a capacity of 10 KL/Hr which start and stop automatically to maintain the water pressure.

xxxxxxxxxxxxxxxxxxxxxxxx