Environmental Impact Assessment
&
Environmental Management Plan

For

Proposed Optimization of Existing Rerolling Mill
(Resultant increase in Production from
60000 to 150000 TPA Capacity)

at

Village - Gondwara, Urla Industrial Area,
Tehsil and District Raipur (CG)

ToR File No. F. No- 120/SEAC, C.G./Udyog/Raipur/535 Dated 28.04.2017

Project Proponent

M/s. Lingraj Steel and Power Private Limited

EIA Consultant

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Report No.: ANqr /PD/20A/2017/60

May, 2017

M/s. Lingraj Steel and Power Private Limited

Draft EIA-EMP for Proposed Optimization of existing Rerolling Mill (Resultant increase in production from 60000 to 150000 TPA Capacity) at Village - Gondwara, Urla Industrial Area, Tehsil and District Raipur (CG).

Project No. : ANqr /PD/20A/2017/60

Version: 01

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DISCLAIMER

The EIA report is prepared by M/s. Anacon Laboratories Pvt. Ltd. Nagpur (a consultant organization accredited by QCI-NABET) as per the approved TOR issued by the State Expert Appraisal Committee (SEAC), Chhattisgarh vide ToR letter No. 120/SEAC, C.G./Udyog/Raipur/535 Dated 28.04.2017, with all reasonable skill, care and diligence within the terms of the contract with the client, incorporating our General Terms and Conditions of profession and taking account of the resources devoted to it by agreement with the client & complying MoEF&CC & QCI-NABET requirements.

For and on behalf of M/s. Anacon Laboratories Pvt. Ltd.			
Particulars			**Signature**
Prepared by	:	**Dr. D.G. Garway** (EIA Coordinator)	
	:	**Mr. Shrikant Vyawhare** (Associate EC)	
Approved by	:	**Dr. D.G. Garway** (Head of ACO & MD)	ANACON LABORATORIES PVT. LTD. NAGPUR
Month & Year	:	**May 2017**	

Declaration by Expert

Declaration by Experts contributing to the EIA "*Proposed Optimization of existing Rerolling Mill (Resultant increase in production from 60000 to 150000 TPA Capacity) at Village - Gondwara, Urla Industrial Area, Tehsil and District Raipur (CG)*" by M/s. Lingraj Steel and Power Private Limited.

I, hereby, certify that I was a part of the EIA team in the following capacity that developed the above EIA.

EIA coordinator:

Name: Dr. D. G. Garway

Signature and Date: .....

Period of involvement: November 2016 to April 2017

Associate EIA coordinator:

Name: Mr. Shrikant Vyawhare

Signature and Date: 05/05/2017

Period of involvement: November 2016 to April 2017

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Functional area experts:

S. No.	Functional areas	Name of the expert/s	Involvement (period and task**)	Signature and date
1.	AP*	Dr. D. G. Garway	November 2016 to April 2017 (Identification & Assessment of Impacts, Suggestion Mitigation Measures)	
2.	WP*	Dr. D. G. Garway	November 2016 to April 2017 (Identification & Assessment of Impacts, Suggestion Mitigation Measures)	
3.	SHW*	Mr. Chakor Gedam	November 2016 to April 2017 (Identification & Assessment of Impacts, Suggestion Mitigation Measures)	
4.	SE*	Mr. Rajendra Korde	November 2016 to April 2017 (Identification & Assessment of Impacts, Suggestion Mitigation Measures)	
5.	EB*	Mr. Shrikant Vyawhare	November 2016 to April 2017 (Identification & Assessment of Impacts, Suggestion Mitigation Measures)	

S. No.	Functional areas	Name of the expert/s	Involvement (period and task**)	Signature and date
6.	HG* GEO*	Mr. Gyanchand Bohra	November 2016 to April 2017 (Identification & Assessment of Impacts, Suggestion Mitigation Measures)	
7.	SC*	Mr. Swarup Tripathy	November 2016 to April 2017 (Identification & Assessment of Impacts, Suggestion Mitigation Measures)	
8.	AQ*	Mrs. Farheen Khan	November 2016 to April 2017 (Identification & Assessment of Impacts, Suggestion Mitigation Measures)	
9.	NV*	Mr. Gyanchand Bohra	November 2016 to April 2017 (Identification & Assessment of Impacts, Suggestion Mitigation Measures)	
10.	LU*	Mr. Swarup Tripathy	November 2016 to April 2017 (Identification & Assessment of Impacts, Suggestion Mitigation Measures)	
11.	RH*	Mr. Chakor Gedam	November 2016 to April 2017 (Identification & Assessment of Impacts, Suggestion Mitigation Measures)	
Associate Functional Area Expert (AFAE)				
1.	AP* & SHW	Mr. Chinmay Garway	November 2016 to April 2017 (Identification & Assessment of Impacts, Suggestion Mitigation Measures)	

*One TM against each FAE may be shown

**Please attach additional sheet if required

S. No.	Functional areas	Name of the expert/s	Name of the Team Member/s	Involvement (period and task**)	Signature and date
1.	SE*	Mr. Rajendra Korde	Ms. Shilpa Chandekar	November 2016 to April 2017 (Identification & Assessment of Impacts, Suggestion Mitigation Measures)	
2.	AP*	Dr. D. G. Garway	Mr. Subhradip Mondal	November 2016 to April 2017 (Identification & Assessment of Impacts, Suggestion Mitigation Measures)	

S. No.	Functional areas	Name of the expert/s	Name of the Team Member/s	Involvement (period and task**)	Signature and date
3.	NV*	Mr. Gyanchand Bohra	Mr. Subhradip Mondal	November 2016 to April 2017 (Identification & Assessment of Impacts, Suggestion Mitigation Measures)	
4.	WP*	Dr. D. G. Garway	Mr. Suraj Salunkhe	November 2016 to April 2017 (Identification & Assessment of Impacts, Suggestion Mitigation Measures)	
5.	LU*	Mr. Swarup Tripathy	Mr. Suraj Salunkhe	November 2016 to April 2017 (Identification & Assessment of Impacts, Suggestion Mitigation Measures)	
6.	EB*	Mr. Shrikant Vyawhare	Dr. Vivek Tiwari	November 2016 to April 2017 (Identification & Assessment of Impacts, Suggestion Mitigation Measures)	

Declaration by the Head of the accredited consultant organization/ authorized person

I, Dr. D.G. Garway, hereby, confirm that the above mentioned experts prepared the EIA *"Proposed Optimization of existing Rerolling Mill (Resultant increase in production from 60000 to 150000 TPA Capacity) at Village - Gondwara, Urla Industrial Area, Tehsil and District Raipur (CG)" by M/s. Lingraj Steel and Power Private Limited.* I also confirm that the consultant organization shall be fully accountable for any mis-leading information mentioned in this statement.

Signature: .....

Name: Dr. D. G. Garway

Designation: Head of ACO & MD

Name of the EIA consultant organization: M/s. Anacon Laboratories Pvt. Ltd.

NABET Certificate No. & Issue Date: 44th Meeting for RA dtd. March 04, 2015; 48th Meeting for RA dtd. April 04, 2015, 77th Meeting for RA dtd. Jan. 20, 2016 and 87th Meeting for RA dtd. April 27, 2016

EXECUTIVE SUMMARY

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1.0 INTRODUCTION

M/s. Lingraj Steel and Power Pvt. Ltd (LSPPL) already has an operating Unit working since year 2006 having installed capacity 60000 TPA rerolling mill at village Gondwara, Tehsil and District Raipur (CG). now proposed to increase its production capacity from 60000 to 150000 TPA of re-rolled product in order to expand its business in steel sector. The estimated cost of expansion project is Rs. 275.00 Lakhs.

As per Environmental Impact Assessment Notification dated 14thSeptember, 2006 and subsequent amendment thereof, the proposed project falls under "Category B", Schedule 3 (a) and requires Environmental Clearance (EC) to be obtained from SEIAA – Chhattisgarh.

The online application for prior Environmental Clearance (Form-1) was submitted to SEIAA/SEAC, Chhattisgarh on 22nd Dec. 2016 for proposed optimization of existing rerolling mill project. The proposal was considered by the State Expert Appraisal Committee (SEAC) during its meeting held on 20th February 2017. The SEAC has suggested standard Terms of References (ToR) for preparation of the EIA Report, vide F. 120/SEAC,CG/Udyog/Raipur/535 dated 28 April, 2017.

The Draft EIA/EMP is prepared as per the TOR issued by SEAC, Chhattisgarh and the report is submitted for public consultation process as per the provisions of EIA Notification 2006 and amendments thereof.

1.1 IDENTIFICATION OF PROJECT

M/s. LSPPL is private limited company, incorporated pursuant to provisions of Companies Act 1956 on 18/03/2004. Company had already installed 60,000 TPA rerolling mill.

The company is proposed Optimization of existing Rerolling Mill with following production capacity:

Product	**Quantity (TPA)**	**Remarks**
Existing Capacity		
Rerolled Steel" product i.e. Beam, Channel, Angle, Round, Beam, CTD bar, TMT bar and structural product	60000	Consent was granted by CECB on dtd. 04.11.2009 vide letter no. 3259
Proposed Optimization of existing rerolling mill for enhancement in production		
Rerolled Steel	90000	Achieved proposed production through - • Increase the operational timing from 10 hrs. to 22 hrs. per day • Increase in operating days from 300 days to 330 days
Total	**1,50,000 TPA**	

1.2 LOCATION OF THE PROJECT

Plant is located at Urla Industrial area, village Gondwara, Raipur district of Chhattisgarh. The study area of 10 km radial distance from the project site is shown in **Figure 1**.

1.3 EIA/EMP REPORT

In line with the approved ToR obtained from SEAC, Chhattisgarh, baseline environmental monitoring was carried out during winter season (15th Dec 2016 to 15th Mar 2017)for determining the status of ambient air quality, ambient noise levels, surface and groundwater quality, soil quality, status of flora, fauna and eco-sensitive areas and socio-economic status of the villages within 10 km radius study area from the project site.**(figure 1)** The observations of the studies are incorporated in the draft EIA/EMP report. Impacts of the proposed project activities during construction and operation stages were identified and duly addressed in the draft EIA/EMP report alongwith the proposed management plan to control / mitigate the impacts. Environmental Management Plan is suggested to implement the pollution control in the project.

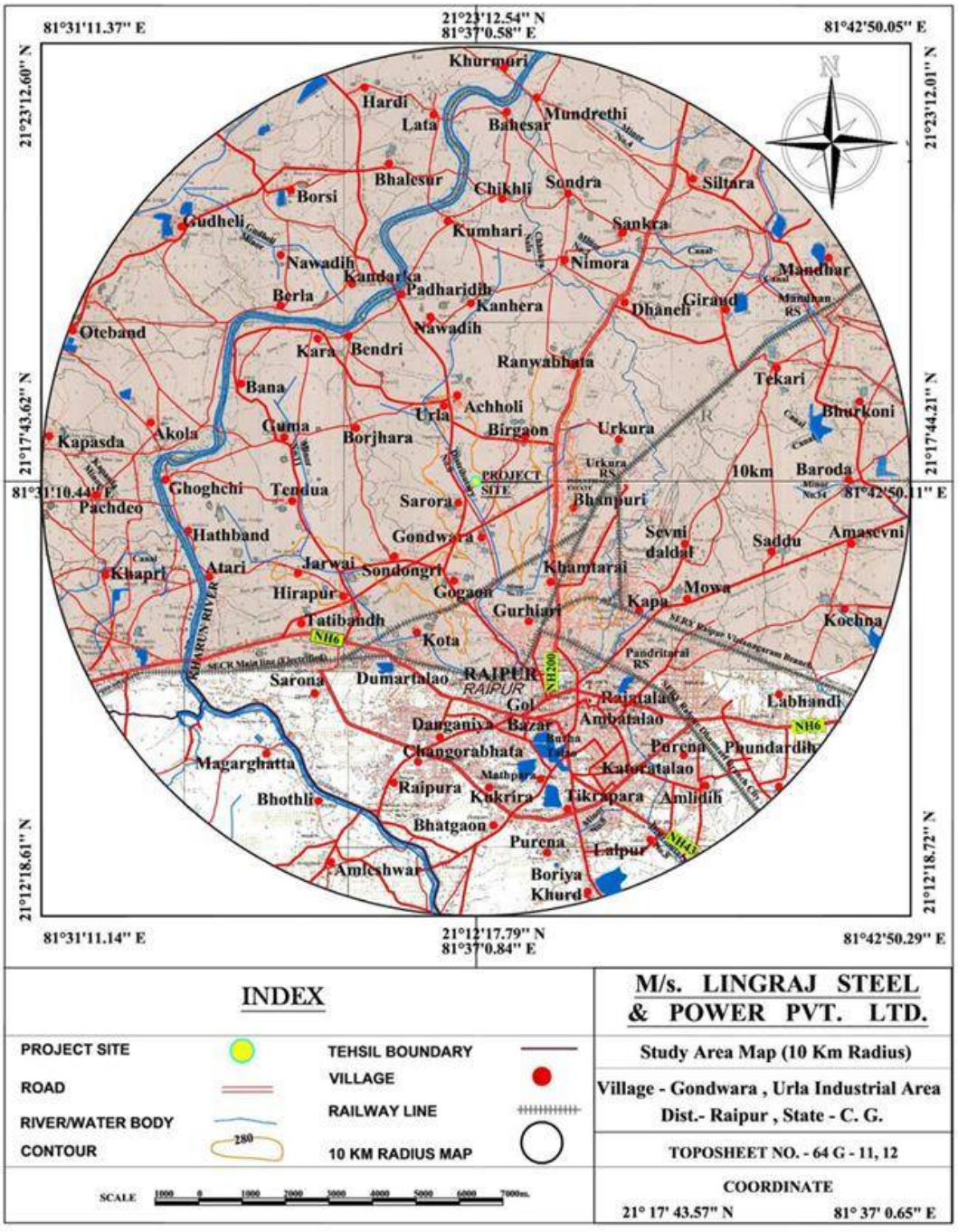

FIGURE 1: STUDY AREA (10 KM RADIAL DISTANCE)

TABLE 1
DETAILS OF ENVIRONMENTAL SETTINGS

Sr. No.	Particulars	Details
1.	Project Location	Village: Gondwara, (Urla Industrial Complex) Tehsil-Raipur , Dist.- Raipur (Chhattisgarh)
2.	Co ordinate	Latitude : $21^0$17'43.57"N Longitude: $81^0$37'0.65"E
3.	Toposheet No.	64 G/11 & 64 G/12
4.	Climatic Conditions	Mean annual rainfall is 1252.8 mm Temperature : Pre monsoon 20.6^0 C (Min.) 41.7^{0}C (Max.) : Winter 13.3^{0}C (Min.) 31.0^{0}C (Max) : Post monsoon 17.3^0 C (Min.) 31.8^{0}C (Max.) Source: IMD, Raipur
5.	Nearest IMD station	Nearest city - Raipur ~ 5 km, S
6.	Land Form, land Use and Ownership	The land use previously non-industrial barren land which is converted to Industrial use.
7.	Site topography	Project site located at 286 m (MSL) Flat Terrain
8.	Nearest roadway	Raipur - Chandikhol - (NH-200) road 1.86 km, E
9.	Nearest Railway Station	Urkura ~ 2.82 Km, (E) ; Raipur 4.46 Km, (S)
10.	Nearest Air Port	Raipur 17.8 Km, SE
11.	Nearest Port	NA
12.	Nearest lake	NA
13.	Nearest State/National Boundaries	NA
14.	Nearest major city with 2,00,000 population	Nearest city - Raipur ~4.5 km, SE
15.	Distance for sea coast	NA
16.	Hills/valleys	NA
17.	Nearest Reserved/ Protected forests	None
18.	Nearest water bodies	One Seasonal Nala ~0.73 Km E Kharun river ~6.5 Km WNW
19.	Seismic zone	The proposed expansion project site falls in zone-II as per IS 1893 (Part-I): 2002. Hence, seismically, it is a stable zone.

2.0 PROJECT DESCRIPTION

2.1 PROCESS DESCRIPTION

Ingot/ Billet after proper sizing through Gas Cutting or billet Shearing Machine will be pushed in reheating furnace. The reheating furnace will be fired by Coal producer gas plant as well as backed up by Oil Fired Burners. There will be high energy efficiency heat recuperators installed in with it.

Then pushed out to rolling stands for re-rolling. Steel Pieces are rolled through all stands in order to get required shape of finished goods i.e. TMT/Wire rod/ Bars. It is proposed to produce TMT bars at present; however in future the Mills may be used to produce Wire Rod or Structure also.

In case of production of TMT the rolled bars are passed through the TMT quenching machine and then after quenching of TMT are transferred to Cooling Bed for Cooling.

After Cooling, Wire rod Coils/TMT/Bars are shifted to decoiling machine and after inspection, Bundled are ready for dispatch.

In order to improve the operational and energy efficiency the company is proposing to increase the average operational timing from 10 hours to about 22 hours per day, and increase no of operating days from 300 days to 330 days working and will make some energy efficiency changes by installing required plant and machinery for the same and increase the number of persons required for production. In the proposed expansion the company will do the following improvements in its existing set up:

- Set up a 18 inches roughing Mill with three high stands.
- Set up a high efficiency Stainless steel recuperates.
- To improve in the past designs in the mill.
- To Improve the recuperator system
- To improve the roll guides.
- To improve the billet reheating furnace design.
- To improve the cooling bed system.
- To improve the material conveying system.
- To improve the bar bending facilities.
- To improve the producer gas plant

2.2 LAND REQUIREMENT

The expansion project is proposed on the existing land total will be 1.821 Ha. (4.5 Acre) land, this land is already acquired by the company, having Khasara No. 1/4. No additional land is proposed to be acquired for the expansion project. Land schedule of the project site is given in **Table 2**.

TABLE 2
LAND SCHEDULE OF THE PROJECT SITE

Khasra No	Land Schedule	Area In Hectare
1/4	Pvt. Industrial Land	1.621
Nil (CSIDC lease land)	Csidc Lease Hold Land	0.200
Total		**1.821**

2.3 RAW MATERIALS REQUIREMENT, SOURCE & MODE OF TRANSPORT

The material like Ingot/Billet will be transported from local market nearby mini steel plants or Bhilai Steel Plant. coal will be transported through covered truck, or in case requirement of furnace oil will be transported through tanker. It is estimated that approx. 53trucks/day required for transportation of raw materials and finished products of the plant.

2.3.1 Solid and Hazardous waste generation

Total Solid wastesgeneration through process is estimated to be about 15,032 MT/Yr which includes Miss-rolls, Mill Scale and Coal ash are 6032 MT/Year, 3750 MT/Year, 5250 MT/Year respectively. Waste oil/used oil and tar generated through the process will be 3 KL/Yr and 75 MT/Yr. respectively which are classified as hazardous waste.

2.4 WATER REQUIREMENT & SOURCE

The total makeup water requirement for the project will be about 8 m^3/day (5 KL for Cooling & 3 KL for domestic purpose). This will be met from groundwater.

2.5 POWER REQUIREMENT & SUPPLY

Power requirement will be around 3.89 MW which will be drawn from electricity board (CSEB). An emergency backup DG set of 125 KVA is also proposed.

2.6 MANPOWER REQUIREMENT

The project will create employment generation of approximately 33 persons during operation phase in addition to the existing manpower 92. Thus, the total employment generation by the company will be 125 persons. Preference will be given to local people, depending upon their qualification and skillness.

2.7 FIRE FIGHTING FACILITIES

In order to combat any occurrence of fire in plant premises, fire protection facilities are envisaged for the various units of the plant. All plant units, office buildings, laboratories, etc. will be provided with adequate number of portable fire extinguishers to be used as first aid fire appliances.

2.8 PROJECT COST

The project cost for expansion of the project is estimated as Rs. 275.00 Lakhs.

3.0 EXISTING ENVIRONMENTAL SCENARIO

3.1 BASELINE ENVIRONMENTAL STUDIES

Baseline environmental studies were conducted at project site along with 10 km radial distance from the project site. The baseline environmental quality data for various components of environment, viz. Air, Noise, Water, Land were monitored during Winter Season (15th Dec 2016 to 15th Mar 2017).

3.2 METEOROLOGY & AMBIENT AIR QUALITY

Summary of the Meteorological Data Generated At Site (15th Dec 2016 to 15th Mar 2017)

Temperature (°C)	13^0C to 39^0C
First Predominant Wind Direction	NE (16.1%)
Second Predominant Wind Direction	ENE (12.3%)
Avg. wind speed (m/s.)	2.61
Calm conditions (%)	0.64

The status of ambient air quality within the study area was monitored for winter season for the period of Dec 2016–Mar2017 at 8 locations covering project site, Sarora, Gondwara, Sondongri, Birgaon, Urkura, Sarona and Tendua villages. Total 8 sampling locations were selected based on the meteorological conditions considering upwind and downwind, cross wind directions and reference point. The levels of Respirable Particulate Matter (PM_{10}), Fine Particulates ($PM_{2.5}$), Sulphur Dioxide (SO_2,), Oxides of Nitrogen (NO_X) and carbon monoxide (CO), Ammonia, Ozone, Benzene and BAP were monitored. The details of Ambient Air Quality Monitoring Results are summarized and given in **Table 3**.

TABLE 3
SUMMARY OF AMBIENT AIR QUALITY MONITORING RESULTS

Sr. No.	Parameters	Range
1.	PM_{10}	48.4 – 87.0
2.	$PM_{2.5}$	16.8 – 35.9
3.	SO_2	8.1 - 21.3
4.	NO_x	11.1-33.1
5.	CO	0.131-0.326
6.	Ozone	6.1-22.7
7.	Benzene	BDL
8.	BAP	BDL

Note: *All values are reported in µg/m^3 except CO in mg/m^3 and BAP in ng/m^3;* BDL: Below Detectable Limit

From the above results, it is observed that the ambient air quality with respect to PM_{10}, $PM_{2.5}$, SO_2, NOx and CO at all the monitoring locations was within the permissible limits specified by CPCB.

3.3 AMBIENT NOISE LEVELS

Ambient noise level monitoring was carried out at the 08 monitoring locations; those were selected for ambient air quality monitoring. The monitoring results are summarized in **Table 4.**

TABLE 4
SUMMARY OF AMBIENT NOISE LEVEL MONITORING RESULTS

Sr. No.	Monitoring Locations	Equivalent Noise Level	
		Leq $_{Day}$	**Leq $_{Night}$**
Residential Area			
1.	Sondongri	52.5	44.6
2.	Tendua	54.2	40.7
CPCB Standards dB(A)		**55**	**45**
Commercial Area			
3.	Birgaon	61.3	53.2
4.	Urkura	56.5	45.8
CPCB Standards dB(A)		**65**	**55**
Silence Zone			
5.	Sarona	48.1	38.2
CPCB Standards dB(A)		**50**	**40**
Industrial Area			
6.	Project site	70.8	65.5
7.	Sarora	69.8	62.3
8.	Gondwara	70.5	58.2
CPCB Standards dB(A)		**75**	**70**

Source: Field monitoring and analysis by Anacon Laboratories Pvt. Ltd., Nagpur

3.4 SURFACE AND GROUND WATER RESOURCES & QUALITY

3.4.1 Geology, Hydrology and Hydrogeology

The area as a whole represents a gently slope, drained by a number of NW to North East flowing rivers which debouche into the one major river i.e. Kharun River present in Western North West direction of the project site which is about 6.5 km approx. The area as a whole is the basin of

Seonath catchment and maximum flow of the water is going towards the Seonath River and again the Seonath confluence into Mahanadi River.

Geologically, the area mainly covered by the rocks of Chandi Formation, Raipur Group of Chhattisgarh Super Group of Meso to Neoproterozoic age. Lithologically the formation comprises of limestone and dolomite: reddish brown, fine to medium grained, hard and compact.

Ground water level during pre-monsoon 3-5m was observed within the study area whereas in post monsoon observed water level 2-3m in the area. Water table contour observed in the study area is from 250m amsl. As per CGWB, 2013 data the study area falls in safe category of groundwater development with observed groundwater development of 64%.

3.4.2 Water Quality

Groundwater and surface water quality was assessed by identifying 8 groundwater (Borewel) locations in different villages and 6 surface water samples.

A. Groundwater Quality

The analysis results indicate that the pH ranged between 6.91-7.52 which was well within the specified standard of 6.5 to 8.5.The TDS was ranging from 233-521 mg/l. Total hardness was found to be in the range of 86-216.14 mg/l. The fluoride concentrations were varied between 0.19-0.44 mg/l which is within the acceptable limit of 1 mg/l. The nitrate and sulphate were found in the range of 7.19-142.21 mg/l and 4.51-36.85 mg/l respectively. Calcium hardness varied between 57.5-186.07 mg/l. The heavy metals content (i.e. As, Al, Cd, Cr, Cu, Pb, Fe, Mn, and Zn) were found to be within permissible limits.

B. Surface Water Quality

The analysis results indicate that the pH ranged between 6.49 to 7.31 which was well within the specified standard of 6.5 to 8.5. The TDS was observed to be 300 to 600 mg/l which is within the permissible limit of 2000 mg/l. The total hardness recorded was in the range of 199 to 385 mg/l as $CaCO_3$ which is also within the permissible limit of 600 mg/l. The nitrate was found to be in the range of 11.39 to 20.79 mg/l. The levels of chloride and sulphate were found to be in the range of 49.9 to 166.9 mg/l and 13.23 to 49.87 mg/l respectively. Heavy metals content (i.e. As, Al, Cd, Cr, Cu, Pb, Fe, Mn, Zn and Hg) were found to be very low and within specified standards. The overall surface water quality was found to be safe for drinking purpose physico-chemically.

C. Bacteriological Characteristics

Bacteriologically, all surface water samples were contaminated and chlorination or disinfection treatment is needed before use for drinking purpose whereas some of the groundwater samples were also found contaminated and need chlorination before use for drinking purpose. Overall, the surface and groundwater within the study area was found to be good physico-chemically, however bacteriologically found to be contaminated and need chlorination before use.

3.5 LAND USE LAND COVER CLASSIFICATION

The Land Cover classes for the study area were extracted following a visual interpretation method or on screen digitization of the Resource Sat-2Imagery, sensor LISS-3 having 23.5 m spatial resolution image. These were later verified by using SOI toposheet, Google Earth imagery and Ground truthing by GPS survey. Polygon layers for each class were digitized and the respective areas were calculated. The Land Cover classes and their coverage are summarized in **Table 5.**

TABLE 5

LU/LC Classification System				
S. No.	**Level-I**	**Level-II**	**Area (Sq.Km²)**	**Percentage (%)**
1	**Built-up land**	Settlement	52.63	16.76
		Industrial Settlement	48.94	15.59
		Road Infrastructure	9.54	3.04
		Railway Infrastructure	6.85	2.18
2	**Agricultural Land**	Cropland	124.88	39.77
		Play Ground	2.43	0.77
4	**Scrubs/Wastelands**	Barren Land	10.86	3.46
		Land with scrub/Open Scrub	40.96	13.04
5	**Water-bodies**	River/Nala/Stream	9.88	3.15
		Pond/Tank	2.92	0.93
6	**Others**	Mining/Stone Quarry	1.24	0.39
		Brick Kline area	2.87	0.91
		Total	**314.00**	**100.00**

3.6 SOIL QUALITY

For studying soil quality of the region, sampling locations were selected to assess the existing soil conditions in and around the proposed project site representing various land use conditions. The physical, chemical properties and heavy metals concentrations were determined. The samples were collected by ramming a core-cutter into the soil up to a depth of 15-20 cm. Total 8 samples within the study area were collected and analyzed.

From the analysis results of the soil samples, it was observed soil texture of the soil observed to be silty clay. The overall organic matter, nitrogen, potassium and phosphorus content of the soils were found to be moderate..

3.7 BIOLOGICAL ENVIRONMENT

Floral composition in Study Area

Floral characteristics within project site, Urla Industrial area and surrounding areas including various villages were studied during winter season. Total 86 floral species were observed in the study area. The details about the floral composition are as follows.

Trees: Total 47 Nos. of different species were observed within the study area

Shrubs& Herbs: Total 25 species were observed within the study area

Climbers: Total 7 species of climbers were reported in different patches of the study area.

Grasses& Bamboos: Total 7 different species of grasses were observed within the study area.

Fauna in the Study area:

The majority of land in the study area is under cultivation, followed by industrial settlement. No forest were observed within the study area. The scrubland in the form of a waste patch was much less and therefore possibility of occurrence of any wild mammal in good density was minimum. Apart from the domestic animals, wild animals are confined to the scrub patches belonging to native tree species *Acacia nilotica* and *Butia monosperma*.

Site specific study revealed that very few mammalian species were reported by the locals like Jackal, Monkey, black naped hare and mongooses. Locals also denied the occurrence of other major mammals in study area.

Avifauna:

Birds are the most diverse group amongst the terrestrial higher vertebrates. In the present study, birds were found at all the locations i.e. in the villages, in agricultural fields, at roadside, within plant site/industrial notified area and along the river side and paddy fields.

Reptiles:

Lizards and snakes are the most adaptive groups of reptiles as these are seen living in the very close vicinity of human populations. Lizards are common everywhere, in house, in fields, in wastelands and in wilderness.

Overall faunal enumerations within the study area are:

Mammals: Total 9 wild mammals observed other than domesticated ones from the study area.

Reptiles: Total 6 reptiles were reported within the study area.

Avifauna: Total 46 birds were observed within the study area.

3.8 SOCIO-ECONOMIC ENVIRONMENT

Information on socio-demographic status and the trends of the communities in the 10 km radius was collected through primary social survey and secondary data collection from census 2011 &District Census hand book 2011. Summary of the socio-economic status of the study area is given in **Table 6.** Details regarding education facilities infrastructure and evaluation 2011 are presented in **Table 7 & 8** respectively

TABLE 6
SUMMARY OF SOCIO-ECONOMIC ENVIRONMENT OF VILLAGES WITHIN 10 KM RADIUS AREA

No. of villages	48
No of Towns	01
Total households	42,767
Total population	2,03,171
Male Population	1,04,972
Female population	98,199
SC Population	32,250
ST Population	7,413
Total literates	1,31,641
Total Illiterates	71,530
Total workers	73,920
Total main workers	62,893
Total marginal workers	11,027
Total non-workers	1,29,251

Source: Primary census abstract 2011, district Raipur, Chhattisgarh

TABLE 7
DETAILS REGARDING EDUCATION FACILITIES WITHIN 10 KM RADIUS STUDY AREA

Gov. Primary school	Private primary school	Gov. Middle School	Private Middle School	Gov. Secondary School	Gov. Senior Secondary School	Private Senior Secondary School	Gov. Arts, Science Degree College	Pvt. Arts, Sci.& Comm. College
58	47	36	10	08	08	08	3	07

Source: District census handbook 2011, district Raipur, state Chhattisgarh

TABLE 8
COMPARATIVELY ANALYSIS OF INFRASTRUCTURE FACILITIES IN THE STUDY AREA

Year	In percentage (%)									
	Educa-tion	Drink-ing water	Road	Power	Recre-ation	Transpor-tation	Medical	Communi-cation	Bank	Drainage
2011	100	100	100	100	96	88	50	92	12	44

Source: District census handbook 2011, District Raipur, state Chhattisgarh

SALIENT OBSERVATION OF THE SOCIO-ECONOMIC SURVEY

House pattern: It is notable that nearly 60% of the house type was pakka and 30% houses were observed in semi pakka and only 10% kaccha form in the study area

Employment: Main occupation in the study area was in the form of private job and labour work in the industrial area.The labours were getting daily wage in the range of Rs. 100-250, depending on type of work they set

Fuel: The primary sources of cooking fuel were LPG, cow dung and coal etc. Most of the villagers use coal powder and cow dung mix balls for cooking purpose

Main crops: Most of the study area was under industrial area. Agricultural land was less with lack of irrigation facility. The main crop grown in agricultural farm was paddy. Average productivity of paddy crop was 5-6 quintal per acre, the reason behind the low production was lack of irrigation facility, water problem and poor soil fertility. Agricultural activities provide a limited contribution to village economy.

Language: Official language was Hindi and mother tongue of the population was Chhattisgarhi. Migration of workers from other states was common; therefore during survey other language spoken population like Odiya, Bengali etc. also found.

Migration from other states: During survey it was found that local population were not migrating for employment purpose, they prefer only local employment, but migration from other states was seen in the study area

Sanitation: Toilet facility is one of the most basic facilities required in a house. The findings of thesurvey showed that more than 60% of the households were not having toilet facilities in their houses. Open defecation was in practice in most of the villages. There was no proper drainage line in the villages, open and kachha drainage which was not working properly seen in most of the villages. The overall position of cleanliness was not satisfactory

Drinking water Facilities: During the survey, it was observed diverse sources of drinking water supply in villages. Major source of drinking water in the study area was ground water (hand pumps,

tap water and dug wells). During discussion, it was revealed that in summer season water scarcity occurred in most of the villages

Education facilities: Most of the villages had education facilities in the form of Anganwadi and primary schools. Higher education facilities were available in the range of 5-10 km. Colleges and other diploma courses were available at Raipur city.

Transportation facility: For transportation purpose auto,private bus services were available in the study area; transportation facilities were frequently available in the study area and connecting Raipur city. Private vehicles like bicycles & motor cycles were mostly used by villagers for transportation purpose

Road connectivity: Most of the roads were pucca and connecting fair enough to villages. CC roads were commonly seen inside the villages

Communication facilities: For communication purpose mainly mobile phones, news papers & post offices were seen in the villages.

Medical facilities: There were few healthcare facilities available in the study area. In some of the villages primary health sub centres were available. Hospitals and other better medical facilitieswere available in the range of 10-20 km at town/city place

Electricity: All villages were availing electricity facility for domestic use. Very few farmers were using electricity for irrigation purpose

Market facility: Study area was predominantly semi urban. Most of the small towns were converted in Nagar Nigam. In villages, small shops were available for daily need things. Weekly market facility was available in some villages. Wholesale markets was available at Urla, Birgoancity etc.Raipur city is major hub for all type of facilities for the population in the study area.

Recreation facilities: Television and radio were the main recreation facilities in the study area. News paper/magazine facilities were also used by villagers

4.0 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Air Environment

The proposed optimization of re-rolling mill will have impact on the air quality parameters like PM_{10}, $PM_{2.5}$, SO_2, NO_X and CO. The raw material handling plant, Producer Gas Plant, Billet Reheating Furnace, etc. are the sources of emissions in air due to project activities. Apart from the above, there will be fugitive dust emissions due to transportation, storage and processing of raw materials.

The mitigation measures adopted are:

- The primary & secondary emissions from the process will be extracted and treated in a fume extraction system.
- Adequate capacity dust extraction measures with swivel hood, ID fan shall be provided at different loading, unloading and transfer points in the raw material handling section.
- Twin cyclone is already in place at producer gas plant to control the dust emission. However, bag filters with centralized dust collection system will be installed in order to control the dust emission, in case of utilization of FO during non-availability of coal in the process.
- Clean gases having less than 50 mg/Nm^3 of dust content will be exhausted through a stack of 35 m height.
- Adequate dust suppression system in the form of water sprinklers shall be provided at raw material yard, temporary solid waste dump site and along the vehicular roads.
- The company is already planted around 550 trees in and around the plant premises. The company also proposed to do more plantation during next monsoon season. Additional greenbelt will also be planted outside the plant on the approach road as well as available community land,

available in the nearby community area in order to maintain about 33% of green belt with local and fast growing species.
- Stacks will be provided with porthole and working platform so that stack monitoring can be done as per norms of statutory authority

Noise Environment:
During the normal operation of manufacturing process will be generated due to Reheating Furnace, rolling mill, Air pollution control devices, storage yard, etc. the ambient noise levels are expected to increase significantly with the attributes of the respective equipment, but these noise will be restricted close to the concerned equipment. The preventive measures are given below:

- Provision for insulating caps and aids at the exit of noise source on the machinery,
- The use of damping materials such as thin rubber/lead sheet for wrapping the workplaces like compressors, generators etc,
- Earmuffs / earplugs will be provided to the workers and it will be enforced to use by the workers.

Water Environment:
The proposed project may have some impact on the water environment. The impact may be on the source of water in the form of depletion of water resources of the area and in the form of deterioration of quality of natural water resources due to discharge of plant effluent.

The various control measures that will be adopted are:

- No pre-treatment of raw water is required. As the water will be used for cooling purpose only.
- No wastewater generation from the process
- Closed circuit cooling system will be implemented.
- Waste water generated through sanitary/toilet activities. This will be treated in septic tank and overflow will be used for plantation purposes or discharge in soak pit.
- All stock piles will be on pucca flooring to prevent for any ground water contamination.

Vehicular Movement
All the major raw materials and finished products will be transported through trucks by road or in case of FO will be transported through tanker.

Biological Environment

M/s. LSPPL unit lies within Urla Industrial Area. Major nearby industries are mainly belonging to the primary and secondary metallurgical (ferrous) industries & power generation, etc. Naturally, there will be cumulative pollution load at higher side but on the other side, there will not be any ecological sensitive area like national park, sanctuary, biosphere reserve, wetland, forest, etc. within 15 km radial distance from the project site. No rare or endangered flora/fauna were recorded in the study area. Thus, the impact on local ecology in surrounding area would be minimum.

On the other side, the impact on the surrounding ecology will mainly occur from the deposition of air pollutants arising out from the proposed project. Air pollution affects the biotic and abiotic components of the ecosystem individually and synergistically with other pollutants. Chronic and acute effects on plants and animals may be induced when the concentration of air pollutants exceeds threshold limits.

The incremental emission of air pollutants is not likely to induce any significant changes in the ecology because the ambient air quality standards will remain within the limits. However deposition of small amount of pollutants may also affect the surrounding ecosystem. The project is therefore planned with most efficient air pollution control systems for achieving dust emission within, so that the impact on nearby ecosystem will be minimized. Most of the fugitive dust emission generation points are also fitted with efficient air pollution control systems (Plant dedusting systems). Water sprinkling system will be used at material handling points to suppress the generation of fugitive dust. These measures are adequate to minimize the adverse impact on nearby ecosystem. In addition to this, the company is already planted around 550 trees in and around the plant premises. The company also proposed to do more plantations during next monsoon season. About 33% of land will be converted to green belt with local and fast growing species. These positive steps will serve to develop an ecological layout which will provide nesting, breeding ground and perching land for native birds in the area.

Socio-economic Impacts:

The land use is not going to be significantly change as the proposed optimization of rerolling will be carried out within existing plant premises, thus there will be no issue of involvement of any agriculture land or settlement on the contrary there will be positive impact on the socio economic environment of the area. Increase in direct/indirect job opportunity shall take place. Services in the locality shall be used and accordingly growth in economic structure of the area will take place.

5.0 ENVIRONMENTAL MONITORING PROGRAM

An Environmental Management Cell (EMC) will be established for the proposed expansion project under the control of Executive Director followed by General Manager. The EMC will be headed by an Environmental Manager having adequate qualification and experience in the field of environmental management. Environmental monitoring of ambient air quality, surface and ground water quality, ambient noise levels, etc. will be carried out through MoEF&CC accredited agencies regularly and reports will be submitted to CECB/MoEF&CC.

6.0 RISK ASSESSMENT & DISASTER MANAGEMENT PLAN

The assessment of risk in the proposed project has been estimated for fire, explosion and toxicity and corresponding mitigation measures are suggested in the Draft EIA/EMP report.

A detailed Disaster Management Plan for facing disasters due to natural effects and human reasons is prepared and incorporated in the draft EIA/EMP report for ensuring safety of life, protection of environment, protection of installation, restoration of production and salvage operations in this same order of priorities. For effective implementation of Disaster Management Plan, it will be widely circulated and personnel training through rehearsals. Site facilities, procedures, duties and responsibilities, communications, etc.are considered in details in the Disaster Management Plan.

7.0 PROJECT BENEFITS

Existing CSR Activities:

Promoter director of the company are contributing to the social upliftment on their individual capacity which reflects the attitude towards concerns of the society. Mr. Siddheswar Agrawalla Managing Director of the company is also President of Rotary Raipur East has been very active in mobilizing

resourcing for providing educational aid to primary school run by governments, blind girls school, campaign on polio prevention control, diabetic control campaign, health campaign, cleanliness campaign, support to the poor patients. The company under his leadership proposed to take up the compliance of socio-economic development obligation required under law.

Proposed Social Welfare Arrangement

The proposed project would provide development of area and consequent indirect and direct job opportunities which would finally result in improvement in the quality of life of people in the central region. M/s LSPPL will carry community welfare activities in the following areas:

- Community development
- Education
- Health& medical care
- Drainage and sanitation
- Roads

A budget of Rs. 7 Lakh as Capital cost and Rs. 3 Lakh per annum as recurring expenses has been proposed for implementation of Enterprise Social Commitment (ESC) activities in the nearby villages. The company will also comply with its obligation for CSR as per Company's Act too.

In addition to this, the project will helpful to overcome the demand and supply gap of steel product in the country to some extent. The project will also generate additional revenue for the State government and thereby the Nation. The additional steel availability will boost the infrastructure sector and the overall economic scenario of the country.

8.0 ENVIRONMENTAL MANAGEMENT PLAN

An Environmental Management Plan comprising following set of mitigation, management, monitoring and institutional measures to be taken during implementation and operation of the project, to eliminate adverse environmental impacts or reduce them to acceptable levels.

- Overall conservation of environment.
- Minimization of natural resources and water.
- Ensure effective operation of all control measures.
- Monitoring of cumulative and longtime impacts.
- Ensure effective operation of all control measures.
- Control of waste generation and pollution.

Judicious use of the environmental management plan addressing the components of environment, which will be likely affected by the different operations in the project will be implemented. The capital cost required to implement the EMP for proposed expansion is estimated tobe Rs40 Lakhs. The annual recurring expenses will be Rs.20 Lakhs has been allocated for implementation of the Environmental Management Plan for proposed expansion project.

9.0 CONCLUSION

The proposed optimization of existing rerolling mill of M/s. Lingraj Steel and Power Private Limited will be partly beneficial for the overall development of the nearby villages. Some environmental aspects like dust emission, noise, wastewater, traffic density, etc. will have to be controlled within the permissible norms to avoid impacts on the surrounding environment. Necessary pollution control equipment liketwin cyclone, bag house, water sprinklers, enclosures, etc., will form integral part of the

plant infrastructure. Additional pollution control measures and environmental conservation measures will be adopted to control/minimize impacts on the environment and socio-economic environment of the area. Measures like development of green belt and plantation in nearby village and along transport road, adoption of rainwater harvesting/recharging in the plant and in nearby villages will be carried out. The proposed CSR activities to be initiated by the company will be helpful to improve the social, economic and infrastructure availability status of the nearby villages.

Thus, it can be concluded that with the judicious and proper implementation of the pollution control and mitigation measures, the proposed expansion project will be beneficial to the society and will help to reduce the demand-supply gap of steel to some extent and will contribute to the economic development of the region in particular and country in general.

10.0 DISCLOSURE OF CONSULTANTS

The Environmental studies for proposed project of M/s LSPPL are carried out by M/s Anacon Laboratories Pvt. Ltd., Nagpur (M/s ALPL). Anacon established in 1993 as an analytical testing laboratory and now a leading Environmental Consultancy firm backed by testing lab for environment and food in Central India region. M/s ALPL is a group of experienced former Scientists from the Government Institutions and excellent young scientist of brilliant career with subject expertise. It is recognized by Ministry of Environment & Forests, New Delhi for carrying out environmental Studies& accredited by Quality Council of India (QCI) for conducting Environmental studies vide 44th NABET Accreditation Committee Meeting for Re-Accreditation held on Mar 04, 2015 as category A consultant organization in 14 Sectors including Metallurgical Industries projects.