Executive Summary of
ENVIRONMENTAL IMPACT ASSESSMENT
&
ENVIRONMENTAL MANAGEMENT PLAN

FOR

PUBLIC HEARING

As per EIA Notification, 2006

OF

DHUPTALA EXPANSION OC

(Ballarpur Area, WCL)

for

Increase in production capacity from 1.70 MTPA to 2.50 MTPA
Within ML area of 1013.83 ha

(Prepared as per ToR granted vide MoEF&CC vide No. J-11015/538/2008-IA-II(M) dated 30.08.2023)

Baseline data generated from 15.03.2023 to 15.06.2023 by NABL accredited ***Laboratory of CMPDI, RI-IV*** **certificate no. TC-7102 valid upto 28.06.2026**

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Prepared by

CENTRAL MINE PLANNING AND DESIGN INSTITUTE LIMITED

(Accredited vide letter no. NABET/EIA/22-25/SA0223 valid till 08.04.2025)

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Contents

1. INTRODUCTION

The Dhuptala Expansion OC mine is situated in Dhuptala Geological block located in southern bank of Wardha River near Ballarpur in Chandrapur district of Maharashtra State.

Environmental clearance for Dhuptala OC mine has been obtained for production capacity of 1.70 MTPA with total mining lease area of 1300.91 ha vide MoEF&CC letter No. J-11015/538/2008-IA.II (M) dated 10th January, 2013. The mine has started coal production from 2022-23.

Considering the potential of the mine to produce coal beyond the sanctioned production capacity, a Mining plan for expansion in production capacity from 1.70 MTPA to 2.50 MTPA within the mine lease area of 1070.49 has been prepared. The mining plan has been approved by WCL Board vide ref: WCL/Office of CS/BM-341/2021-22/974 dated 22.03.2022. Further the mining plan was updated in compliance of specific ToR condition (i) with ML area of 1013.83 ha.

This Environmental Impact Assessment (EIA) - Environmental Management Plan (EMP) Report has been prepared based on the ToR issued by MoEF&CC vide Letter No. J-11015/538/2008-IA-II(M) dated 30.08.2023.

1.1 Location

The mine is located about 4 km from Rajura township and 4 km from Ballarpur township. The mine falls in the Survey of India toposheet No. 56 M/5 (RF 1:50,0000).

The project area is bounded by following coordinates-

Latitude - 19°47'59.68"N to 19°51'9.49"N

Longitude - 79°18'27.15"E to 79°21'18.52"E

1.2 Communication

The project area is well connected by road. The proposed Dhuptala OC mine is located about 4 km from Rajura township and 4 km from Ballarpur township via new bridge on Wardha River near Ballarpur OC mine. Rajura is connected to Ballarpur and Ballarpur is connected to Nagpur (165 km) by all-weather metalled road as well as by rail link. The nearest airport is at Nagpur at a distance of 165 kms.

1.3 Topography & Drainage

The area has a slightly undulating topography with gentle slope towards Wardha River in the North. The surface reduced level values vary between 167.04 m to 180.30 m. The H.F.L. of Wardha River as recorded by Sasti Colliery in 1959 is 178.38 m. The Wardha river controls the main drainage of the area. The Dhuptala Nallah and a local

Nallah are flowing over the quarry area in the dip side and merge with Rajur Nallah which ultimately discharges into Wardha river.

1.4 Climate & Rainfall

The area experience tropical climate. The summer season is from April to June with the maximum temperature reaching through 48^{o}C during May. Winters are moderate with the minimum temperature dropping upto 8^{o}C. The average rainfall is 1100 mm. The maximum precipitation is during June to September.

2. GEO-MINING PARAMETERS

The geo-mining parameters of the Dhuptala OC mine are tabulated below:

Geo-Mining Parameters

Sr. No.	PARTICULARS	DETAILS
1	Life of Mine	25 Years
2	Grade/GCV (k.Cal./kg.)	G11/4210
3	Average SR (m^3/t)	5.26
4	Gradient of seam	1 in 10 to 1 in 18
5	Average thickness of seam (m)	15.68
6	Rehandling of OB (Mm^3)	9.66
7	Volume of Trench Cutting (Mm^3)	2.70
8	Area of the Quarry	
(a)	On floor (ha)	291.45
(b)	On surface (ha)	385.68
9	Average Strike length (m)	
(a)	At surface	1700
(b)	At floor	1400
10	Average width (m)	
(a)	At surface	1700
(b)	At floor	1500
11	Depth (m)	
(a)	Initial	25
(b)	Final	150

Type and Method of Mining Operations: It is an existing opencast mine with shovel dumper combination for both coal extraction and overburden removal. Considering the shifting of Sasti village as time consuming activity, initially, quarry is proposed to be

worked leaving safe distance from Sasti village. After rehabilitation of village, the rise side quarry will be extended towards village. The OB excavated from the quarry will be accommodated in External OB dump on non-coal bearing area in rise side of Dhuptala block and later on from 8th year onwards internal backfilling will also start in the void of Dhuptala OC Sector-C, from 12th year onwards internal backfilling will start in the void of proposed quarry and from 19th year onwards internal backfilling will start in the void of Ballarpur NW OC quarry.

3. DESCRIPTION OF ENVIRONMENT

This is an existing coal mine running as per existing EC production capacity of 1.70 MTPA since 2022-23. Sasti Expansion OC mine, Ballarpur UG mine, Gauri Pauni Expn OC, Pauni-II Expansion OC mine and Gauri Deep OC mine are other running opencast coalmines located near to the Dhuptala OC. This region is very important in meeting the coal demand of western and southern thermal power plants.

The summary of baseline data generated to know the existing status of air quality, water quality, noise level, soil quality, flora-fauna and socio-economic is provided below.

3.1 Micrometeorology

Meteorological data was collected during the study period March, 2023 to June, 2023 (Pre- Monsoon season) reveals the following status:

Wind Speed/Direction

Generally, moderate to stronger winds prevailed throughout the season. Daily average wind speed readings were ranging from 0.1 m/s to 2.7 m/sec. The seasonal average wind speed was observed to be 1.1 m/sec.

The analysis of wind pattern during the season showed that the predominant wind directions were from West and North West (Blowing from).

Temperature

Daily average temperature values ranged between 26.4 ^{O}C to 42.2^{O}C. The seasonal average temperature value during this period was found to be 35.8^{O}C.

Relative Humidity

The daily average relative humidity values were in the range of 0% to 65.7%. The seasonal average humidity value was found to be 28.1%.

Cloud Cover

Mostly clear sky was predominant during the study period except few days of April month.

3.2 Air Environment

The baseline ambient air quality monitoring has been carried out from March, 2023 to June, 2023 (12 weeks) at 12 locations. 2 nos of samples in upwind direction, 2 nos in core zone of project, 2 in cross-wind direction and 6 stations in downwind directions has been chosen to monitor the ambient air quality of the area for the purpose of baseline data generation.

Concentration of PM10 was found to be maximum within core zone at Managers Office and Sasti village which is situated near Dhuptala Quarry. In buffer zone maximum concentration of PM 10 (85 µg/m$^{3)}$ was found to be at Ballarpur township due to vehicular movement and nearby industries.

Summary of Air Quality Data

Summary of Baseline Air Quality (in µg/m^3)

Parameter	Name of Monitoring Station	Minimum	Maximum	Average	98th percentile	Permissible Limit
PM_{10}	Manager Office Dhuptala OC	104	177	128	45	**300**
	Ballarpur Township	60	87	73	85	**100**
	Sasti Village	65	85	76	83	**100**
	Rajura Township	58	77	67	76	**100**
	Charli Village	56	72	63	71	**100**
	Chunala Village	50	76	62	75	**100**
	Mathara Village	61	80	70	79	**100**
	Hirapur Village	57	74	67	74	**100**
	Gauri Village	62	85	74	84	**100**
	Ruyad Village	51	75	63	74	**100**
	Daheli Village	39	68	54	66	**100**
	Goyegaon Village	61	80	70	80	**100**
$PM_{2.5}$	Manager Office Dhuptala OC	28	45	37	45	**60**
	Ballarpur Township	19	36	26	35	**60**
	Sasti Village	21	34	28	34	**60**
	Rajur Township	21	34	29	34	**60**
	Charli Village	20	35	27	34	**60**
	Chunala Village	22	45	31	42	**60**
	Mathara Village	20	36	27	34	**60**
	Hirapur Village	24	36	29	35	**60**
	Gauri Village	21	36	29	35	**60**

	Ruyad Village	21	33	27	32	**60**
	Daheli Village	16	35	25	34	**60**
	Goyegaon Village	21	40	29	40	**60**
NO_X	Manager Office Dhuptala OC	6	15	10	15	**120**
	Ballarpur Township	8	12	10	12	**80**
	Sasti Village	8	12	10	12	**80**
	Rajura Township	8	12	10	12	**80**
	Charli Village	8	12	10	12	**80**
	Chunala Village	7	12	9	12	**80**
	Mathara Village	12	10	12	8	**80**
	Hirapur Village	8	12	10	12	**80**
	Gauri Village	7	12	10	11	**80**
	Ruyad Village	7	12	9	12	**80**
	Daheli Village	8	14	11	14	**80**
	Goyegaon Village	8	14	11	14	**80**
SO_2	Manager Office Dhuptala OC	<10	<10	<10	<10	**120**
	Ballarpur Township	<10	<10	<10	<10	**80**
	Sasti Village	<10	<10	<10	<10	**80**
	Rajura Township	<10	<10	<10	<10	**80**
	Charli Village	<10	<10	<10	<10	**80**
	Chunala Village	<10	<10	<10	<10	**80**
	Mathara Village	<10	<10	<10	<10	**80**
	Hirapur Village	<10	<10	<10	<10	**80**
	Gauri Village	<10	<10	<10	<10	**80**
	Ruyad Village	<10	<10	<10	<10	**80**
	Daheli Village	<10	<10	<10	<10	**80**
	Goyegaon Village	<10	<10	<10	<10	**80**

Observation

The ambient air quality parameters were found to be within permissible limits in Core Zone and Buffer Zone. It was observed that most of the dust generated due to the mining operation has impact only within and around the core zone. The SOx and NOx levels were found to be much lower than the prescribed standards.

3.3 Water quality

Any adverse impact or pollution consequence of water will have serious effect on the environment. Hence, it becomes important to assess the water quality periodically in the mining area. The water samples of the surface water, ground water, mine discharge water and ETP discharge water has been collected and analyzed in compliance of ToR condition (10) issued for Dhuptala OC mine.

The baseline water quality characterization has been conducted by collecting water samples during Pre-monsoon season i.e. March'2023 to June'2023. Total 36 water samples (Thrice in a season at 12 locations) were monitored during the above period. As it is an existing mine, water samples from the mine discharge water and ETP discharge were analyzed. The surface water samples were collected from the Gauri Nallah, Mathara Nallah and Wardha river flowing in the vicinity of the project. The Wardha river controls the drainage of the region. These water samples were collected in upstream and downstream to project from the water bodies. As it is an existing mine, water samples from the mine discharge water and ETP discharge were analyzed. The samples of ground water were collected from nearby Mathara Village, Sasti Village, Kadholi Village and Rampur Village.

The different sources of water were identified for water quality characterization depending on their use for potable/industrial purposes and considering likely impact on these sources due to project activities.

Observations

All water quality parameters were found to be within prescribed limit for mine discharge water. pH range of mine discharge water was at the optimal level. The quality of outlet water from ETP was also found to be within prescribed standards. In general, the water quality in Wardha River (Upstream & Downstream) were found to be satisfactory. The pH of surface water is ranging from 7.59 to 8.45. Fluoride was found to be ranging from 0.37 mg/l to 0.54 mg/l.

Within Groundwater samples, the maximum TDS of 1090 mg/l was found in Sasti Village. The hardness in groundwater was found to be ranging from 752 to mg/l 1090 mg/l. Here it can be said that the groundwater is having higher TDS value in this region. Zinc was reported to be varied from <0.01 mg/l to 0.043 mg/l.

Summary of Water Quality Data

Sr. No.	Parameter	Wardha River		Gauri Nallah		Mathara Nallah		Overall	
		Min	Max	Min	Max	Min	Max	Min	Max

1	pH	7.72	7.86	7.59	7.92	8.14	8.45	7.59	8.45
2	TDS-mg/l	330	455	410	450	340	410	330	450
3	DO -mg/l	5.0	5.9	5.0	5.6	4.9	6.1	4.9	6.1
4	BOD	2.0	3.6	2.0	3.6	2.0	3.0	2.0	3.6
5	Fluoride	0.42	0.53	0.54	0.66	0.37	0.52	0.37	0.54
6	Sulphate	57	80	69	85	43	57	43	57
7	COD	32	44	32	48	32	44	32	44
8	Arsenic	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
9	Zinc	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
10	Iron	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
11	Cadmium	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005

Ground Water Quality Core Zone

Sr.No.	Parameter	Core Zone (Sasti Village)	
		Min	Max
1	pH	7.03	7.23
2	TDS-mg/l	1020	1090
3	Chlorides -mg/l	80	90
4	TSS	<10	<10
5	Fluoride	0.38	0.48
6	Sulphate	162	181
7	Nitrate	35	44
8	Magnesium	48	59
9	Zinc	0.031	0.043
10	Iron	<0.06	<0.06
11	Nickel	0.02	0.03
12	Manganese	0.025	0.038

Ground Water Quality Buffer Zone

Sr. No.	Parameter	Rampur Village		Mathara Village		Kadholi Village		Overall in Buffer Zone	
		Min	Max	Min	Max	Min	Max	Min	Max
1	pH	7.33	7.53	7.51	7.72	7.17	7.34	7.03	7.72
2	TDS-mg/l	970	1018	752	790	978	1070	752	1090
3	Chlorides -mg/l	174	192	126	132	108	120	80	192
4	TSS	<10	<10	<10	<10	<10	<10	<10	<10
5	Fluoride	0.36	0.44	0.36	0.48	0.53	0.82	0.36	0.82
6	Sulphate	52	62	137	146	148	162	52	181
7	Nitrate	8	14	34	41	33	42	8	44
8	Magnesium	41	53	21	24	64	70	21	70
9	Zinc	<0.01	<0.01	0.019	0.038	0.025	0.031	0.019	0.043
10	Iron	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
11	Nickel	0.021	0.031	<0.02	<0.02	0.022	0.025	0.02	0.031
12	Manganese	<0.02	<0.02	0.021	0.021	0.035	0.043	0.021	0.043

3.4 Hydrogeological Quality

The range of water levels (2023), measured from the core (2 km) and buffer zone (10 km) of Dhuptala OC Mine are given below:

Table 1 Range of water level (2023) in core and buffer zone of Dhuptala OC Mine

Pre monsoon (May, 2023)	Core Zone	5.10 m to 6.80 m
	Buffer zone (area between 2 to 10 km radius)	1.80 m to 9.70 m
Post monsoon (Nov, 2023)	Core Zone	3.70 m to 2.20 m
	Buffer zone	5.40 m to 7.00 m

3.5 Noise levels

Baseline noise levels at day time and night time is being generated at twelve locations. An integrated Sound Level Meter was used for sound level data collection on fortnightly basis from March'2023 to June'2023.

All noise levels values are found to be within the prescribed limits.

3.6 Land Use

The mine lease area of the project is 1013.83 ha. The land area is already within the mining activities. In the present proposal no additional land is required. The prior mining land use was agriculture in the project area. Entire land area is acquired by Project proponent.

Note: No forest land is involved in this project.

3.7 Socio Economic

Sasti village is present in the Core zone of the zone which is proposed for rehabilitation in Approved PR, 2018. There are around 1535 houses in Sasti village considered for rehabilitation. Sasti Village is located within the mine lease area of Dhuptala OC hence it is proposed to be rehabilitated.

4. ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

To have a close watch on the environmental condition and implementation of various measures suggested, a multi- disciplinary approach is essential.

4.1 Air Quality

Prediction of fugitive dust level in the surrounding is carried out (for 24 hours average) with the help of by using AERMOD version 16216r Air Quality Model. The predicted air quality was found to be within prescribed limit.

This is an existing mine in which many pollution control measures are already implemented. The details of existing and proposed mitigation measures along with provision of capital is provided below.

Mitigation Measures

Particular/Location	Existing Mitigation Measures	Mitigation Measures proposed	Capital Provision made (in Lakhs)
Fixed Water Sprinklers along Haul road, Coal stockyard, Weigh bridge, Coal transportation road	16 Nos of Fixed Sprinklers Provided at Coal stockyard. Total 10.00 lakhs have been spent.	Provision made for Additional Fixed Sprinklers. Rs. 20 Lakhs have been provided in Approved PR, 2019	20.00 Lakhs
Truck mounted mechanical Road Sweeping Machine	Deployed in the mine. Total Expenditure incurred -30 lakhs	--	--
Tyre Wash systen	1 no installed and commissioned in Rs. 33 Lakhs.	--	--
Fog Cannon system	1 no. of trolley mounted mist fogger with throw 100 m has been deployed. Total 7 lakhs have been spent.	--	--
Greenbelt	3,67,125 nos of trees has been planted with as part of greenbelt and reclamation. Total 32 lakhs have been spent in FY 2023-24.	Provision has been made in approved Project Report for Plantation for initial three years.	20.00
Wind Barried System	Of length 230 m around Coal stockyard. Total expenditure incurred- 20 Lakhs		
Continuous Ambient Air Quality Monitoring Station	2 nos of CAAQMS has been installed in nearby mines Pauni-II Expansion OC and Sasti OC mine	1 nos of CAAQMS is proposed to installed for Dhuptala OC Mine in FY 2024-2025.	--
Total Capital Provision made in Project Report			**40.00 Lakhs**

In case the air quality monitoring indicates increase in pollution level, additional fixed sprinklers and mobile water sprinklers will have to be provided by the project proponent.

4.2 Water Quality

Anticipated Impact

Mining and its associated activities not only use a lot of water but also likely to affect the hydrological regime of the area. The major impact of deep and large mines is of natural groundwater table. Lowering of water table may result in reduced groundwater availability. Extraction of different minerals is known to lead to water pollution due to heavy metal, acid discharges and increased suspended solids. Regular water quality monitoring is carried out in the existing Dhuptala OC mine. The water quality has been found to be within prescribed standards in regular monitoring as well as during baseline data generation period. No issues of acid mine discharge have been observed in this mine as well in any of the nearby mine. So, in future also it is unlikely to get acid mine discharge in Dhuptala OC. However, it is essential to continually monitor the mine water discharge quality. In case if acid mine discharge is reported at any point of time, necessary action should be taken to treat the acid mine discharge.

Salient controls measure to be taken to reduce water pollution are as follows:

Mitigation Measures

Salient controls measure to be taken are as follows:

Industrial Effluent

The waste-water from workshop, which normally remain laden with oil and grease, suspended and dissolved solids etc is treated in the Effluent Treatment Plant (ETP). The wastewater is generated due to washing of HEMM.
A 150 KLD Effluent Treatment plant is installed at Dhuptala OC mine.

Clear water coming out from the treatment plant is taken into the closed water circuit and recycled for its reuse. The ETP is equipped with Oil skimmer, Sedimentation tank, Rapid mixer and Clarifloculator. ETP sludge is sent to Waste Collection, Treatment, Storage & Disposal Facilities (CHWTSDF) at Butibori and no effluent is discharged in the local water streams.

All parameter of ETP waste discharge are monitored regularly as per Environment (Protection) Amendment Rule, 2000. As per the approved Mining Plan, the water requirement in the present proposal for washing of 47 dumpers will be 93.6 KL

considering 1800 litre/day is spent for washing one dumper. Hence, the proposed ETP of 150KL will be sufficient for treatment of effluent generated from workshop.

Mine Water

Most of the suspended particles are settled in the sump located in the quarry and the supernatant water is pumped out to the sedimentation tank present on surface. This water is passed through sedimentation pond on surface, before being reused or discharged in to River. A sedimentation tank of 30 mtr x 15 mtr x 1.50 mtr (1 Million cubic meter capacity) is working in existing Dhuptala OC mine. Additional Capital provision of 30.00 Lakhs have been made in Approved Project Report.

Sewage Water

The treatment of sewage generated from the households is necessary to keep clean the nearby waterbodies. The manpower of Dhuptala Project is accommodated in existing Sasti township. At the township, 1 MLD sewage treatment plant has been provided which will be sufficient to cater the requirements of this mine.

Surface Run-off

Adequate numbers of vegetation will be grown on the top surface and slopes of the dumps in order to arrest the erosion of soil. The vegetation reduces surface run-off, which helps averting siltation of natural water courses. Garland drains and catch drains will be constructed and maintained to arrest silt and sediment flows from the soil, OB and mineral dumps. At present, catch drains of length 5.11 Km and size of 3.5 Km X 1.5 Km have been provided all along the periphery of existing OB dump. These drains are cleaned and desilted before onset of every monsoon. Further, drains will be constructed as per requirement as the mine advances.

Impact on Hydro-Geological Regime

In the opencast mines, the different aquifers overlying the working coal seam would be contributing groundwater to the mine by gravity drainage since they are exposed/removed at the mine. The anticipated groundwater inflow to the mine is to the tune of 10915 m3/day(approx.). As such due to this pumping/gravity drainage, cone of depression would be formed. The shape and extent of the cone would depend on mainly hydraulic conductivity and specific yield of aquifers, mine depth & area etc. Generally steep drawdown cone would be formed in poor potential aquifers, thereby the influence area will be limited to small distance and reverse is established in respect of aquifers with high hydraulic conductivity.

The radius of influence has been estimated for two scenarios i.e. the impact only due to Dhuptala OC Mine and the cumulative impact of workings of both Dhuptala OC Mine and adjoining Sasti OC Mine.

Based on hydraulic conductivity values of both Kamthi and Barakar formation in the area, the zone of influence in the Dhuptala OCP may extend from 162 m to about 494 m from the mine edge.

In the combined effect of Dhuptala OC and Sasti OC Mines, the zone of influence is estimated to extend from 324 m to about 990 m from the mine edge.

As is practiced, after passing through the sedimentation tanks, the mine water is discharged into the ponds throughout the year and the surplus mine water during monsoon is discharged into the Wardha River. Thereby, the local village water supply will be least affected and rather, source augmentation can be anticipated.

Conservation Measures

i. The impact will be limited up to a distance of 990 m.
ii. The entire industrial water demand of the mine would be met from the treated mine discharge water. The wastage of water will be minimized.
iii. Thereby, the mine water will behave as constant source of recharge and improves the water levels in the mine area and thus reducing the zone of influence. This will also become a resource for the local public and increase agriculture output.
iv. The surface tanks, ponds, mine water discharge and irrigation use also enhance the groundwater recharge potential.
v. With the increase in secondary porosity, a significant improvement in rainfall infiltration rate/recharge close to the mine area can be anticipated.
vi. To assess the impact on local water levels, a close monitoring of water levels though established dug wells and piezometers in the study area is in progress by WCL.

4.3 Noise Quality

The existing mine is having effective green belt around mine area as plantation has been undertaken. This green belt will be further strengthened in the area of future expansion of Dhuptala OC mine which will act as an effective barrier against Noise pollution. Monitoring of the noise control will continue to be carried out on regular basis as per the Environment (Protection) Amendment Rule 2000. While planning for an

effective noise attenuation measure, the concept of source, path and receiver has been considered.

4.4 Impact on Land and Land Reclamation

The mining activities has been planned in the expansion project keeping minimal utilization of the land. The mine has been planned in such a way that it ensures not only the conservation of coal but also conservation of the precious land resource. The conversion of UG project into an open cast mine utilizes coal to its optimal potential. The requirement of land area has been reduced by planning the land use with nearby mines like Ballarpur NW mine together.

Total 291.86 Mm^3 of overburden will be produced during the expansion of project. Out of above, 137.97 Mm^3 (~47%) of overburden is proposed to be dumped internally in the void in 88 ha of Quarry area.

The land use of the project during mining is as follows:

Land Use Pattern

Sr. No.	Particulars	Area (ha) as per Approved EC, 2013	Area (ha) as per present Mining Plan
	Within Mine Leasehold Boundary		
1	Excavation area	385.68	385.68
2	External OB Dump (including top soil dump)	396	255.3
3	Infrastructure/Roads	30	50
4	Embankment	90	60
5	For Nallah diversion	15	15
6	Rationisation Boundary /Blasting Zone / Land for Future Coal Extraction and OB Dumping	327.57	117.85
7	Green Belt	-	130
	TOTAL	**1244.25**	**1013.83**
Outside Mine Leasehold Boundary			
8	Colony	3	3
9	For Village Rehabilitation	15	15
10	Existing Combined Township	38.66	38.66
	TOTAL	**1300.91**	**1070.49**

It can be observed from the above land use table, that the quarry area is same as Approved EC, 2013 while External OB dump is decreasing from 396.0 ha to 255.3 Ha.

The reduction in the external dump area is due to transfer of land earlier proposed for external dumping for Dhuptala OC mine to Ballarpur NW mine. Effectively, the land under external dump is reduced. Area under infrastructure has increased due to creation of new infrastructure during expansion of the project. Total green belt of 130 ha is proposed to be developed including the existing greenbelt.

The following activities have been proposed for reclamation of land.

1. Creation of garland drains in order to arrest the silt load, due to erosion, to enter into natural watercourses during surface run-off.

2. Grass, legumes and different types of plants etc. will be planted on such reclaimed land in order to make it, as far as possible, conducive to agricultural growth.

3. Technical and biological reclamation of external OB dump and rehandling at the end of mine life. The density of trees will be around 2500 plants/ha.

4.5 Rehabilitation & Resettlement

The Sasti village is located within the mine lease area. Hence, R&R of Sasti Village is envisaged in the approved Project Report and Mining Plan. The details of population of Sasti Village as per the census, 2011 is provided below:

Name	No of Households	Total Population Person	Scheduled Castes population Person	Scheduled Tribes population Person	Literates Population Person
Sasti	1058	4320	1408	370	3104

Out of total population of 4320, 32% population is scheduled cast and 8.5% population is Scheduled Tribe. The literacy was 71% in 2011. Rehabilitation and Resettlement cost has been calculated considering shifting of 1536 families. Since, the exact location of Rehabilitation site is not finalized, lump sum capital for 15 ha land for rehabilitation site has been provided. Provision of 173.13 Crore has been made for R&R of Sasti Village.

5. ENVIRONMENTAL MONITORING PROGRAMME

The Environmental Monitoring Programme will be carried out as per statutory requirements and detailed in the chapter – VI of the EIA report.

Environment Management Cell

WCL, has an Environment Deptt. headed by General Manager (Env.) at its HQ. The department provides necessary support that are required for environmental management of various mining projects under the jurisdiction of the company. At area

level, Area General Manager co-ordinates the activities of various disciplines in the area to render all necessary assistance at the implementing level i.e. the Project level. Nodal Officer (Environment) of the area monitors all aspects of environment on behalf of the Area General Manager. He takes suitable steps for generation of environmental data along with CMPDI team for its analysis and interpretations.

6. ENVIRONMENTAL COST PROJECTION

A capital provision of Rs. 4.8874 Crore has been made against environment protection. Rs. 6.00/t of coal has been provided to absorb environmental related cost in the project.

7. PROVISION FOR CSR WORK

The fund for the CSR will be allocated based on 2% of the average net profit of the Company for the three immediate preceding financial years or Rs 2.00 per Tonne of Coal Production of the previous year whichever is higher.

8. CONCLUSION

The mining sequence has been planned in a way to maximise internal dumping and optimisation of land by dumping in nearby projects so that no additional area is required for external OB dumping. The mine lease area required has been decreased from the earlier EC. The project authorities need to follow the mitigation measures strictly as given in the EIA & EMP report. This will minimise the impact on environment. The project for expansion of Dhuptala OC may be granted environmental clearance so that the project can continue to meet the coal requirement of the country.