

EXECUTIVE SUMMARY

for

Proposed increase in Iron Ore excavation capacity from 0.4 MTPA to 1.2 MTPA along with crusher & screen plant of capacity 600 TPH and Installation of a new 0.95 MTPA (throughput) iron ore beneficiation (dry/wet)

Mining Lease Area: 66.00 Ha

At

**Forest Compt. No. 632, 633, 634 & 635, Forest range
Durg Kondal, Forest Division East Bhanupratappur,
Village - Hahaladdi, Tehsil – Bhanupratappur, District
Kanker, Chhattisgarh**

Of

M/s. Pushp Steels & Mining (P) Limited

Environmental Consultant

M/s AmplEnviron Private Limited

Hyderabad

1.0 INTRODUCTION

M/s. Pushp Steels & Mining (P) Limited has been granted a mining lease of Iron ore over an area of 215.00 Ha., out of which forest and environmental clearances was initially obtained over an area of 66.00 Ha. and accordingly mining lease deed was initially executed in Forest Range Durg Kondal, Forest Division East Bhanupratappur, District Kanker for 50 years period from 07/01/2017 to 06/01/2067. The working area for which lease deed has been executed is 66.00 Ha (including 4.5 Ha approach road and 8.5 Ha Safety Zone).

Also, supplementary lease deed has been executed for compliance of DGPS survey, a copy of the lease deed and supplementary lease deed are enclosed as Annexure-I. The said supplementary lease deed has also mentioned that the lease deed of 215 Ha was granted by the State Govt., out of which lease deed is initially executed over 66.00 Ha.

Earlier, the State Govt. has issued a grant order for 215 Ha area and advised to lease execution for 66.00 Ha. vide letter No.F 3-92/2003/12/Naya Raipur, Dated 05/01/2017. The forest clearance was initially granted for 66.00 Ha vide letter No. F-8-125/2006-FC dated 06/05/2009. Pushp Steels & Mining (P) Limited was obtained Environment clearance for Mine Lease area of 66.00 Ha and iron ore excavation capacity 0.40 Million Tones per annum from Ministry of Environment and Forest, New Delhi, vide letter No. J-11015/484/2006-IA II(M), dated 28/01/2008. Latter company was obtained CTE and CTO from Chhattisgarh Environment Conservation Board Chhattisgarh. The company was obtained latest CTO from Chhattisgarh Environment Conservation Board Regional Office, Jagdalpur, Chhattisgarh vide order No. 1089/RO/TS/CECB/2019 date 12/09/2019 which is valid up to 28/10/2024. The renewal of the same has already been applied with Chhattisgarh Environment Conservation Board vide online application dtd 22.05.2024.

Now, Pushp Steels & Mining (P) Limited have proposed for increase in Iron Ore excavation capacity from 0.4 MTPA to 1.2 MTPA along with crusher & screen plant of capacity 600 TPH and Installation of a new 0.95 MTPA(Throughput) iron ore beneficiation (dry/wet) in the Mine lease of 66.00 Ha in Forest Compt. No. 632, 633, 634 & 635, Forest range Durg Kondal, Forest Division East Bhanupratappur, Village - Hahaladdi, Tehsil – Bhanupratappur, District Kanker, Chhattisgarh. The proposed Expansion Project cost - Rs. 6,000.0 Lakhs.

As per the Ministry of Environment, Forest & Climate Change, New Delhi Notification, dated 14th September, 2006 and its subsequent amendments, all Mine Lease areas equal and less than 250 Ha. of Major Minerals are classified under Category 'B1'.

As per MOEF&CC Notification, dated 14th September, 2006 and its subsequent amendments, Form-1 & Pre-feasibility Report have been submitted to State Environment Impact Assessment Authority (SEIAA), Chhattisgarh vide online proposal No. SIA/CG/MIN/72040/2022 Date 07/02/2022 for increase in Iron Ore excavation capacity from 0.4 MTPA to 1.2 MTPA along with crusher & screen plant and Installation of a new 0.95 MTPA iron ore beneficiation (dry/wet) under B1 category for issue of Term of Reference (TOR) for the Mine Lease Area of 66.00 Hect. in Forest Compt. No. 632, 633, 634 & 635, Forest range Durg Kondal, Forest Division East Bhanupratappur, Village - Hahaladdi, Tehsil – Bhanupratappur, District Kanker, Chhattisgarh. The State Environment Impact Assessment Authority (SEIAA) Chhattisgarh is issued TOR vide letter No. 1085/SEIAA /CG/Mine/1927, Naya Raipur Atal Nagar, Date: 25/07/2023.

1.1. PROJECT DESCRIPTION

M/s. Pushp Steels & Mining (P) Limited proposes for increase in Iron Ore excavation capacity from 0.4 MTPA to 1.2 MTPA along with crusher & screen plant of capacity 600 TPH and Installation of a new 0.95 MTPA(Throughput) iron ore beneficiation (dry/wet) in the existing Mine lease of 66.00 Ha in Forest Compt. No. 632, 633, 634 & 635, Forest range Durg Kondal, Forest Division East Bhanupratappur, Village - Hahaladdi, Tehsil – Bhanupratappur, District Kanker, Chhattisgarh. The project planning details are showing in Table 1.

Table 1: project details

S. No	Particulars	Details
A.	Nature of project	Iron Ore Mine
B.	Size of project	
1.	Mining Lease area	66.00 ha, (Forest land)
2.	Proposed Production capacity	increase in Iron Ore excavation capacity from 0.4 MTPA to 1.2 MTPA along with additional crusher & screen plant capacity of 350 TPH leading to total screening and crushing capacity of 600 TPH and Installation of a new 0.95 MTPA

S. No	Particulars	Details
		(Throughput) iron ore beneficiation (dry/wet)
3.	Life of the mine	6 years
C.	Project location	
1.	Survey No	Forest Compt. Nos. 632, 633, 634 & 635 Forest range Durg Kondal, Forest Division East Bhanupratappur,
2.	Village	Hahaladdi
3.	Tehsil	Bhanupratappur
4.	District	Kanker
5.	State	Chhattisgarh
6.	Land	Forest land
7.	Toposheet No	64 D/15
D.	Environmental Settings Details (With approx. aerial distance and direction from the mining lease boundary)	
1.	Nearest Village/ City	Tumrisur Village – 1.0 Kms, (W)
2.	Nearest National Highway/ State Highway	State Highway is at distance of 4.0 Kms
3.	Nearest Railway station & Airport	Nil within 10 km Radius (Bhanupratappur Rainway Station – 18.0 Kms) (Swami Vivekananda International Airport, Raipur: 134 Km towards NE)
4.	Archeological Place	Nil within 10 km Radius
5.	National Park, Wild Life Sanctuary, Wild Life Corridors, Biosphere Reserves, Migratory routes for Birds etc. within 10 Km radius study area	Nil within 10 km Radius
6.	Reserve Forest or Protected Forest within 10 Km radius	Project area is part of Durgukondal Forest Range in Bhanupratappur (East) Forest Division
7.	Water bodies within 10 km radius	Khandi Nadhi- 0.2 Kms m in North Saindri Nadhi – 0.6 Kms(NE) Kotri nadhi – 6.8 Kms(W)
8.	Interstate Boundary	Nil within 10 km Radius
9.	Seismic Zone	Zone – II
E.	Cost Details	
1.	Total Project Cost	Rs. 60.0 Crores
F.	R & R	
		No R & R involved

1.2. MINING METHOD

The proposed mine is planned to be carried out by opencast mechanized mining method with drilling and controlled blasting. The ROM will be loaded into tippers using Excavator.

1.3. WATER

The water requirement for the existing mine is 40.0 KLD. The water required for expansion proposal will be 40 KLD. Total water requirement after expansion will be 80 KLD. Need be water can be drawn from Khandi river flowing nearby. The water required mainly for dust suppression, plantation and Domestic purpose. The water drawl permission of existing mine was already obtained from CGWA New Delhi. The water required will be for the proposed expansion will be taken from ground water (Bore wells). We will obtain ground water drawl permission from CGWA New Delhi. The breakup of the water requirement is shown in Table 2.

TABLE 2 : WATER REQUIREMENT

S.No.	Item	Existing (KLD)	Expansion (KLD)	After Expansion (KLD)
1	Dust Suppression	27.0	--	27.0
2	Domestic	3.0	--	3.0
3	Greenbelt	10.0	--	10.0
4	Beneficiation Process	--	40	40.0
	Total	40.0	40.0	80.0

2.0 DESCRIPTION OF ENVIRONMENT

As part of Environmental Impact Assessment study, baseline environmental monitoring was carried out for Post Monsoon, covering the months of October 2021 to December, 2021.

2.1 METEOROLOGY

The data collected on wind speed and wind direction was used for computation of wind percentage frequencies in all the sixteen directions is given in **Table 3**. The predominant wind direction is from NE followed by NNE. The wind rose diagram is shown in **Figure 1**.

Table 3: Site specific meteorological data (October 2021 to December, 2021)

Month	Temperature (°C)		Humidity		Rainfall (mm)
	Min.	Max.	Min.	Max.	
October 2021	18.3	29.2	72	61	74.0
November 2021	14.4	26.7	61	50	8.5
December 2021	10.1	23.7	60	49	9.1

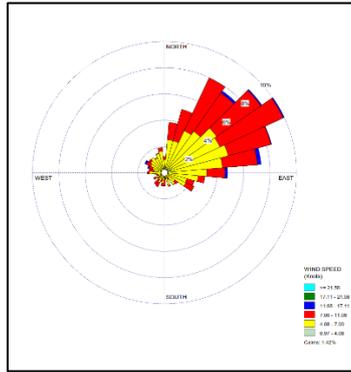


Figure 1: Windrose Diagram (Site Specific)

2.2. AIR ENVIRONMENT

The ambient air quality monitoring was carried out at 8 locations. The parameters monitored during the study period were Particulate Matters (PM₁₀), Particulate Matters (PM_{2.5}), Sulphur dioxide (SO₂), Oxides of nitrogen (NO_x), Carbon Monoxide (CO).

PARTICULATE MATTER – PM₁₀

The 98th percentile values of particulate matter monitored in the study area are in the range of 49.6 to 80.8 µg/m³ which were found to be well within the prescribed limits of NAAQ standards.

PARTICULATE MATTER – PM_{2.5}

The 98th percentile values of PM_{2.5} monitored in the study area are in the range of 18.8 to 35.0 µg/ m³, which were found to be well within the prescribed limits of NAAQ standards.

SULPHURDIOXIDE-SO₂

The 98th percentile values of Sulphur dioxide in the study area are in the range of 14.1 to 18.2 µg/ m³, which were found to be well within the prescribed limits of NAAQ standards.

OXIDES OF NITROGEN – NO_x

The 98th percentile values of Nitrogen oxides in the study area are in the range of 15.1 to 21.6 µg/ m³, which were found to be well within the prescribed limits of NAAQ standards.

CARBON MONOXIDE – CO

CO values in the study area are in the range of <0.1 to 0.52 mg/ m³ which were found to be well within the prescribed limits of NAAQ standards.

2.3. NOISE ENVIRONMENT

Eight monitoring locations were selected to assess the noise levels in the study area. The Maximum Noise (day) value was observed 62.1 dB(A) and the minimum noise (day) value was observed 48.4 dB(A). The Maximum Noise (night) value was observed 54.7 dB(A) and the minimum noise (night) value was observed 39.2 dB(A).

2.4. WATER ENVIRONMENT

Eight Groundwater and three Surface water samples were collected within the study area. The parameters thus analyzed were compared with the drinking water standard of IS 10500:2012.

Summary of Ground Water Quality

- pH of the ground water samples collected was in the range of 6.7– 8.1.
- Total Dissolved Solids in the samples was in the range of 391 – 532.0mg/l.
- Total Hardness was found to vary between 216 – 328 mg/l.
- Chlorides concentration was found to vary between 59.0 – 109.0mg/l.
- Fluoride concentration was found to vary between 0.58 – 0.85 mg/l.

Summary of Surface Water Quality

- pH of the ground water samples collected was in the range of 7.7 – 7.9.
- Total Dissolved Solids in the samples was in the range of 220– 261 mg/l.
- Total Hardness was found to vary between 131.4 – 141.0 mg/l.
- Dissolved Oxygen was found to vary between 6.8- 7.1 mg/l.
- Biological Oxygen Demand was found to vary between 5.1 – 5.8 mg/l.

2.5. SOIL ENVIRONMENT

Soil samples were collected from 6 locations in the study area for assessing the soil quality. All the soil samples showed average to good fertility.

In the study area, variations in the pH of the soil were found to be 6.5 to 6.8. Electrical conductivity (EC) in the study area ranged from 0.364 μ Mhos/cm to 0.510 μ Mhos/cm. Available Nitrogen in the study area ranged from 210 to 266 kg/ha. Available Phosphorus in the study area ranged from 13.65 to 24.20 kg/ha. Available Potassium in the study area ranged from 144 to 245.10 kg/ha.

2.6. LAND ENVIRONMENT

Study reveals that major area about 66.00 Ha, total area is forest land. Proposed expansion project site is having good accessibility of road network. Proper land use planning should be done for the watershed management prior to mining operations. An effective water management practices and greenbelt development needs to carry out by the project proponent.

2.7 BIOLOGICAL ENVIRONMENT

Land use and land cover of the study area reveals the absence of any National Parks or Wildlife Sanctuaries or Reserve Forests or Biosphere Reserves or Important Bird Areas (IBAs) or Protected Wetlands and perennial water bodies within 10km radius of the project.

3.0.ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

3.1. IMPACT ON AIR ENVIRONMENT AND MITIGATION MEASURES

The air borne particulate matter is the main air pollutant contributed by opencast mining. Various emission sources are identified from the mining operations.

The mining operation are by adopting Open Cast Mechanized mining method. The source of emissions from the proposed operations will be from active mining and its activities like drilling, blasting, loading/unloading, and transportation of materials. The emissions will be mainly Particulate Matter (PM).

Air Pollution Control Measures

However, to further minimize the pollutant concentration especially Particulate matter, the following control measure should be adopted by the project proponent

- Wet drilling and Controlled blasting
- Water spray on haul roads to avoid dust generation during transportation.
- Water spray at truck loading and un-loading of materials
- Covering of material when transport through trucks/dumper
- All vehicles above Bharat IV norms should be used.

3.2.IMPACT ON NOISE ENVIRONMENT AND MITIGATION MEASURES

Operation of heavy earth moving machines and allied quarrying operations such as transport, blasting, workshop activities etc. will produce noise pollution.

Noise Pollution Control Measures

The following control measures will be adopted to keep the ambient noise levels well below the limits:

- Drilling will be carried out with the help of sharp drill bits which will help in reducing noise.
- Controlled blasting will be done to minimize noise, ground vibration, fly rock and air overpressure.
- Proper maintenance, oiling and greasing of machines at regular intervals will be done to reduce generation of noise.
- In order to reduce the effect of noise pollution, ear plugs / earmuffs will be provided to all employees.
- Green belt development around infrastructure and mine areas etc., would minimize adverse impacts

3.3. IMPACT DUE TO GROUND VIBRATIONS

The proposed mine will adopt open cast semi mechanized method for mining with minimum drilling and blasting involved.

By practicing controlled blasting, the problems will be greatly minimized and the impact will also be minimized by using Latest techniques for blasting:

- Blasting operations will be carried out only during daytime as per mine safety guidelines
- Proper warning signals will be used
- Adequate safe distance from site of blasting will be maintained
- Blasting will be done in controlled manner with use of non-electric delay detonator to minimize dust to get air borne and also limit the fly rocks within 50-60 m.
- Competent persons will carry out blasting and precautions laid down under MMR - 1961 circulars and directions of DGMS issued from time to time will be followed.
- Controlled blasting will be done and use of explosives is optimized to reduce gaseous emissions. Besides, the persons working in near vicinity of machines will be provided with PPEs.

3.4. IMPACT ON WATER ENVIRONMENT AND MITIGATION MEASURES

- There will be no impact on water table due to proposed mining
- There are no rivers in the mining lease area.
- The domestic effluent generated from office will be discharged into soak pit via septic tank.
- The general ground water level is about 380 m from the general surface level. The working will be confined up to 395 m and not go below the water table.
- Garland drains will be constructed keeping a barrier from the surface will be constructed to arrest incoming water to the mine.
- Retention wall will be constructed to prevent the siltation of the dumps and Check dam construction against drainage channels to arrest silt.

3.5. IMPACT ON LAND ENVIRONMENT AND MITIGATION MEASURES

The generated laterite will be temporarily dumped near the crushing plant, for this about 1.00 Ha are will be earmarked. Total area for dumping of fines will be 65604 sqm (6.56 Ha).

3.6. AFFORESTATION

At the conceptual stage, out of the total mining lease area (i.e., 66.00 Ha.), plantation will be on 6.00 Ha (For five years). The plantation work for greenbelt development will be carried in consultation with a horticulturist which will help minimizing adverse impact on the flora found in the area. Species will be planted as per CPCB guidelines and native species.

3.7. SOCIO ECONOMIC ENVIRONMENT

The mine area does not cover any habitation. Hence, the mining activity does not involve any displacement of human settlement. No public buildings, places, monuments etc. exist within the lease area. There will be no resettlement or rehabilitation involved in the project area. Thus, no adverse impact is anticipated.

The mining activity can improve overall economic status of the people around the mine area. Local people will get employment with the continued mining activities and infra-structural facilities will be developed. Hence there is possibility of positive impact on socio- economics of people living in the nearby villages.

Following measure will be taken to improve the social infrastructure of the study area:

- To control the air pollution all the EMP measures given in Air pollution control measure to be followed strictly.
- Blasting with millisecond delay detonator with control cushion blasting method is to be adopted and all the EMP measures given for blasting and vibration control should be followed.
- No solid waste disposed outside the mine lease area.
- Greenbelt development and regular water sprinkling should be done.
- Preventive medical care and educational facilities for rural population will be promoted.
- Priority will be given to local people for employment.
- Extending general benefit by way of development work in the villages through respective Gram Panchayat.
- Supplementing Govt. efforts in health monitoring camps, social welfare and various awareness programmes among the rural population.
- Assisting social forestry programme.

3.8. OCCUPATIONAL HEALTH AND SAFETY

Health hazards should be interpreted as being harmful dust and noise which is emitted during surface mining operations. The management will strictly follow these guidelines. All necessary first aid and medical facilities will be provided to the workers. The mine will be well equipped with proper fire protection and firefighting equipment.

All operators and mechanics will be trained to handle fire-fighting equipment's. Further all the necessary protective equipment's such as helmets, safety goggles, earplugs, earmuffs, etc. will be provided to persons as per requirements.

4.0. ENVIRONMENTAL MONITORING PROGRAM

To evaluate the effectiveness of environmental management programme, regular monitoring of the important environment parameters will be taken up. The schedule, duration and parameters to be monitored are shown in below **Table 4**.

Table .4: Monitoring Schedule for Environmental Parameters

S. No	Item	Parameters	Methodology	Monitoring Frequency
1.	Ambient Air quality	PM ₁₀ , PM _{2.5} , SO ₂ , NO ₂ , CO, etc.	PM ₁₀ and PM _{2.5} –Gravimetric Method	Twice in a year

S. No	Item	Parameters	Methodology	Monitoring Frequency
.			SO ₂ – West and Geake Method (Modified) NO ₂ – Modified Jacob and Hochheiser CO - Non-Dispersive Infrared (NDIR) Spectroscopy	
2.	Stack	PM10, SO ₂ & NO _x	Stack monitoring kit	Twice in a year
3.	Water Quality	pH, DO, TSS, BOD, COD, Oil & Grease, Sulphate, Phosphate, Chloride, Residual Free chlorine, Ammonical Nitrogen, Kjeldhal nitrogen, Coliforms (E.coli), MPN.	As per IS 10500 (drinking water quality standard), CPCB / MOEF&CC guidelines	Twice in a year
4.	Noise	Equivalent noise level- dB (A)	As per CPCB / MOEF&CC guidelines	Twice in a year
5.	Soil	pH, Humidity, Texture, Organic matter, N, P, K, Sulphate, Calcium, Magnesium, C:N ratio.	As per CPCB / MOEF&CC guidelines	Twice in a year
6.	Greenbelt	No. of total plants, No. of Survived plants / trees, No. of weak plants / Trees	As per CPCB / MOEF&CC guidelines	Twice in a year
7.	Environmental Audit	With Respect to Environment Clearance, Consent conditions and ISO 14001.	As per CPCB / MOEF&CC Guidelines	Once in a Year

5.0 ENVIRONMENTAL MANAGEMENT PLAN

5.1 AIR ENVIRONMENT

The emission emitted from mining activity will be dust and sources of dust emissions due to mining, drilling, blasting and vehicular movement. The following measures will be adopted in mining to eliminate the fugitive dust emission.

- Wet drilling method will be adopted to reduce the dust generation.
- The dust rising due to drilling will be controlled by covering the drill rods with cloth, dust extractors will also be employed.
- Water sprinkling on mine haul roads and approach road for dust suppression.
- Planting of trees along mine haul roads.
- Proper housekeeping at the loading and dispatch areas will be practiced.

5.2 WATER ENVIRONMENT

There will be no process wastewater generation from the mine and there will be no wastewater discharge from the process as closed loop water system will be maintained in the beneficiation plant. Zero liquid effluent discharge system will be adopted. The sanitary wastewater from the proposed expansion project will be 5.6 KLD which will be treated in septic tank followed by sub surface dispersion

5.3 NOISE ENVIRONMENT

The main source of noise generation from mine will be drilling and blasting and vehicular movement. The main source of noise generation from beneficiation plant will be crusher, Vehicular movement, DG sets, etc The following noise control measures will be taken to reduce the noise impact.

Drilling precautions:

- Wet Drilling will be adopted.
- Use of sharp drill bits, delivery of compressed air at optimal pressure and proper maintenance of compressor and drilling machine.
- Provision of earplugs/earmuffs to drillers.

Blasting precautions:

- Proper charge per delay will be regulated
- Millisecond delay detonators or sequential blasting exclusively used.
- Stemming column will be more than the burden to avoid blown out shots.
- The machinery will be maintained properly to reduce the noise levels.
- The protective noise reducing gear like earmuffs, the company will provide earplugs to all the employees.
- Plantation will be taken-up along the 7.5 m buffer area within the ML area.

5.4 SOLID WASTE

There is no generation of top soil/OB, the iron ore occurs on the top. The generated fines will be temporarily dumped in mine, for this about 6.56 Ha are will be earmarked
The generated laterite/waste will be temporarily dumped within the lease area and utilized for bench/road making time to time, for this about 1.00 Ha are will be earmarked

5.5 LAND ENVIRONMENT

Due to the mining activity, there will be change in the topography of the land.

5.6 GREENBELT DEVELOPMENT

The plantation will be taken up in the Buffer zone of the ML area and along the approach road. Total mine lease area is 66.0 Ha. The 7.5 M buffer zone left out statutorily is a soil and boulder area. Presently within the 7.5 m of buffer zone has been covered with plantation and covered by barbed wire fencing.

During the next two years period further planation in about 6.0 Ha area will be carried out. The planation will be properly fenced with barbed wire. The plantation work for greenbelt development will be carried in consultation with a horticulturist which will help minimizing adverse impact on the flora found in the area. The following will be details shown in table 5.

Table 5: plantation development details

Year	Area (Ha)	Nos
1 st year	2.50	2500
2 nd year	3.50	3500
Total	6.00	6000

5.7 EMP BUDGET

In order to implement an effective environmental management plan for mitigating the adverse impacts on the environment, regular monitoring of various environmental components is necessary. Mines Manager with the support of foreman and other workers will monitor the environment management plan of this area. Budget allocated this expansion project Capital Cost is about Rs. 80,00,000/- and recurring Cost is about Rs. 10,00,000/-.

6.0.PROJECT BENEFITS

The total manpower requirement for carrying out all the required works will be about 139. Preference will be given to the local people. In addition, there will be indirect employment to many people in the form of, business opportunities, service facilities etc. this will enhance the economic status of the local people.

The impact of mining activity in the area will be positive on the socio-economic environment of the region. The employment directly and indirectly will be increased and better infrastructure and communication facilities will be provided. M/s. Pushp Steels & Mining (P) Limited has proposed to provide financial assistance of about Rs. 60.0 Lakhs for the development of social infrastructure of the area. The expenditure will be done in a phased manner proportionate to the investment made.

7.0. CONCLUSION

The industrial and economic growth of India depends largely on mining where iron ore plays a very important role, as it is the prime source of steel plants. The demand of iron ore has significantly increased in order to meet the requirement of industry. The project will have impacts on the local environment but with proper implementation of the environment management plan and the environmental safeguards as stipulated by MoEF&CC and CECB, the negative impacts can be minimized largely.

M/s. Pushp Steels & Mining (P) Limited will take up various socio-economic development activities to have the positive impact on the surroundings. However, this project accelerates the pace of industrial development and growth of regional economy.
