

CHAPTER – 11

SUMMARY & CONCLUSION



11.1 PROJECT NAME AND LOCATION [Gen. TOR # 1]

Real Power Pvt. Ltd. (RPPL) is existing 7.5 MW Biomass based power plant at Khamhardih Village, Pathariya Tehsil, Mungeli District, Chhattisgarh. Environment Clearance was not applicable to the existing plant as CTE has been obtained in November 2004 and was prior to EIA notification dated 14-09-2006. As per EIA Notification 1994 also EC was not required as the capital investment for green field project was less than Rs. 100 Crores.

Existing plant has obtained Consent to Establishment (CTE) vide letter no. 4874/TS/CECB/2004 Raipur dated 27-11-2004 from Chhattisgarh Environment Conservation Board. Existing plant is located in an area of 26.82 acres of land and proposed expansion will be taken up in the existing plant premises only.

11.2 PRODUCTS AND PRODUCTION CAPACITIES

Now as part of expansion, company is planning to manufacturing of SiMn (14,400 TPA) or FeMn (25,200 TPA) or FeCr (15,000 TPA) or FeSi (7,000 TPA) or Pig Iron (25,200 TPA) in the proposed 1 x 9 mVA SEAF in the existing plant premises.

Following is plant configuration and production capacity existing & proposed:

S.No.	UNIT	EXISTING CAPACITY	PROPOSED EXPANSION	AFTER EXPANSION
1.	Biomass based Power Plant	7.5 MW	---	7.5 MW
2.	Ferro Alloys Plant (1 x 9 MVA)	---	Silicon Manganese (SiMn) – 14400 TPA OR Ferro Manganese (FeMn) – 25200 TPA OR Ferro Chrome (FeCr) – 15000 TPA OR Ferro Silicon (FeSi) – 7000 TPA	Silicon Manganese (SiMn) – 14400 TPA OR Ferro Manganese (FeMn) – 25200 TPA OR Ferro Chrome (FeCr) – 15000 TPA OR Ferro Silicon (FeSi) – 7000 TPA

			OR Pig Iron – 25200 TPA	OR Pig Iron – 25200 TPA
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11.3 REQUIREMENT OF LAND, RAW MATERIAL, WATER, POWER, FUEL

11.3.1 TOTAL LAND REQUIREMENT

Existing plant is located at Khamhardih Village, Pathariya Tehsil, Mungeli District, Chhattisgarh in an area of 26.82 acres / 10.85 Ha.

Khasra nos. of the total land are 1, 4/1, 5, 6/4, 7/4, 8/3, 12, 13/2, 14, 16/2, 16/3, 21/1, 21/2, 21/3, 25/2, 25/3, 26/1, 26/2, 28/2, 30/2, 31/2, 32/1, 32/2, 32/3, 33, 34, 35, 36, 37/1, 37/2, 37/3, 38/1, 38/2, 39/2, 42, 43. Proposed expansion will be taken up in the existing plant premises only.

11.3.2 RAW MATERIAL & FUEL REQUIREMENT FOR THE PROPOSED EXPANSION PROJECT

The following will be the raw material requirement for the proposed expansion project:

For Ferro Silicon unit (FOR PROPOSED - 1 x 9 mVA)				
S.No.	Raw Material	Quantity (TPA)	Source	Mode of Transport
1	Quartz	8,450	Chhattisgarh / Andhra Pradesh	By Rail & Road (covered trucks)
2	Coke	2,800	Chhattisgarh / Bihar	By Rail & Road (covered trucks)
3	MS Scrap	175	Raipur	By Road (covered trucks)
4	Electrode paste	420	Maharashtra / West Bengal	By Rail & Road (covered trucks)

For Ferro Manganese unit (FOR PROPOSED - 1 x 9 mVA)				
S.No.	Raw Material	Quantity (TPA)	Source	Mode of Transport
1	Manganese Ore	46,620	MOIL / OMC	By Rail & Road (covered trucks)
2	Coke	26,840	Chhattisgarh / Bihar	By Rail & Road (covered trucks)
3	MS Scrap	1,790	Raipur	By Road (covered trucks)
4	Electrode Paste	5,240	Maharashtra / West Bengal	By Road (covered trucks)

For Silico Manganese unit (FOR PROPOSED - 1 x 9 mVA)				
S.No.	Raw Material	Quantity (TPA)	Source	Mode of Transport
1	Manganese Ore	15,850	MOIL / OMC	By Rail & Road (covered trucks)
2	Mn. Slag	9,000	In house generation	----
3	Quartz	3,900	Chhattisgarh /	By Rail & Road (covered trucks)

			Andhra Pradesh	
4	Coke	1,600	Chhattisgarh / Bihar	By Rail & Road (covered trucks)

For Ferro Chrome unit (FOR PROPOSED - 1 x 9 mVA)

S.No.	Raw Material	Quantity (TPA)	Source	Mode of Transport
1	Chrome ore	40,000	Sukinda (Odisha) Import (Indonesia)	By Road (Covered Trucks) From Port By Road (Covered Trucks)
2	Coke	15,750	Chhattisgarh / Bihar	By Road (Covered Trucks)

For Pig Iron unit (FOR PROPOSED - 1 x 9 mVA)

S.No.	Raw Material	Quantity (TPA)	Source	Mode of Transport
1	Iron Ore / Sinter	46,000	Barbil, Odisha NMDC, Chhattisgarh	By rail & road (through covered trucks)
2	Coke	21,500	Chhattisgarh / Bihar	By Rail & Road (covered trucks)
3	Limestone	3,000	Chhattisgarh	By Rail & Road (covered trucks)
4	Quartz	1,500	Chhattisgarh / Andhra Pradesh	By Rail & Road (covered trucks)

11.3.3 WATER REQUIREMENT

Water required in the existing plant is 490 KLD and is being sourced from Maniyari river. Water required for the proposed expansion project will be 30 KLD and same will be sourced from Maniyari river. Total water requirement after expansion will be 520 KLD. This includes Make-up water for Power Plant, Ferro Alloys plant and Domestic water.

11.3.4 POWER REQUIREMENT

Power required for existing plant is 0.75 MW, is being met from existing biomass power plant. Power required for proposed Ferro Alloys plant will be 9 MW and same will be sourced from captive biomass power plant and State Electricity Board.

11.4 PROCESS DESCRIPTION IN BRIEF, SPECIFICALLY INDICATING THE GASEOUS EMISION, LIQUID EFFLUENT AND SOLID & HAZARDOUS WASTES

11.4.1 PROCESS DESCRIPTION BRIEF

Ferro Manganese, Silicon Manganese will be produced using manganese ore as main raw material, Ferro silicon will be produced using Quartz as main raw material & Ferro Chrome will be produced using Chrome Ore as main raw material in a sub-merged arc furnace using reducer (Coke) under high voltage. Pig Iron will be produced using Iron Ore/Sinter, Coke, Limestone as raw material.

11.4.2 EMISSIONS FROM PROPOSED EXPANSION

S. No.	Stack attached to	No. of Stacks	Dia (m)	Height (m)	Temp. of flue gas (°C)	Velocity of flue gas (m/sec)	PM (g/s)	SO ₂ (g/s)	NO _x (g/s)
Existing Stacks									
1.	7.5 MW power plant (Biomass based)	1	1.5	51	100	11.0	0.8	20.6	4.0
Proposed Stack									
1.	Submerged arc furnace (1 x 9 MVA)	1	1.2	30	150	15.0	0.6	--	6.0

11.4.3 EFFLUENT GENERATION

In the proposed expansion, wastewater generated from the proposed unit will be sent to Settling pond after it will be recycled again as closed-circuit cooling system will be provided. Oil & grease traps will be provided, to treat if water is getting mixed with oil, grease and cleaning agents. Sanitary waste water generation due to expansion will be 0.4 Cum/day and will be treated in septic tank followed by subsurface dispersion.

11.4.4 SOLID & HAZARDOUS WASTE GENERATION

- Slag generated from FeMn will be reused in manufacture of SiMn as it contains high SiO₂ and Silicon.
- Slag generated from FeSi will be given to Cast Iron foundries.
- Slag generated from SiMn will be used for Road construction / will be given to slag cement manufacturers

- Slag generated from FeCr will be processed in Zigging plant for Chrome recovery and TCLP test will be performed, accordingly output will be secured land filled as per the CPCB guidelines.
- Slag from Pig Iron manufacturing will be given to nearby cement plants.
- Municipal (Organic) solid wastes from the Plant will be composted and used as manure for the green belt. Inorganic wastes (Non-biodegradable) will be sent to Authorized SPCB Recyclers.
- Waste oil will be stored in covered HDPE drums in a designated area and will be given to SPCB authorized recyclers & re-processors.
- Used batteries will be given back to the supplier under buy back agreement with supplier.

11.5 MEASURES FOR MITIGATING THE IMPACT ON THE ENVIRONMENT

11.5.1 IMPACT DUE TO AIR EMISSION ON THE ENVIRONMENT & ON NEAREST HABITATION

- The Fugitive emissions from the Submerged Electric Arc furnaces will be sucked through hoods and will pass through a 4th hole extraction system with bag filters and then the treated gases will be discharged into the atmosphere through a stack of 30 m height for effective dispersion of emissions from SEAF.
- Air emission control systems with high efficient control systems will bringdown the outlet dust emissions to less than 50 mg/Nm³ Hence there will not be any additional emissions due to the proposed project.

The following systems will be provided to control fugitive emissions

- Dust suppression system at unloading areas.
- Conveyers will be covered with sheets.
- Material transfer points to be provided with dust extraction system with bagfilters.
- Pucca internal roads

The net resultant GLCs due to the air emissions will be within the NAAQS. All aforementioned systems will be installed and operated to comply with the norms. Hence there will not be any adverse impact on Nearby village due to the proposed project.

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The nearest habitation is Attara is at a distance of 0.65 Kms. from the existing plant. Hence there will not be any adverse impact on Near by village due to the proposed expansion.

11.5.2 WASTEWATER TREATMENT / DISPOSAL PROPOSED

- The wastewater generated from the proposed unit will be sent to Settling pond after it will be recycled again as closed-circuit cooling system will be adopted.
- Sanitary waste water will be treated in septic tank followed by sub-surface dispersion trench.

11.5.3 SOLID, HAZARDOUS WASTE GENERATION & DISPOSAL FROM THE EXPANSION

- Slag generated from FeMn will be reused in manufacture of SiMn as it contains high SiO₂ and Silicon.
- Slag generated from FeSi will be given to Cast Iron foundries.
- Slag generated from SiMn will be used for Road construction / will be given to slag cement manufacturers
- Slag generated from FeCr will be processed in Zigging plant for Chrome recovery and TCLP test will be performed, accordingly output will be secured land filled as per the CPCB guidelines.
- Slag from Pig Iron manufacturing will be given to nearby cement plants.
- Municipal (Organic) solid wastes from the Plant will be composted and used as manure for the green belt. Inorganic wastes (Non-biodegradable) will be sent to Authorized SPCB Recyclers.
- Waste oil will be stored in covered HDPE drums in a designated area and will be given to SPCB authorized recyclers & re-processors.
- Used batteries will be given back to the supplier under buy back agreement with supplier.

All solid wastes will be disposed off as per norms. Hence there will not be any adverse impact on land environment due to the solid waste generation.

11.5.6 CAPITAL COST OF THE PROJECT, ESTIMATED TIME OF COMPLETION

The total capital investment of the proposed expansion project is Rs. 13.0 Crores. The following is the schedule of implementation from the date of issue of Environmental Clearance.

S.No.	Description	Plant Configuration	Duration from the Date of receipt of EC & Financial Closure										
			1 st year	2 nd Year	3 rd Year	4 th Year	5 th Year	6 th Year	7 th Year				
1	Ferro Alloy Plant (Submerged Electric Arc Furnace)	1 x 9 MVA											

11.5.7 SITE SELECTION / ENVIRONMENT SETTING WITHIN 10 KM. RADIUS.

Following are Environmental and other features within the 10 Km. radius of the plant:

S.No.	Salient Features / Environmental features	Distance w.r.t. site / Remarks
1.	Type of Land (for Expansion)	Industrial land The expansion project will be taken up in the existing plant premises only.
2.	Type of Land (Study Area)	As per LULC the land use within 10 Km. is as follows: Settlements – 3.1 %; Industrial Area - 1.1 %; Tank / River – 6.3 %; Single crop land – 72.2 %; Double Crop Land – 7.5 %; Land with scrub – 4.4 %; Land without scrub – 3.5 % & Stone quarry – 1.9 %.
3.	National Park/ Wild life sanctuary / Biosphere reserve / Tiger Reserve / Elephant Corridor / migratory routes for Birds	There are no notified National Park/ Wild life sanctuary / Biosphere reserve / Tiger Reserve/ migratory routes for Birds with in 10 Km. radius of the plant.
4.	Historical places / Places of Tourist importance / Archeological sites	Nil
5.	Industrial areas / cluster (MoEF&CC Office Memorandum dated 13 th January 2010 & subsequent amendment)	Nil
6.	Defence Installations	Nil
7.	Nearest village	Atarra Village - 0.65 Kms.
8.	No. of Villages in the Study Area	70

S.No.	Salient Features / Environmental features	Distance w.r.t. site / Remarks
9.	Nearest Hospital	Belha Village – 8.6 Kms.
10.	Nearest School	Sargaon Village – 4.3 Kms.
11.	Forests	No forest present within 10 Kms. radius of the project site.
12.	Water body	Maniyari River – 0.05 Kms., Agar River – 5.5 Kms., Shivrath river – 8.0 Kms. exists within 10 Km. radius of the plant site
13.	Nearest Highway	NH # 200 (3.6 Kms. By road)
14.	Nearest Railway station	Belha R.S. - 9.0 Kms. (Aerial) & 14.5 Kms. (By Road)
15.	Nearest Port facility	Nil
16.	Nearest Airport / Airstrip	Nil (Bilaspur Airstrip – 14 Kms.)
17.	Nearest Interstate Boundary	No interstate boundary within 10 Km radius of the plant site.
18.	Seismic zoneas per IS-1893	Seismic zone – II
19.	R & R	There is no rehabilitation and resettlement issue, as the proposed expansion will be taken up in the existing premises only.
20.	List of Industries / Mining activity	M/s. Laxman Cement Ltd, M/s. Radhamadhav Industries Pvt. Ltd., M/s. Nova Iron & Steel Ltd. & few Dolomite quarries are present within 10 Km. radius of the plant site
21.	Litigation / court case is pending against the proposed project / proposed site and or any direction passed by the court of law against the project	None

11.6 BASELINE ENVIRONMENTAL DATA

11.6.1 AMBIENT AIR QUALITY

Ambient air quality was monitored for PM_{2.5}, PM₁₀, SO₂, NO_x & CO at 8 stations including project site during 1st October 2017 to 31st December 2017. The following are the concentrations of various parameters at the monitoring stations:

Parameter		Concentration
PM _{2.5}	:	19.7 to 37.4 µg/m ³
PM ₁₀	:	32.9 to 63.2 µg/m ³
SO ₂	:	8.3 to 19.6 µg/m ³
NO _x	:	9.5 to 28.3 µg/m ³
CO	:	525 to 1150 µg/m ³

11.6.2 SURFACE WATER QUALITY

2 nos. of surface water samples (SW1 & SW2) have been collected from Maniyari river (0.05 Kms.) and one sample each from Agar River (8.2 Kms.), Shivnath River (7.8 Kms.) & Ghongha Nadi has been collected respectively. The analysis of samples shows that all the parameters are in accordance with BIS-2296 specifications.

11.6.3 GROUND WATER QUALITY

8 No. of ground water samples from open wells / bore wells were collected from the nearby villages to assess ground water quality impacts and analyzed for various Physico-Chemical parameters. The analysis of samples shows that all the parameters are in accordance with BIS: 10500 specifications.

11.7 IDENTIFICATION OF HAZARDS

Identification of hazards in handling, processing and storage of hazardous material and safety system provided to mitigate the risk.

S.No.	AREA OF	OCCUPATIONAL & SAFETY HAZARDS AND CAUSES	THEIR IMPACT	ACTIONS TAKEN TO ELIMINATE THE IMPACT / HEALTH AND SAFETY HAZARDS
1	RAW MATERIAL AREAS	<ul style="list-style-type: none"> EXPOSURE TO DUST WORKING IN OPEN AREAS 	<ul style="list-style-type: none"> Dust allergy, Fatigue due to physical activity 	<ul style="list-style-type: none"> Providing protective and safety appliances Rotation of workers
2	RAW MATERIAL FEEDING SYSTEMS FERRO ALLOYS	<ul style="list-style-type: none"> EXPOSURE TO DUST WHILE HANDLING RAW MATERIALS IN YARDS EXPOSURE TO DUST AT TRANSFER TOWERS NOISE LEVELS DUE 	<ul style="list-style-type: none"> Dust allergy, Lung disorders, respiratory problems and effect to skin Fatigue due to physical activity Scope of accidents / 	<ul style="list-style-type: none"> All conveyors covered Dust suppression systems at transfer towers to eliminate dust Providing proper protective and safety appliances

S.No.	AREA OF	OCCUPATIONAL & SAFETY HAZARDS AND CAUSES	THEIR IMPACT	ACTIONS TAKEN TO ELIMINATE THE IMPACT / HEALTH AND SAFETY HAZARDS
		TO IMPACT AT BATCHING SYSTEM, EMV FEEDERS	injuries due to improper maintenance practices. • Hearing impairment, sleep disturbance, hypertension	• Standing instructions and standard operating procedures • Providing ear plugs
3	FURNACE AREA FERRO ALLOYS	<ul style="list-style-type: none"> • EXPOSURE TO HEAT AT FURNACE • EXPOSURE TO DUST AT FURNACE • CHARGING & STROKING SYSTEM AT FURNACE • SUFFOCATION AT OPERATING FLOOR LEVEL 1ST FLOOR 	<ul style="list-style-type: none"> • Dehydration and cardio vascular disease. • Dust allergy, Lung disorders, respiratory problems and effect to skin • Metallic dust exposure • Scope of burns and injuries and effect to eyes • Scope of injury due to spillage of hot charge mix at furnace operating floor 	<ul style="list-style-type: none"> • Low hood design of furnace smoke hood eliminates exposure to dust and fumes • Providing safety and protective appliances • Proper design of hood top for extraction of fumes to eliminate suffocation at operating floor due to fugitive emission • Face marks, shoes, helmets at operating floor eliminates injuries
4	PROCESS FERRO ALLOYS	<ul style="list-style-type: none"> • FLUCTUATIONS DUE TO METALLURGICAL ASPECTS • FURNACE ERRUPTIONS • VARIATIONS IN PROCESS PARAMETERS 	<ul style="list-style-type: none"> • Burns and injuries due to furnace eruptions due to metallurgical disturbances in process • Excessive heat / radiation and effect due to hold up of slag / metal in the furnace due to process variations 	<ul style="list-style-type: none"> • Proper selection of raw materials and quality control of inputs eliminates process variations and related hazards. • Provision of proper safety and protective equipment eliminates injuries / burns
5	HOT METAL HANDLING AREAS	• TAPPING AREA HOT LIQUID METAL HANDLING AND SPILLAGES	• Scope of burns due to liquid metal spillages	• SOPs and proper maintenance of cranes / tools & tackles eliminate

S.No.	AREA OF	OCCUPATIONAL & SAFETY HAZARDS AND CAUSES	THEIR IMPACT	ACTIONS TAKEN TO ELIMINATE THE IMPACT / HEALTH AND SAFETY HAZARDS
		<ul style="list-style-type: none"> EXPOSURE TO HEAT CONTINUOUS CASTING MACHINE PROCESS 	<ul style="list-style-type: none"> Accidents due to Break down / failure of tools and tackles used in hot metal handling equipment Burns due to Liquid metal spillages during process of pouring Burns due to water ingress to hot metal areas 	<ul style="list-style-type: none"> accidents Proper layout and free spaces for movement in hot metal handling areas eliminate scope of injuries in abnormal conditions. Providing proper safety and protective equipment eliminate scope of injuries
6	PRODUCT HANDLING FERRO ALLOYS	<ul style="list-style-type: none"> HOT METAL & SLAG CAKES HANDLING PRODUCT SIZING PROCESS PRODUCT LOADING PROCESS 	<ul style="list-style-type: none"> Scope of burns due to hot metal cakes handling Metallic dust exposure Scope of injuries during sizing process of metal and slag Failure of lifting tools & tackles and equipment 	<ul style="list-style-type: none"> Providing proper safety and protective equipment to eliminate scope of injuries SOPs and proper maintenance and testing of lifting equipment to eliminate scope of injuries.
7	EQUIPMENT FERRO ALLOYS	<ul style="list-style-type: none"> BREAK DOWN OF CRANES BREAK DOWN OF WATER-COOLING PUMPS BREAK DOWN OF BLOWERS IN FURNACE AREA BREAK DOWN OF HYDRAULLIC SYSTEMS 	<ul style="list-style-type: none"> Crane break down cause scope of lining failures and there by scope of injuries / burns Scope of steam generation in the water-cooling circuit and failure of water hoses due to steaming and scope of burns Break down of blowers scope of suffocation in 2nd floor 	<ul style="list-style-type: none"> Proper SOPs for O & M and proper maintenance schedules and equipment testing schedules eliminate scope of accidents related to these failures. Proper ventilation in the plant building eliminates scope of suffocation.

S.No.	AREA OF	OCCUPATIONAL & SAFETY HAZARDS AND CAUSES	THEIR IMPACT	ACTIONS TAKEN TO ELIMINATE THE IMPACT / HEALTH AND SAFETY HAZARDS
8	FURNACE TRANSFORMERS	<ul style="list-style-type: none"> • POSSIBILITIES OF FIRE • POSSIBILITIES OF ELECTRICAL FAILURES 	<ul style="list-style-type: none"> • Injuries / burns due to fire at transformer • Electrical short circuits causing transformer failure and scope of catching fire 	<ul style="list-style-type: none"> • Proper fire fighting equipment and nitrogen purging eliminates fire accidents in transformers • Proper protection scheme and isolation of furnace from source eliminate any scope of accidents due to failure of transformer
9	HYDRAULLIC SYSTEMS	<ul style="list-style-type: none"> • FAILURE OF HYDRAULLIC HOSES • POSSIBILITIES OF FIRE OF HYDRAULLIC OIL 	<ul style="list-style-type: none"> • Failure of hydraulic hoses due to electrical short circuits may cause accidents • Possibility of fire accident due to oil catching fire 	<ul style="list-style-type: none"> • Proper SOPs for O & M eliminate failures • Using carbon free high pressure hoses eliminate hose failure accidents. • Separate enclosed room for hydraulic room reduces scope of high temperature and eliminate fire accidents
10	POLLUTION CONTROL SYSTEMS FERRO ALLOYS	<ul style="list-style-type: none"> • SPARKS CAUSING BURNING OF BAGS IN BAG FILTERS • POSSIBILITIES OF SUDDEN SURGES IN FURNACE 	<ul style="list-style-type: none"> • Fire accidents at Bag house • Excessive emissions due to failure of bags • Structural failures due to this fire accident 	<ul style="list-style-type: none"> • To avoid scope of bags catching fire, baffles in the ducting to arrest sparks, water cooled hood top, duct length of about 40 metres between hood & bag filter, providing heat exchanger and dilution dampers for fresh air completely eliminate this scope of fire accident • PLC based Interlocking system

S.No.	AREA OF	OCCUPATIONAL & SAFETY HAZARDS AND CAUSES	THEIR IMPACT	ACTIONS TAKEN TO ELIMINATE THE IMPACT / HEALTH AND SAFETY HAZARDS
				w.ill be provided and acts in such a way that whenever bagfilters fail, then furnace will be shutdown
11	REFINING PROCESS AREAS	<ul style="list-style-type: none"> LIQUID METAL HANDLING SCOPE OF BURNS BREAK DOWN OF CRANES 	<ul style="list-style-type: none"> Scope of burns due to liquid metal spillages Accidents due to Break down / failure of tools and tackles used in hot metal handling equipment Burns due to Liquid metal spillages during process of pouring 	<ul style="list-style-type: none"> SOPs and proper maintenance of cranes / tools & tackles eliminate accidents Proper layout and free spaces for movement in hot metal handling areas eliminate scope of injuries in abnormal conditions. Providing proper safety and protective equipment eliminate scope of injuries
12	TESTING AREAS	<ul style="list-style-type: none"> HAZARDS DUE TO CHEMICALS EXPOSURE TO REACTION FUMES / GASSES 	<ul style="list-style-type: none"> Scope of burns and skin damages Scope of lung disorders 	<ul style="list-style-type: none"> Proper safety precautions and protective equipments to eliminate these hazards
13	ELECTRICAL SYSTEMS	<ul style="list-style-type: none"> EXPOSURE TO ELECTRICAL SHOCKS SCOPE OF FIRE DUE TO ELECTRICAL SHORT CIRCUITS EXPOSURE TO BURNS DUE TO ELECTRICAL SYSTEMS 	<ul style="list-style-type: none"> Burns due to electrical accidents Shocks due to electrical accidents Damages to skin due to electrical fire accidents Neurological problems due to electrical shocks 	<ul style="list-style-type: none"> Proper SOPs for O & M teams will eliminate scope of these hazards Proper fire fighting scheme for electrical failures eliminate these Hazards Proper design of electrical equipment and proper isolation eliminate these Hazards

S.No.	AREA OF	OCCUPATIONAL & SAFETY HAZARDS AND CAUSES	THEIR IMPACT	ACTIONS TAKEN TO ELIMINATE THE IMPACT / HEALTH AND SAFETY HAZARDS
14	NOISE RELATED HAZARDS	<ul style="list-style-type: none"> EXPOSURE TO NOISE OF VARIOUS EQUIPMENT WORKING AT FURNACE AREAS 	<ul style="list-style-type: none"> Damage to ears and neurological systems Lung disorders Skin diseases and effect to skin 	<ul style="list-style-type: none"> Proper ventilation eliminates heat Proper measure to reduce noise levels and keep noise levels within permissible Proper safety and protective equipment
15	FIRE HAZARDS AREAS	<ul style="list-style-type: none"> ALL HOT METAL AREAS FURNACE TRANSFORMERS FURNACE OPERATING FLOOR 	<ul style="list-style-type: none"> Scope of fire accidents and burns Scope of damage to skin 	<ul style="list-style-type: none"> Proper SOPs for O & M and good fire fighting scheme eliminate these Hazards Proper safety and protective equipments eliminate impact of these Hazards
16	SAFETY RELATED AREAS	<ul style="list-style-type: none"> TOOLS AND TACKELS USED IN HANDLING AREAS FURNACE WORKING AREAS VEHICULAR MOVEMENT AT RM YARDS 	<ul style="list-style-type: none"> Scope of mechanical related accidents causing injuries Exposure to dust causing dust allergy 	<ul style="list-style-type: none"> Proper SOPs for testing of tool and tackles and lifting equipment and proper maintenance schedules eliminate the scope of these accidents and hazards Proper layout design eliminates accidents due to vehicular movement in project
17	CONTINUOUS PROCESS INDUSTRY	<ul style="list-style-type: none"> FATIGUE DUE TO LONG WORKING HOURS AGE RELATED CONSTRAINTS 	<ul style="list-style-type: none"> Absentism causes long working hours and fatigue Incapability in some working areas beyond certain age limit 	<ul style="list-style-type: none"> Keeping some additional manpower in summers eliminate fatigue Relocation / rotation of working area will eliminate age related constraints
18	SEASONAL RELATED ISSUES	<ul style="list-style-type: none"> EXPOSURE TO HEAT IN SUMMERS 	<ul style="list-style-type: none"> Dehydration during summers at furnace 	<ul style="list-style-type: none"> Proper ventilation, providing additional

S.No.	AREA OF	OCCUPATIONAL & SAFETY HAZARDS AND CAUSES	THEIR IMPACT	ACTIONS TAKEN TO ELIMINATE THE IMPACT / HEALTH AND SAFETY HAZARDS
		<ul style="list-style-type: none"> FURNACE PROCESS FLUCTUATIONS DURING MANSOON SEASON HIGH MOISTURE LEVELS IN RAW MATERIALS 	<p>areas</p> <ul style="list-style-type: none"> Excess moistures cause improper porosity in the furnace causing eruptions and burning Chocking of charging systems and spillages due to excess moisture during mansooncausing work load fatigue to maintenance teams 	<p>manpower during summers eliminate the scope of impact due to these hazards.</p> <ul style="list-style-type: none"> Proper selection of raw materials during mansoon, storage of raw material in covered sheds, maintaining proper preventive maintenance schedules and additional manpower during mansoon eliminates these Hazards
19.	Failure of APCS	DUST / SMOKE	<ul style="list-style-type: none"> Air emission 	<ul style="list-style-type: none"> Emergency alarm to be given to Villagers. Water sprinkling arrangements.

11.8 IMPACT OF THE PROJECT ON AIR, WATER, LAND, FLORA-FAUNA AND NEARBY POPULATION

Zero effluent discharge will be adopted. All the required air pollution control systems will be provided to comply with CPCB / SPCB norms. All solid wastes will be disposed / utilized as per CPCB / SPCB norms. **3.64 Ha. (9.0 Acres)** of greenbelt is being developed as per guidelines. Hence there will not be any adverse impact on land environment due to the proposed project.

11.9 EMERGENCY PREPAREDNESS PLAN

As part of Emergency preparedness plan the following shall be taken care

- Communication systems (including Public Address System)
- Emergency Siren
- Transport for evacuation of plant personnel
- Providing proper Assembly area

- First Aid facility including ambulance at site
- Fire Fighting and rescue arrangements
- Security arrangements
- Breathing air sets and facilities for bottling of breathing air.
- Laboratory facilities
- Fire Alarm System –Heat & Smoke Detectors
- Fire Pump House

11.10 ISSUES RAISED DURING PUBLIC HEARING (IF APPLICABLE) AND RESPONSE GIVEN

Will be prepared after Public Hearing

11.11 CORPORATE ENVIRONMENT RESPONSIBILITY PLAN

Real Power Pvt. Ltd. is actively contributing to improve the Socio-economic conditions of the area. The continuing commitment by business to behave ethically and contribute to economic development while improve the quality of life of workforce and their families as well as that of the local community and society at large.

Details of expenditure for proposed for CER activities as per the Ministry's Office Memorandum vide F.No. 22-65/2017-IA.III dated 1st May 2018 is given below:

Total cost of the expansion project	:	Rs. 13 Crores
Percentage earmarked (\leq 100 Crores) (for Brownfield Projects)	:	1.0 % of project cost
Total CER Budget	:	Rs. 13 Lakhs

11.12 OCCUPATIONAL HEALTH MEASURES

The health of workers can be protected by adopting the following measures:

- Proper Designing of building, Work area.
- Relaxation facilities to workers with good ventilation & air circulation. This will help in relieving of thermal stress.
- Good Housekeeping practices.
- Well-engineered ventilation & exhaust system.
- Enclosure.

- Isolation of specific areas
- Enforcement of usage of Personal Protective Devices.
- Regular Work Environment Monitoring
- Statistical Monitoring
- Working hours
- Rotation of employees in specific areas to avoid continuous exposure
- Frequency of Periodical Examination:
 - a. For employees <30 Years once in five years
 - b. Between 31-50 Years once in four years
 - c. Between 41-50 Years once in two years
 - d. Above >50 years once a year

11.13 POST PROJECT MONITORING PLAN

A comprehensive monitoring programme is given under.

MONITORING SCHEDULE FOR ENVIRONMENTAL PARAMETERS

S.No.	Particulars	Frequency of Monitoring	Duration of sampling	Parameters required to be monitored
1. Water & Waste water quality				
A.	Water quality in the area	Monitored on quarterly basis.	Grab sampling	As per IS: 10500
B.	Sanitary waste water	Once in a month	Grab sampling	As per EPA Rules1996
2. Air Quality				
A.	Stack Monitoring	CEMS (proposed)	continuous	PM & NOx
B.	Ambient Air quality	Once in a month	24 hours continuously	PM _{2.5} , PM ₁₀ , SOx, NOx & CO
C.	Fugitive emissions	Quarterly basis	8 hours	PM
3. Meteorological Data				
	Meteorological data to be monitored at the plant.	Daily	Continuous monitoring	Temperature, Relative Humidity, rainfall, wind direction & wind speed.
4. Noise level monitoring				
	Ambient Noise levels	Twice in a year	Continuous for 24 hours with 1 hour interval	Noise levels