

## Pre-feasibility Report

### **PROJECT:- “Kandla-Viramgam-Gandhinagar-Sanand Pipeline section of Kandla Gorakhpur Pipeline” project**

#### **Introduction**

Liquefied Petroleum Gas (LPG) demand in India is on a continuous growth path. With the ongoing policy push to increase LPG penetration up to 80% of the total population, the industry is experiencing an upsurge in demand across all demographics of the country.

To cater to the country wide LPG demand of about 21 MMTPA, there are only 5 operational LPG pipelines with a combined capacity of 8.53 MMTPA. Moreover, there are another 4 LPG pipelines under implementation by Oil Marketing Companies (OMCs). Majority of these pipelines have been planned for linking the bottling plants in Southern and Eastern India. While there is only one pipeline linking West Coast of India to the northern states, there remain several LPG bottling plants in Eastern U.P. and Central India that are not served by any existing as well as upcoming/proposed LPG pipelines

In view of the situation, Indian Oil Corporation Limited submitted an Expression of Interest (Eoi) on 20.9.2016 to Petroleum and Natural Gas Regulatory Board (PNGRB) for development of 1987 km long, 3.75 MMTPA capacity LPG pipeline, originating from IOCL’s Kandla LPG import terminal to its bottling plant in Gorakhpur with enroute connectivity to various bottling plants in Gujarat, Madhya Pradesh and Uttar Pradesh.

As the proposed pipeline could meet the LPG requirement of en route LPG bottling plants of other Oil Marketing Companies (OMCs) i.e. Bharat Petroleum Corporation Limited, and Hindustan Petroleum Corporation Limited, initiated discussions for jointly implementing the pipeline on Industry basis

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Considering the projected OMC's requirement for LPG for their bottling plants in states of Madhya Pradesh and Eastern Uttar Pradesh, IndianOil, BPCL and HPCL have entered into a MoU for bidding jointly for obtaining authorization from PNGRB for laying and operating the proposed Kandla-Gorakhpur LPG pipeline

### **Need & Justification**

The demand of LPG is increasing consistently in recent years. Further, due to Government of India's emphasis to make the clean and environmental friendly fuel available to every domestic household in the country, growth in LPG demand is expected to increase at much steeper rate in the coming years.

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For the purpose of present feasibility, long-term industry demand of LPG has been projected considering no major change in Government policy on LPG with subsidized pricing and quantity capping and no restriction in providing new connections. While a significant impact is foreseen due to availability of Piped Natural Gas (PNG) in major cities, the same is likely to be overcome by increased penetration in uncharted areas. Further, LPG consumption in areas other than domestic i.e. industrial and automotive, are expected to grow at present growth levels.

Industry LPG demand is expected to reach about 30 MMTPA by 2021-22 which would further increase to about 37 MMTPA by the end of 2031-32 with demand in Northern and Western regions of the country to touch about 10 MMTPA and 9 MMTPA by 2031-32 respectively

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Thus, the proposed Kandla-Gorakhpur LPG pipeline, which will connect 22 existing and upcoming LPG bottling plants of all three OMCs i.e. IOCL (8), BPCL (8) and HPCL (6) to the LPG import facilities on the west coast, would meet logistics requirement of these 3 companies in most cost-effective and reliable manner.

### Project Brief

IHB Private limited a joint venture of Indian Oil Corporation Limited (IOCL), Bharat Petroleum Corporation (BPCL) and Hindustan Petroleum Corporation Limited (HPCL) with 50% equity holding by IOCL and 25% each by HPCL and BPCL, has been authorized by PNGRB on 31.12.2018 to lay, build, operate and expand Kandla Gorakhpur Pipeline (2757 km) from Kandla (Gujarat) to Gorakhpur (Uttar Pradesh) with additional feeder lines of Pipavav-Ahmedabad, Dahej-Koyali and associated branch lines.

### **Salient Details**

<b>Length</b>	• 2757 km [Gujarat-1063 km, M.P.- 611 km, U.P.-1083 km]	
<b>System Capacity</b>	• 8.25 MMTPA	
<b>Line Diameter (Inch)</b>	• 20"/ 18"/ 16"/ 14"/ 12"/ 10"/ 8"	
<b>Pumping Stations</b>	• Kandla, • Mithi Rohar, • Viramgam, • Dahej	• Pipavav, • IPS-1 (Ch. 237: Near Indore), • Dumad, • BPC Bina Refinery
<b>LPG Sources</b>	LPG Import Terminals : • Kandla, • Mundra (at Mithi Rohar), • Dahej • Pipavav.	Refineries- • IOCL's Koyali Refinery • BPCL's Bina Refinery
<b>Bottling Plants</b>	• HPCL Gandhinagar, • IOCL Ahmedabad (Sanand), • BPCL Ahmedabad (Hariyala), • BPCL Indore, • HPCL Indore,	• BPCL Kanpur, • HPCLLL Unnao, • IOC Lucknow, • BPC Lucknow, • IOCL Allahabad,

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	<ul style="list-style-type: none"><li>• IOCL Ujjain,</li><li>• IOCL Bhopal,</li><li>• BPCL Bhopal,</li><li>• HPCL Bhopal,</li><li>• BPCL Jhansi,</li><li>• IOCL Kanpur,</li></ul>	<ul style="list-style-type: none"><li>• BPCL Allahabad,</li><li>• IOCL Varanasi,</li><li>• HPCL Varanasi,</li><li>• IOCL Gorakhpur,</li><li>• BPCL Gorakhpur,</li><li>• HPCL Gorakhpur</li></ul>
<b>Product to handled</b>	<ul style="list-style-type: none"><li>• LPG (Propane – 50%, Butane – 50%)</li></ul>	

In first phase, about 332 Km of pipeline section is envisaged to be laid from Kandla import terminal to Viramgam, Viramgam to HPCL Gandhinagar bottling plant and Viramgam to IOCL Sanand bottling plant in Gujarat. The pipeline shall traverse through states of Gujarat. The designed capacity of the pipeline is 5.10 MMTPA. The pipeline will cater to demands of LPG of bottling plants enroute.

### **System Requirements:**

- ❖ Connectivity with Kandla Import LPG terminal.
- ❖ Pumping Station at Mithi Rohar
- ❖ Pumping station at Viramgam Intermediate Pump Station
- ❖ Delivery facilities at HPCL Gandhinagar Bottling Plant
- ❖ Delivery facilities at IOCL Sanand Bottling Plant
- ❖ Construction of intermediate Sectionalizing Valve (SV) stations as per OISD-214

### **Main Trunk Line:**

Laying of about 264 km long mainline, 18" OD x 0.25" WT, API 5L-X70 grade pipeline, from Kandla Dispatch Station to IOCL Sanand bottling plant enroute connectivity to Mithi Rohar Pumping station and Viramgam Intermediate Pump Station (IPS)

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### **Branch Line:**

Laying of about 68 km long branch line, 10.75" OD x 0.25" WT, API 5L-X46 grade pipeline, from Viramgam IPS to HPCL Gandhinagar bottling plant.

### **Pipeline Route**

- The main trunk line route takes off from existing premises of IOCL's Kandla Import facility from where the route alignment runs north towards Mithi Rohar station at a distance of about 10 km. The pipeline will then pass through Viramgam IPS, which is around 220 km from Mithi Rohar and reaches IOCL Sanand bottling plant. During this route, the pipeline will cross a Coastal Regulatory Zone, Wild Ass Sanctuary and marshy lands for about initial 7-8 km near Kandla and crosses Hadkiya creek at Ch 87 Km. The terrain is generally flat. The entire alignment of this section has scores of water bodies, most of which are non- perennial in nature.
- For HPCL Gandhinagar bottling plant connectivity, the branch line will originate from an appropriate location on main trunk line near Viramgam and traverses in north direction avoiding THOL BIRD Sanctuary to reach HPCL Gandhinagar bottling plant at about 68 km. The terrain is generally flat. The alignment is approachable with the help of Highways (NH & SH), MDR's and other metalled roads.
- The entire pipeline system would be provided with motor operated sectionalised valves at regular intervals all along the pipeline route including providing sectionalised valves on each side of major river crossings as per the provisions of OISD-214.

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