EXECUTIVE SUMMARY
OF
DRAFT ENVIRONMENTAL IMPACT ASSESSMENT (EIA) REPORT

For

Proposed Railway Unloading Siding
along with existing Jalandhar TOP of BPCL
Village-Suchi Pind, District- Jalandhar, Punjab-144009

(TOR Letter No. SEIAA/2018/202 date. 26/02/2018)

Project Category: *(B1)*
Project Sector: *6 b (Isolated storage & handling of hazardous chemicals (As per threshold planning quantity indicated in column 3 of schedule 2 & 3 of MSIHC Rules 1989 amended 2000).*

Project Proponent

M/s Bharat Petroleum Corporation Limited, Jalandhar TOP
Village-Such Pind, Jalandhar, Punjab-144009

Environmental Consultant

Earth Protection Group Environmental Consultant Private Limited
QCI – NABET Accredited EIA Consultant for Sector 28
ISO 9001:2015, ISO 14001:2015, OHSAS 18001:2007
4-D/620-B, Sector-4, Gomti Nagar Extension, Lucknow (U.P.)-226010
Email: epgec@yahoo.co.in, epgec1@gmail.com
Website: www.epgec.com

June-2018

EXECUTIVE SUMMARY

1.0 Project Description

BPCL owns and operates an existing Tap-off Point (TOP) at Village Suchi Pind District Jalandhar, which was commissioned in year 1997. The total storage capacity of the TOP is 26,402 KL for MS, HSD, ETHANOL, MTO, SBP & HEXANE. This TOP receives bulk petroleum products (MS & HSD) from nearby IOCL Terminal having input from their Panipat-Ambala- Jalandhar cross country pipeline and receives ETHANOL, MTO, SBP & HEXANE through road tankers. The primary operations involved are receipt, storage and distribution of finished petroleum products and blending of bio fuels.

Owing to high demands, petroleum product shortages are often faced because of unavailability of the products through IOCL's Panipat – Ambala – Jalandhar cross country pipeline. To meet the shortage, petroleum products are moved through tankers and Lorries from other supply points situated at greater distance from Jalandhar. Movement of bulk petroleum products over long distance is dangerous, techno-commercially non-viable and non-environment friendly.

To ensure the continuous supply of petroleum products, BPCL proposes to provide a railway unloading siding as an additional means of receipt of bulk petroleum products. BPCL's existing Jalandhar TOP does not have a direct frontage along Railway Track. Hence, they have identified suitable plot of private land near Suchipind Railway station abutting Jalandhar Cantt- Pathankot railway line for setting up proposed railway unloading siding. The proposed siding will be in a separate premise approx. 700-800 m away from existing Jalandhar TOP on 28.9 Acres land.

1.1 Land Requirement

BPCL is acquiring 231 Kanal- 05 Marlas (28.9 acres) agricultural land belonging to private landowners and situated in four villages viz Suchipind, Chak Hussaina Lambapind, Daddhapind & Mubarakpur. Change in land use of 28.9 acres land being acquired by BPCL is envisaged from agricultural to industrial use.

The acquisition of the said land in being done through "Mutual Consent Route" wherein the land owners have consented to sell the land to BPCL and BPCL will pay the compensation as per the directives of District Administration which includes 100% Solatium over and above the market rate of the land. (Notification No. 24/109/2015-LR-1/9877 dated 18.05.2016 issued by Revenue, Rehabilitation and Disaster Management Department (Land Revenue Branch), Govt. of Punjab). The compensation of land has been fixed by DC Jalandhar on 15.09.2017.

1.2 Cost of Project

The total investment for the proposed railway unloading siding is approximately INR 100 Crores.

2.0 Description of the environment

Environmental baseline monitoring has been carried out from 5th February, 2018 to 4th May, 2018 used to identify potential significant impacts. Environmental baseline monitoring for meteorology, air quality, water quality, soil quality, noise level was carried out by M/s Prakriti Consultant Services (An approved laboratory from MoEF &CC vide S.O. No. 1190 (E) dated: 01/05/2014 and valid up to 30/04/2019). As per TOR (**No. SEIAA/2018/202 dated 26/02/2018)** granted by State Level Environment Impact Assessment Authority (SEIAA), Punjab in the 126th Meeting held on 1st February 2018.

2.1 Study area

The study includes detailed characterization of existing status of environment in an area of 05 km radius around proposed project site. However in some cases, the core area comprising of 10 km radius around proposed site has been considered for EIA study as per the TOR granted by SEIAA.

2.2 Meteorology

The weather monitoring station was installed at the project site to record temperature, wind speed, wind direction, relative humidity. Rainfall was monitored by rain gauge. The hourly minimum, maximum values monitored during study period from 5th February, 2018 to 4th May 2018.

2.3 Air Environment

The levels of PM_{10}, $PM_{2.5}$, Sulphur Dioxide (SO_2), Oxides of Nitrogen (NO_X), Carbon Monoxide (CO) were monitored for establishing the baseline status as per CPCB guideline and methodology for monitoring and analysis of air parameters was carried out as per standard method.

Ambient Air Quality Monitoring was carried out 24 hourly. PM10, PM2.5, SO2, NOx, were monitored twice a week for 12 weeks in study area and 8 hourly samples were monitored twice a week for 12 weeks for carbon monoxide.

The minimum, maximum, average and 98th percentile values have been computed from the observed raw data for all the AAQ monitoring stations.

PM10: PM10 concentration ranged from **47.1** to **98.4** µg/m^3 in the study area. The maximum concentration of 98.4 µg/m^3 was recorded at Existing Jalandhar TOP Admin Building near main gate (AAQ2) and minimum concentration of 47.1 µg/m^3 was recorded at village Chohak Kalan (AAQ3). High concentration was observed due to dust emission from vehicular traffic movement observed near Existing Jalandhar TOP Main gate.

PM2.5: The minimum and maximum concentrations for PM2.5 were recorded as **12.6** µg/m^3 and **55.4** µg/m^{3}respectively. The maximum concentration was recorded at Existing Jalandhar TOP Admin Building near main gate (AAQ2) and the minimum concentration was recorded at Kolta (AAQ8).

SO_2: SO_2 concentration ranged between **3.1** to **22.7** µg/m^3 in the study area. The maximum concentration of 22.7 µg/m^3 was recorded at Moti Bagh (AAQ4) and minimum concentration of 3.1 µg/m^3 was recorded at village Chohak Kalan (AAQ3).

NOx: The minimum and maximum NOx concentrations were recorded as **9.6** µg/m^3 and 36.4µg/m^3 respectively. The maximum concentration was recorded at Nangal Jamalpur (AAQ6) and the minimum concentration was recorded at Moti Bagh (AAQ4).

CO: CO concentration ranged between **0.06** to **0.45** mg/m^3 in the study area. The maximum concentration of 0.45 mg/m^3 was recorded at Nangal Jamalpur (AAQ6) and minimum concentration of 0.06 mg/m^3 was recorded at Nangal Jamalpur (AAQ6).

The concentrations of PM10, PM2.5, SO2, NOx, and CO are observed to be well within the standards prescribed by Central Pollution Control Board (CPCB).

Construction of proposed additional means of receipt of bulk petroleum products (only MS & HSD) by rail wagon from proposed railway unloading siding in to existing tankage through TWD pumps without enhancing the TT filling capacity. Hence, proposed railway unloading siding shall not impart any adverse impact on existing air environment.

2.4 Noise Environment

The noise monitoring has been conducted at 08 locations in the study area. The noise levels were measured once during the study period.

a. Day Time Noise Levels (6 am to 10 pm)
The noise levels at all locations ranged between **49.7 to 63.4** dB (A) Leq. Noise levels near proposed railway unloading siding is 63.4 dB (A) Leq during day time which was well within the prescribed limit of 75 dB (A) for industrial area. Mean of the noise level over a specified period (day time) near the proposed railway unloading siding is higher than the other locations of the study area because of nearby railway track.

b. Night Time Noise Levels (10 pm to 6 am)
The night time noise levels at all locations ranged between **32.2** dB (A) to **51.2** dB (A) Leq.Noise levels near proposed railway unloading siding is **51.2** dB (A) Leq during night time which was well within the prescribed limit of 70 dB (A) for industrial area. Mean of the noise level over a specified period (night time) near the proposed railway unloading siding is higher than the other locations of the study area because of nearby railway track.

2.5 Water environment

Eight groundwater samples and two surface water samples within the study area were considered for assessment. Water analysis was carried out for relevant physical and chemical parameters as per the methods prescribed in IS 10500 and “Standard Methods for the Examination of Water and Wastewater (American Public Health Association-APHA)”.

a. Ground Water
The analysis of ground water results are compared with the IS-10500 standards. The analysis results indicated that the pH ranged between 7.1 to 7.9, which are within the specified standard of 6.5 to 8.5. TDS was ranging from 355 to 560 mg/l. Total hardness was found to be in the range of 245 to 412 mg/l. The nitrate and sulphate were found in the range of 4.3 to 6.2 mg/l and 8.2 to 12.2 mg/l respectively. Calcium varied between 56.0 to 76.8 mg/l.

b. Surface Water
The analysis of surface water results are compared with the IS-10500 standards**.** The analysis results indicated that the pH ranged between 7.4 to 7.5, which are well within the specified standard of 6.5 to 8.5. The TDS was observed to be 928 to 960 mg/l which is within the permissible limit of 2000 mg/l. The Total Hardness recorded was in the range of 410 to 423 mg/l as CaCO3 which is also within the permissible limit of 600 mg/l. The nitrate was found to be in the range of 14.3 to 15.1 mg/l. The levels of chloride and Sulphate were found to be in the range of 58.7 to 68.2 mg/l and 32.4 to 35.3 mg/l respectively. Bacteriological, all surface water samples were faecally contaminated and not suitable for drinking purpose.

2.6 Land environment

Soil Characteristics
Four locations within the study area were selected for soil sampling. It has been observed that the pH of the soil was ranging from 7.1 to 8.0 indicating the soils are basic in nature. The Electrical Conductivity value is less than 2000 µS/cm, the soil is said to be Non saline in nature. Texture of the soil sample is predominantly sandy. It was found that the soil in the Study area shows moderate fertility.

2.7 Biological environment

Flora and fauna studies were conducted to assess the existing floral and faunal composition of the 10 Km radius of study area. There is no any scheduled fauna have been found in the study area, which is belongs to Schedule –I as per Wild life protection Act (1972).

2.8 Socio- economic environment

Study of socio-economic profile around the proposed project site has been carried out based on "Census of India 2011 and field survey. The EIA Study for the proposed project, the study area has been considered to be an area covered within a radius of 05 km around the site.

3.0 Anticipated environmental impacts & mitigation measures

3.1 Impact on Air Environment

Construction Phase: Fugitive dust generated during earth filling and other earth moving activities and during concreting works. Due to use of construction machinery, mobile DG set and movement of trucks for the transportation of construction material some NOx and little amount of SO_2 emission will be there.

During Operation Phase: One number of 320 KVA additional DG sets will be installed and operated occasionally in case of power failure and there will not be any regular source of gaseous emissions.

Air quality modeling and prediction: The quantification of the present air pollution load and predicted air pollution load due to proposed project activity during the construction phase as well as operational phase on the link road connected to BPCL, Jalandhar Top to Hoshiyapur –Jalandhar City road is carried out by using Caline 4 Model and suggested air pollution mitigation measures.

The resultant concentration levels (existing, predicted and total predicted) for particulate matter, and CO, NO_2 are well within the NAAQS levels prescribed by CPCB. Hence it is inferred that considering resultant concentration levels, the pollution load exerted due to proposed project will be insignificant.

Mitigation Measures during construction phase

The impact on ambient air quality due to fugitive dust generated during construction period is not permanent in nature, and will cease with the completion of construction activity. However, use of tarpaulin for covering the material being transported in trucks, sprinkling of water will control the dust generated, mobile DG set will be provided stack height as per CPCB standard and proper maintenance of construction machinery, equipments and vehicle will be carried out.

Mitigation Measures during operational phase

In order to minimize the fugitive emissions of VOCs, the following measures were undertaken at design stage:

- Minimum number of flanges, valves etc;
- Provision of technologically improved leak proof valves;
- High grade gasket materials for packing;
- Usage of pumps with (double) mechanical seals; and
- Proposed DG sets will be provided stack height as per CPCB guidelines to vent out combustion gases in to atmosphere.

3.2 Impact on Noise Levels

During Construction Phase: During the construction phase, construction machinery, equipment and vehicle movement, mobile DG sets were major sources of noise generation.

It is noticed that the impacts of the noise would almost be negligible as it would be restricted within the area of source. Such impacts will be issues of occupational health. Hence, the impacts of noise on occupational health would be mitigated by supplying PPE like ear muffs/plugs for employees engaged with the activities in the noise generation areas.

Mitigation Measures during construction phase

- Mobile DG sets will be fitted with acoustic enclosure.
- Protective equipment like ear muff and ear plug will be provided to personnel likely to expose in high noise areas.
- Greenery will be developed around proposed railway siding boundary to reduce noise pollution.

Therefore, no significant impact is anticipated on noise levels during construction phase of the proposed railway unloading siding.

During Operation Phase: No continuous operation will be carried out at the proposed railway unloading siding only decantation operation of rail wagon will be carried out through TWD pumps in to existing storage tank of BPCL, Jalandhar TOP whenever rail rack comes (initial traffic of 10-15 rakes per month, which will increase as per the market demands)

Proposed 320 DG sets fitted with acoustic enclosure will be operated only during grid power failure when decantation operation carried out. The proposed DG set will be installed at existing Jalandhar TOP.

Mitigation Measures during operational phase

- TWD pumps will have built-in type noise control abatement technology.
- Proposed 320 KVA DG sets will be fitted with acoustic enclosure.
- Protective equipment like ear muff and ear plug will be provided to personnel likely to expose in high noise areas.
- Green Belt (33%) will be developed around proposed railway siding boundary to reduce noise pollution.

Therefore, impact on noise levels of the study area due operation of proposed railway unloading siding will be insignificant.

3.3 Impact on water (Surface & Ground)

During Construction Phase: 20 KLD water required for construction will be bought out from commercially available water sources supplying water to construction sites. 03 KLD water requirements for domestic uses. 2.5 KLD domestic sewage generated will be treated in proposed sewage treatment plant (STP) and treated STP water will be used in construction.

No disposal of construction waste outside the plant and no leaching are anticipated. No ground water will be extracted and no water disposed off from the proposed project site. Thus the quality and quantity of ground water and surface water will not have any adverse impact.

Mitigation measures during construction phase

- Sewage treatment plant will be provided for the treatment of domestic waste water.
- Construction waste generated during construction of proposed railway unloading siding will be reuse/recycle.
- No ground water will be extracted. Water required for the construction will be bought out from commercially available water sources through water tankers.

During Operational phase: No process water is required during operation, so no process effluent is generated during the operation of proposed railway unloading siding. Small quantity, 160 liter per day domestic waste water generated during operation of proposed railway siding will be treated in septic tanks and soak pits. Water will be required only for development of green belt and fire/mock drill or in fire fighting purposes during emergency.

Mitigation measures during construction phase

- There will not be any adverse impact during operation phase on the ground water as there will be no much increase in the water consumption.
- Proposed tank wagon unloading siding will be provided with washable concrete apron, which prevents percolation of product in to soil/ground water if any accidental release or leakage.
- Oil Water Separator (OWS) will be provided and all the drains where petroleum product handled will be passing through OWS to prevent petroleum product in to ground water or surface water.
- Separate rainwater / storm water drains will be provide and connected to nearest main drainage system.

3.4 Impact due to Solid / Hazardous Waste

During Construction Phase

a. Solid Waste

The spoil generated will be reused in site filling. Construction waste generated such has scrap steel, concrete debris etc will be reuse/recycle .No other waste production is envisaged during construction, as there will be no demolition work. No domestic waste will be generated as no construction worker will be residing at proposed site. The construction workers will be drawn from the local areas only.

b. Hazardous Waste

There is no generation of Hazardous waste during the construction phase except spent oil. The quantity will be very less and will be disposed off through authorized recycler.

Mitigation measures during construction phase

- The proposed site will be provided adequate space for construction yard and scrap yard.
- Separate space will be provided for the temporary storage of hazardous waste with concrete flooring and shed.
- Maintaining housekeeping at construction site.

During Operational phase

a. Solid Waste

No Municipal solid waste will be generated from operation of proposed project as no person residing inside the proposed siding.

b. Hazardous Waste

Around 0.2 KL/Year used/spent oil (Cat. 5.1 HW Rules-2016) generated will be disposed off through authorized recycler. Insignificant quantity of OWS skimmed oil &Oil socked gloves & Cotton is generated..

Mitigation measures during operational phase

- Used/spent oil and oil socked gloves & Cotton will be stored at the facilities available in the existing Jalandhar TOP and disposed of through SPCB approved recyclers.
- Insignificant quantity of OWS skimmed oil collected in SLOP tank and reused.

3.5 Impact on Ecology

a. Terrestrial Ecology

During Construction Phase

The proposed project will be on agriculture land and does not have large trees. Some cultivated tress such as *Poplar* and *Eucalyptis* and scattered bushes are found. Therefore, no major impact is anticipated on terrestrial ecology of the area.

During Operation Phase

A green belt 33% of proposed project area on the periphery as well as on the space available in the proposed railway unloading siding will be developed. Growth of plantation and development of green belt at the proposed railway unloading siding is likely to improve the flora and fauna in the area.

b. Aquatic Ecology

During Construction Phase

2.5 KLD domestic sewage generated during construction of proposed railway unloading siding will be treated in sewage treatment plant (STP) and treated STP water will used in construction. Hence, no impact is envisaged on aquatic ecology of any surface water body.

During Operation Phase

Domestic wastewater (160 liter per day) generated from the proposed railway siding during operation phase will be treated in septic tanks and soak pits.

In normal condition, no waste water will be discharged outside the proposed railway unloading siding. All the drains where petroleum product handled will be passing through OWS. Hence, no impact is envisaged on aquatic ecology from the operation of proposed facilities.

3.6 Impact on Land Environment

Out of the total proposed area 9.57 Acres (more than 33% of the total proposed area) will be covered under greenbelt/ plantation in order to reduce dust and noise pollution levels and to increase aesthetic beauty of the area.

3.7 Impact on Demographic and Socio-economic Environment

Demographic

During construction phase, workers were deployed from nearby villages, mostly from local area. Operation of the proposed project does not require large work force and existing manpower are sufficient for operation of proposed railway unloading siding. Only additional 06 nos. of security guard required for the security of proposed siding and 04 nos. of unskilled manpower required for the purposed of other works such as grass cutting, housekeeping etc. Therefore, large scale immigration has not taken place and the impact on demography of the area is insignificant.

Economic Impacts

The construction and operation of the proposed project had some beneficial impact due to increase in incomes as local unskilled, semiskilled and skilled persons as they gained some direct and indirect employment. However, in view of the small manpower and support facility requirements, the beneficial impact due to the operation of the proposed projectis marginal.

Social Impacts

Since the immigration of work force during construction and operation of the proposed project is very small, the impact on facilities and cultural aspects are insignificant.

4.0 Environmental monitoring program

4.1 Environmental monitoring program during construction phase

Monitoring Parameters	Frequency of Monitoring	Location
Ambient Air Quality at appropriate location for PM_{10}, $PM_{2.5}$, SO_2,NOx, CO	Six monthly or as prescribed by SPCB/CPCB	• Project site • Existing Jalandhar TOP • Upwind direction • Downwind direction • Nearest Habitat
Water Quality Monitoring for Relevant parameters of IS – 10500 for drinking purposes	Six Monthly	One drinking water Sample
Day & Night level Noise Monitoring	Six Monthly	• Project site • Nearest Habitat

4.2 Environmental monitoring program during operational phase

Monitoring	Frequency of Monitoring	Location
Ambient Air Quality at appropriate location for PM10, PM2.5, SO2,NOx, CO HCs and VOCs	Annually or as prescribed by SPCB/CPCB	• Railway siding • Existing Jalandhar TOP • Upwind Direction • Downwind Direction • Nearest Habitat
Stack emission for point sources PM, SO2, NOx & CO.	Annually or as prescribed by SPCB/CPCB	• Fire engine stacks • D.G. Stack
Water Quality Monitoring for Relevant parameters of IS – 10500	Annually or as prescribed by SPCB/CPCB	One sample
Waste Water Quality (Treated) for pH , TSS, Oil & Grease, BOD, COD, etc.	Annually or as prescribed by SPCB/CPCB	OWS outlet for existing and proposed
Day & Night level Noise Monitoring	Annually or as prescribed by SPCB/CPCB	• Railway siding • Existing Jalandhar TOP • Nearest Habitat • Nearby road.

5.0 Additional studies

In additional studies, Risk Analysis followed by DMP for BPCL, Jalandhar TOP has been prepared, which will help in identifying the vulnerable points and to promote towards preparedness to counter any mishap. Risk analysis and disaster management plant have been prepared and incorporated in EIA Report.

6.0 Benefits of project

The proposed project will strengthen the petroleum product availability in the region including for defense establishments in North Western frontier as same will be used for receiving rescue supplies during product shortage caused due unavailability of product through cross country pipeline. The proposed project will improve uninterrupted supply of the High Speed Diesel (HSD), Motor Spirit (MS) in 8 District of Punjab along with 4 Districts of Himachal Pradesh as well as Union Territory of Chandigarh which is vital for economic growth as well as improving the quality of life. Establishment of large developmental projects improve the availability of the physical infrastructures like approach roads, drainage, communication and transportation facilities etc. Many other benefits are as under:

- Aesthetics improvement by general greening with emphasis on biodiversity.
- Improved safety-security in surrounding with better Law and Order.
- Reduction in pollution caused due to large volumes of petroleum product through large distances through Tanker Lorries vapour losses during shortage or supply from IOCL's pipeline.
- Railway siding facility will facilitate receipt of petroleum products sourced from multiple supply points in the country.

7.0 Environmental management plan

7.1 Air Environment Management

During Construction phase sprinkling of water shall be done at regular intervals to control fugitive dust emissions during leveling of surface and earth filling. All vehicles used for the transportation of construction material should have of valid 'Pollution under Control' (PUC) Certificates. Mobile D.G. Set will be used for supply of power at site will be provided with stack height as per CPCB standard.

During operational phase no continuous source of air pollution from the operation of existing and proposed activities. The sources of air pollution are limited to the DG Sets and the Fire water pumps. The stack height of the DG set shall be as per prescribed standard.

7.2 Waste water Management

Domestic waste water will be generated during construction of railway unloading siding and it will be treated in Sewage Treatment Plant. The treated water will be reuse in construction work. No permanent employment will be on railway unloading siding, so only 160 liter per day domestic waste water generated during operation of proposed railway siding will be treated in septic tanks and soak pits.

7.3 Noise Environment Management

All the equipments used in construction shall strictly conform to the prescribed noise standards of Central Pollution Control Board. All construction personal should be provided with ear plugs and other personal protective equipment. The mobile D.G. Set used during construction phase will also provided with acoustic enclosure.

7.4 Land Pollution Management

During construction phase no fuel / lubricants will be stored in project site. The spoil generated during proposed project will be reused in site filling. Construction waste generated during construction of proposed project such has scrap steel, concrete debris etc will be reuse/cycle.

During operational phase very less quantity of hazardous waste generated such as lubricant oil will disposed through authorized vender only. Oil Water Separator (OWS) will be provided and all the drains where petroleum product handled will be passing through OWS to prevent petroleum product in to ground water or surface water. Dip Tray is also provided in siding and in pump house. The floor at railway unloading siding area will be provided with washable concrete apron, which prevents percolation of product in to soil/ground water if any accidental release or leakage.

7.5 Green-Belt Development

Out of the total proposed area more than 33% will be covered under greenbelt/ plantation in order to reduce dust and noise pollution levels and to increase aesthetic beauty of the area. 5750 nos. (as per the TOR- 1500 trees per hectare) of native plant species will be planted on the proposed green belt area within the proposed railway unloading siding in two years.

7.6 Rain water harvesting

Rain water harvesting will be provided in non hazardous area. The run-off water from the roof structure and paved areas will be collected through storm water drainage system and led to rain water harvesting structure.