

EXECUTIVE SUMMARY
ENVIRONMENTAL IMPACT ASSESSMENT & MANAGEMENT PLAN
FOR
THE PROPOSED CAPACITY EXPANSION OF BAILADILA IRON ORE PROJECT
DEPOSIT NO. 14/11C FROM EXISTING 12.0 TO 20.0 MTPA IRON ORE
AT KIRANDUL, SOUTH BASTAR DANTEWADA DISTRICT, CHHATTISGARH

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January 2017

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 एन एम डी सी NMDCL	Environmental Impact Assessment & Management Plan for Proposed Capacity Expansion of Bailadila Iron Ore Project Deposit No.14/11C from existing 12.0 to 20.0 MTPA at Kirandul, South Bastar Dantewada District, Chhattisgarh
	<i>Executive Summary</i>

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1.0 PROJECT DESCRIPTION

1.1 Introduction

NMDC Limited proposes to expand the capacity of existing iron ore mine Deposit-14/11C from 12.0 to 20.0 Million Tonnes Per Annum (MTPA) at Kirandul, South Bastar Dantewada District, Chhattisgarh. The project obtained Environmental Clearance for existing 12 MTPA ROM Iron Ore production capacity from MOEF, New Delhi vide letter no: J-11015/483/2007-IA.II(M) dated 11/9/2007. As per the EIA Notification dated 14th September 2006, the proposed capacity expansion of Bailadila Iron ore Project, Deposit-14/11C from 12 to 20 MTPA falls under 'Category A' of project type 1(a) and requires Environmental Clearance (EC) from MoEF&CC, GoI, New Delhi before the commencement of any expansion activity. Accordingly, NMDC has obtained Terms of Reference from MOEFCC, New Delhi vide letter no: J-11015/400/2015-IA.II (M) dated 08th January, 2016 for preparation of EIA/EMP report. The report was prepared based on TOR conditions and baseline environmental data generated during 1st December 2015 to 28th February 2016 representing winter season. The total capital cost of the proposed capacity expansion project is Rs.965.00 Cr. NMDC has successfully achieved Integrated Certification for ISO: 9001-2008 (QMS), ISO-14001:2007 (EMS) and OHSAS 18001: 2007 (OHSMS) and SA: 8000: 2008 (SAS) for Bailadila Deposit-14/11C Project. NMDC also bagged various prestigious awards for excellence in the field of Environment Management and Social Awareness.

1.2 Location of Project

The project site is located at Kirandul (Nagar Palika Parishad), Block-Kuakonda, Bachelhi tehsil in South Bastar Dantewada district of Chhattisgarh state. The nearby Gram panchayats are Hiroli, Madadi, Kadampal and Kodonar. The site is about 40 km (by road) from Dantewada and 130 km (by road) from Jagdalpur town.

1.3 Project Details

Bailadila iron ore project deposit 14/11C is an existing iron ore project including mining, crushing, screening and loading activities. The Open cast mining method is being used for the excavation of iron ore. The mine is fully mechanized. Deposit-14/11C consists of 2 pits and 3 mining leases. Pit-1 comprises of Deposit-14 mining lease area in which production has commenced from 1st November 1968. Pit-2 comprises of Deposit-14 NMZ mining lease area and Deposit-11C mining lease area partly in which the production from Deposit-11C has started from 1987. The total mining lease area of the project is 935.522 ha comprises of Deposit-14, Deposit-14NMZ and Deposit-11part mining lease areas. The present production capacity is 12 million tonnes per annum (ROM). The period of leases is valid up to 31/3/2020 in r/o Bailadila Deposit-14 ML and 14 NMZ Mining lease. Deposit-11 M.L. is valid up to 12/9/2017 and deemed to have been extended upto 31/3/2020 as per M.M (D.R) Amendment Act, 2015. The forest clearances have already been obtained from MOEFCC for above three mining leases in the year 1999. The approval of modifications in Approved Mining Plan have already been obtained from IBM, Nagpur for above three mining leases upto 31/3/2020.

No Rehabilitation and Resettlement issues involved as the proposed expansion take place within the existing mining lease area. The salient features of the mine lease area are presented in **Table-1.1**.

TABLE-1.1
SALIENT FEATURES OF DEPOSIT-14/11C IRON ORE MINE

S. No.	Particulars	Details
1	Latitude	18°36'44.0492"N to 18°38'36.6175"N
2	Longitude	81°13'15.9460"E to 81°15'24.1185"E
3	Elevation above Mean Sea Level	1230 m
4	Climatic conditions (IMD Jagdalpur)	Annual Max. Temp: 40°C (May) Annual Min. Temp: 11.0°C (Jan) Annual Average Rainfal: 2660 mm
5	Total mine lease area	935.522 ha
6	Toposheet No.	E44J2 (65F/2) and E44J6 (65F/6)
7	Nearest road/highway	State High way connecting Kirandul-Geedam (0.5 km, E).
8	Nearest railway station	Kirandul of East Coast railway (0.2 km, E).
9	Nearest Air Port	<u>By Road Distance</u> Raipur (390 km, NNE) and Jagdalpur (124 km, NE) non-commercial air strip.
10	Nearest major village	Kirandul (0.3 km, E)
11	Nearest town	Dantewada (30.6 km, NNE)
12	Protected areas as per Wildlife Protection Act, 1972	Nil within 10 km/25 km radius.
13	Historical places/ancient monuments	Nil within 10 km radius
14	Socio-Economic factors	No Rehabilitation and Resettlement issues involved
15	Defense installations	Nil
16	Seismic zone	Zone-II as per IS 1893 (Part I): 2002
17	Reserve Forest in 10-km radius from mine lease boundary	Bailadila R.F within mine lease; and Bijapur R.F (6.4 km, W).
19	Rivers/Lakes	Sankani River (3.6 km, NE); Galli Nalla (4.0 km, NW); and Koyar Nadi (3.5 km, ENE).
20	Nearby Mines and Industries within 10 km radius	Deposit-5 (7.3 km, NW); Deposit-10 (6.1 km, NNW); Depoist-11A (3.8 km, NNW); Deposit-11B (1.7 km, N); and Essar beneficiation plant, Kirandul (1.2 km, E).

1.4 Process Description

The Iron ore Reserves and Resources of Bailadila Deposit-14/11C are 575.39 million tons with 64.65% Fe and waste rock is 162.64 million tons as on 1/4/2015. The Bailadila Deposit-14 and Deposit-11C mines are fully mechanized opencast mine using shovel-dumper combination and various processes are drilling, blasting, excavation, ore processing in crushing & screening plants, stacking of iron ore at loading yard and dispatching through railway wagons to customers. The waste material is dumped at well - defined zones beyond

stripping limits. Regular water sprinkling is done on haulage roads for dust suppression.

1.4.1 Capacity Expansion

The production capacity shall be augmented by introducing additional Heavy Earth Moving Machinery equipment and by increasing net utilization of HEM equipment and crushing and screening plants for achieving the proposed target of 20 Million tons per annum from existing 12 MTPA. It is also proposed to construct new crushing plants of 10 MTPA capacity each for Deposit-14 at P-plot area at EL+1020M and for Deposit-11C at EL+900m outside ultimate pit boundary limits along with separate downhill conveyor system from new crushing plant buildings to Screening plants located at Deposit-14 NMZ M.L. area. Similarly, the capacity of Screening plant-I will be augmented to 7 MTPA from existing 5 MTPA capacity and Screening Plant-II to 10 MTPA capacity from existing 7.0 MTPA. The proposed Screening Plant - III with 12 MTPA capacity shall also be utilized for processing of iron ore along with SP-I & SP-II as per requirement. The existing loading facilities at Kirandul and proposed loading facilities shall be utilized for the proposed capacity expansion of Deposit-14/11C from 12.0 to 20.0 MTPA. Additional make up water requirement is envisaged around 6000 KLD which shall be sourced from existing water sources such as Malinger nalla, Kirandul Nalla, Nalla No: 25 at Bachel, etc.

2.0 **Description of Environment**

The baseline environmental data generated during the period 1st December 2015 to 28th February 2016 representing winter season and secondary data collected from various government, semi-government and public sector organizations.

2.1 **Land Use**

The land use pattern of the 10km radius area has been studied by analyzing the available secondary data published in Census records. The forest land occupies an area of about 26968.76 ha comprising to about 49.22% total geographical area under the study. The irrigated land admeasures to about 3.13 ha in the study area which works out to be 0.01% of total study area. The un-irrigated land admeasures about 11165.52 ha and works out to about 20.38% of the total study area as per 2011 census land use records

2.2 **Soil Quality**

Eight soil samples were analyzed in and around the mine lease area to assess the present soil quality of the region. The pH of the soil indicates that the soil is neutral to slightly alkaline in nature. The nitrogen concentration of the soil indicates that the soil is very less to more than sufficient category, phosphorous concentration of the soil indicates that the soil is medium to sufficient category and potassium concentration of the soil indicates that the soil is very less to more than sufficient category. Based on the results, it is evident that the soils are not contaminated by any pollution sources.

2.3 Meteorology

Meteorological data at the site was monitored by VIMTA during December-2015 to February 2016 representing winter season. It was observed that during study period, temperature ranged from 7.2°C to 30.6°C. During the same period of observations, the relative humidity recorded was ranged from 37.7% to 70.2%. Total rainfall 5.3 mm was recorded during that period.

2.4 Ambient Air Quality

Ambient Air Quality Monitoring (AAQM) has been carried out at eight locations with a frequency of two days per week for three months during winter season of 2015-2016. The results thus obtained indicate that the concentrations of PM₁₀ (30.2-64.1 µg/m³), PM_{2.5}(13.7-33.9 µg/m³), SO₂ (8.9-16.1 µg/m³), NO_x (10.6-21.2 µg/m³) and CO (169-406 µg/m³). The values were observed to be well within the National Ambient Air Quality (NAAQ) standards for Residential and Rural areas.

2.5 Water Quality

To assess the physical and chemical properties of water in the region, water samples from four surface and eight ground water locations were collected by VIMTA from various water sources around the project site. The results indicate groundwater is generally in conformity with the drinking water standards (IS: 10500-2012) standards. In surface waters, the Iron concentrations are found to be in the range of 0.14 to 0.93 mg/l and were observed to be within the desirable limit of 0.3 mg/l. The TDS are in the range of 19.5 to 150.0 mg/l, and is observed to be within the desirable limit of 500 mg/l. The BOD and COD were observed to be <3.0 mg/l and <5.0 mg/l respectively.

2.6 Noise Levels

Ambient noise levels were measured at eight locations around the proposed expansion mine site. The daytime and night time noise levels in all the residential locations were observed to be within the permissible limits. The Leq values are found to be in the range of 44.1 dB (A) to 59.9 dB (A) which are well within the permissible limits of 70 dB (A) during night time and 75 dB (A) during day time.

2.7 Ecological Environment

The presence of Schedule-I species in the core and buffer zone are reported and which are confirmed based on the detailed documentary evidence as listed in the records of the local forest department, Office of Range Officer, Bachel, Dantewada District, also substantiated by field citing's of the pugmarks and also locals have also cited about the presence of Scheduled -I animals such as Panthers and bears, near the study area.

2.8 Social Environment

The study area (10 km radius) area has a total population of 64,732 according to 2011 census. Total male population is about 50.42% and total female population is around 49.58%.

3.0 Anticipated Environmental Impacts and Mitigation Measures

3.1 Impact on Topography

The topographical changes in the mining area are restricted to mine site only. The mining shall be carried out by a system of benches. The bench height to be maintained at 12 m and bench width maintained to a minimum of 50 m. At the final stage of the mine, the biological reclamation will be done by planting native and local species at the mined-out areas.

3.2 Impact on Soil

The environmental impact of the proposed capacity expansion mining activities on topsoil are based on the nature of activities, extent of area covered and associated aspects of environmental concern, soil erosion may also be accelerated on areas where the overburden from the ore excavation operation is dumped. Soil and water conservation works are being undertaken through State Forest Department. The works include construction of trenches, brush wood check dams, loose boulders check dams, buttress walls and check bunds.

3.3 Impact on Air Quality

Air pollutants from the proposed expansion project will be emitted both from area sources and line source. It can be observed that the maximum incremental PM concentrations from area source will be $10.2 \mu\text{g}/\text{m}^3$ and occurs at a mine lease boundary in the southeast direction. It can be observed that the maximum incremental CO and NO_x concentrations from line source will be $2.08 \mu\text{g}/\text{m}^3$ and $3.12 \mu\text{g}/\text{m}^3$.

Mitigation Measures

- **Drilling Operations**

The dust generated during drilling is suppressed and allowed to settle in the form of a cone near the collar of the blast hole itself by use of water during drilling so that the air is not polluted by the blast hole drilling.

- **Blasting**

The air pollution during blasting is in the form of chemical gases produced during the explosion and dust generated during the blast. The gases generated during explosion are not likely to contribute much to air pollution as no such ill effects of the escaped gases are observed on vegetation nor on the residents of the nearby townships or residential houses near to the mines. Blasting is carried out with optimum charge. Blasting is avoided during high winds, night time and temperature inversion periods.

- **Transportation of Ore**

The dumpers are well maintained so that exhaust smoke does not contain abnormal values of noxious gases and un-burnt fuel. Regular water sprinkling is

being carried out on the roads leading to the active area of the mine workings during all the shifts.

- **Crushing Operations**

At the dumper platform, mist water spray is being sprayed during unloading of ROM ore by dumpers into primary crusher/apron feeder. For new crushing plant buildings, a dust suppression system covering mist water spray at dumper platform and dry fog in crushing plant, primary surge pile, tunnel and junction houses will be installed for arresting fugitive dust emission.

- **Downhill Conveyor**

The crushed ore is transported through fully covered conveyors thus helps in reducing noise levels and likely dispersion of dust into surrounding atmosphere. All the conveyor belts are covered and are equipped with chutes with ore boxes at transfer points to reduce the vertical fall of ore material.

- **Screening Plant**

During dry screening mist water sprinkling arrangements were made at transfer points to minimize dust generation.

- **Ore Loading**

Dust suppression system has already been installed at Loading plant, Kirandul. The similar system will be established at new loading yard. The present air pollution control measures which are being practiced will also continue to minimize fugitive dust generation.

3.4 Impact on Water Quality

Surface Water Quality

Natural drains in the ML area are not disturbed and no wastewater is sent to these bodies. No siltation of drains from mine operations is envisaged. ISM, Dhanbad has also carried out the studies during August 2015 and collected 21 surface water and 20 from mine water samples and analyzed for various water quality parameters. Suspended solids concentration in mine water discharge was found to be as 319 mg/L. High concentration of suspended solids in rivers during monsoon season may be imparted due to uncontrolled surface run-off from the catchment area due to erosion of exposed surface. However, there is no process waste water generation in the project.

Ground Water Quality

The topsoil and iron ore constitutes of fairly inert and chemically non-reactive ingredients and hence no impact on ground water quality is envisaged. There will not any impact on the ground water resources as there is no ground water tapping for mining and mineral processing purpose. Further, the mining activities will not puncture the ground water table during life time of Deposit-14 and 11C

mines. As per the hydro-geological investigation reports, there is no ground water contamination near the existing Tailing dam area due to leachate generation.

Mitigation Measures

The main sources of water pollution due to mining, screening, etc. operations are:

- Turbid flows of the streams flowing from the active mine areas, slimes from old fine dumps, waste dumps, stock pile and loading plant areas;
- Discharge from service center and auto shops; and
- Domestic sewage.

Screening Plant(s)

The screening plant-I & II will be operated on wet circuit for obtaining better grade of Lump and Fine ore as per requirement during monsoon season only. The wash water contains lot of micro iron fines which will be recovered in slime beneficiation system. Arrangements have already made at Kirandul for transportation of online slimes to M/s. Essar Beneficiation plant at Kirandul. At present, the plants are operated on dry mode even during monsoons season. Hence, there is no generation of any slime and discharge into existing Kadampal Tailing dam. The de-silting operations will be done every year from Tailing dam and de-silted material will be stacked at low lying areas far away from dam / natural Nalla courses. The wet screening operations will be dependent on the space available in Kadampal Tailing dam to accommodate the slimes generated from screening plants.

Loading plant - outside M.L area

At stockpile and loading plant area a network of drains with concrete bottom was constructed at a depth of 1.5 m below the lowest level on the side parallel to the stockpile area with inter connected box culverts. The sloping of surface given inward to the stock pile so that the surface water will only be infiltrate in to the drain. This entire system with special design has lower the water table and the turbid flow has been completely prevented. Only the clear water is ultimately flowing out to natural streams.

Discharges from Township

The township is provided with protected water supply and underground drainage system. For treating domestic sewage two oxidation ponds are constructed at Kirandul township. The oxidation pond is regularly monitored every month and de-silted and cleaned at regular interval. It is proposed to replace the existing Oxidation pond with new Sewage Treatment Plant based on SBR technology.

Effluent Treatment Plant

Effluent Treatment Plant (ETP) is installed at service center, hill top, Deposit-14 M.L. area for treatment of waste water generated due to washing of vehicles. The

oil and grease and suspended solids are removed for waste water and clear water is re-used.

Check Dams

To arrest flow of suspended solids flowing through the streams, 14 numbers of check dams have been constructed across various nallas. The check dams are proved very effective in arresting the silt material. The settled material is removed every year before monsoon season by mechanical means

Buttress walls, boulder walls construction & seeding works for control of soil erosion and water conservation in buffer zone through Forest Department.

At Proposed Crushing Plants

In order to mitigate the impact on local water bodies, Buttress walls on either side of the construction site will be constructed in tandem with the construction activity of the crushing plant. The buttress walls will be constructed so that it will also function as a "Rapid sand Filter" to arrest the suspended solids and thereby discharge clear water.

Action Plan for Control of Surface Runoff

Malinger nalla and Galli nalla that flows in the western side of the Deposit-14 and Deposit-11C respectively is far away and accordingly does not get affected by the storm water. The water that flows at the eastern valley from the mines will join the Kirandul nalla, which ultimately discharges in to the Kadampal-tailing dam. The discharge of rain water from NMDC mines is not directly joining Dankani & Sankini rivers, but it passes through no. of check dams / check bunds constructed across various nalla courses to control silt material. NMDC has engaged ISM, Dhanbad to assess the effect of NMDC mining operations on nearby water sources. The firm has completed the study and recommended (i) to construct limestone filter units in between check dams and (ii) to construct buttress walls along with garland drains at toe of waste dumps which are under implementation.

3.5 Impact on Noise Levels

With the mining operations, due to the deployment of machinery, drilling and blasting for mine development, excavation, transportation and crushing of iron ore and men, it is imperative that noise levels would increase. However, as the mine lease boundary is located 0.5 km away from the nearest settlement, the expected noise levels will not have significant effect on the community.

Mitigation Measures

Controlled blasting techniques are being practiced. Noise level were controlled by using optimum explosive charge per hole and milli second delay detonators and proper stemming to prevent blow out of holes.

The noise level control measures at various stages of the mining shall be as given below:

- Proper and timely maintenance of mining machinery;
- Deep hole blasting is restricted to day time hours only;
- Operator cabins of Dumpers and shovels are air conditioned;
- Noise levels were controlled by using optimum explosive charge per hole and milli second delay detonators and proper stemming to prevent blow out of holes;
- The Crushers in the mine was completely enclosed in a covered building to minimize sound propagation, Screening plant is also covered in closed shed.
- Use of rubber / panel coated screens in screening plants;
- Rubber lining at transfer points of conveyors;
- Developing greenbelt on the sides of conveyors and crushing plant screening plant and loading plant;
- Blasting is carried out by using site mixed emulsion explosives with bottom initiation system during day time only. Optimum charge per delay is used to control fly rock and ground vibration.
- Secondary blasting shall be avoided;
- Non-electric down-the-hole detonators shall be used thus reducing noise level during blasting operation.

3.6 Waste Dump Management

The waste dumping is being done in specified area on gentle slopes devoid of catchment areas. Three separate areas are earmarked for dumping the waste rock material in Deposit-14 M.L. area. At present, dump 14(1) is under use and when this dump is saturated, the generated waste will be dumped in dump (2) and dump (3). Buttress wall has been constructed for existing dump. Waste generated from Deposit-11C is dumped in Deposit-11 M.L. area. The new areas have been identified for dumping of waste in Deposit-14 NMZ M.L area, which are duly approved by IBM in Mining Scheme report. After completion of dumping, small terraces will be formed with peripheral bunds to reduce the erosion of gullies and stabilisation of dumps can be done by agave or other soil binding species and grasses over the slopes.

3.7 Reclamation of Mined Out Areas

The mine benches are active and no area is presently available for technical and biological reclamation. The reclamation of mined out areas will be undertake at the end of life of mine after obtaining approval of IBM for Mine Closure Plan. The Biological reclamation of the mined-out areas at conceptual stage would be as follows:

On the completed benches, shrubs like Agave and local shrubs will be planted. Recommended grasses will be grown on the slopes by hydro-mulching. Shrubs and native species of trees will be planted or seeds will be sown adding some soil. Once the slopes and terraces get stabilized natural growth of vegetation is automatically promoted by spreading soil with litters available in the adjoining areas. Water bodies will also be developed to attract terrestrial fauna and avifauna, wherever possible.

3.8 Impact on Ecology

Impact on Terrestrial Ecology

The adverse impacts on fauna would be mainly due to:

- * Human activity;
- * Noise;
- * Land degradation; and
- * Deforestation.

The impact on the fauna of the buffer zone due to the mining activity will be marginal. The fauna is less in occurrence in the study area. Even so, by restricting mining at any time to small areas, impact on fauna will be kept to the minimum. Moreover, progressive plantation with over a period of time will create conditions favourable for fauna.

Mitigation Measures

NMDC has prepared Bio-diversity survey and conservation plan by engaging Prof. S.B. Roy, Indian Institute of Bio Social Research and Development Centre, Kolkata. The conservation plan is prepared at an estimated expenditure of Rs.13.69 Crores. NMDC has already planted about 14,06,002 nos. plant species covering an area of 1215 Ha within mining lease and outside mining lease areas. NMDC has also participated in Chhattisgarh Hariyar Plantation programme during last 3 years.

4.0 Environment Monitoring Programme

The environmental monitoring for the mining operations is being conducted as follows:

- Micro-Meteorological data
- Seasonal Ambient Air quality;
- Continuous Ambient Air Quality by establishing 2 no. s of stations.
- Water and wastewater quality analysis
- Ambient and work zone Noise levels
- Soil Quality and
- Greenbelt Development.

A centralized environmental monitoring cell is already established at Kirandul. The entire monitoring work is being carried out by MoEF&CC / CPCB recognized laboratories and the data is regularly being submitted to CECB / MOEFCC, RO, Nagpur.

5.0 Additional Studies

5.1 Risk Assessment

The complete mining operation will be carried out under the management control and direction of a qualified mine manager holding a First Class Manager's

Certificate of competency to manage a metalliferous mine granted by the DGMS, Dhanbad. The DGMS have been regularly issuing standing orders, model standing orders and circulars to be followed by the mine management in case of disaster, if any. Moreover, mining staff will be sent to refresher courses from time to time to keep them alert.

5.2 Disaster Management Plan

The Disaster Management Plan for Kirandul complex has been prepared in line with the provisions of National Disaster Management Act 2005 covering prevention, mitigation, preparedness, and response measures with clear cut responsibilities of concerned officers and has been submitted to Ministry of Steel and also to District Collector, Dantewada. The Plan has got it approved from District Collector, Dantewada. This has been implemented in the year 2015.

5.3 Occupational Health and Safety


Projects at BIOM, Kirandul Complex are having well defined occupational health and safety policy. Occupational Health Centre (OHS) which is a part of 79 bedded Hospital with all required facilities and qualified doctors and staff is functioning in the BIOM, Kirandul Complex since year 2002. All required Personal Protective Equipments (PPEs) like respirator, ear muffs/ear plugs etc are provided to all employees regularly. Sufficient stock of PPEs is maintained in stores for timely distribution. NMDC runs hospital at project sites offering free medical treatment not only to staff but to the local communities as well, addressing the needs of an out-patients and inpatients from local tribals every year. NMDC operates 'Hospital on Wheels' (HoW) service in Bailadila about 28 villages by providing free Medicare facilities at their doorsteps.

6.0 Project Benefits

The existing mining projects of NMDC have given social benefits to surrounding population in the form of surrounding educational facilities, roads, communication facilities, transportation, marketing, banking, postal services and health facilities directly or indirectly. The civic amenities have already been developed due to existing mines in Bailadila complex.

The location of the mines in Bailadila Iron Ore Complex has helped to improve vastly the financial resources of the surrounding population by way of petty trade and employment opportunities. The projects had encouraged the setting up of various utility services and petty trade benefiting local people around the mining areas mainly in Kirandul and Bacheli. The activities which are undertaken by NMDC Ltd. towards Corporate Social Responsibility can be broadly classified as:

- Education;
- Roads & Buildings;
- Health;
- Drinking Water and;
- Miscellaneous

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The expenditure on CSR activities implemented during the year 2013-2016 is Rs.13,691.71 Lakhs. CSR expenditure proposed for the year 2016-2107 is Rs.1723.90 Lakhs. Further, the State Governments is receiving royalty (15% of average sale price), District Mineral Fund (30% of royalty), NMET fund (2% of royalty) and Rs.15/- per ton towards Transit permission from Forest Deptt in addition to other taxes, etc. The contract labor is also paid Rs.220/- per day of attendance towards SRNPP & Coupon rate in addition their minimum wages.

Further, NMDC has also consented to fund Group water supply scheme at a cost of Rs.6,237.40 lakhs to provide safe and potable water to the nearby 32 villages in Dantewada District under Nerli and Dhurli water supply scheme. The scheme will be implemented by PHE Deptt, Dantewada.

The assistance in Agriculture, Irrigation and supportive education is provided under integrated village development to people of 18 villages.

Employment

The existing manpower of Deposite-14/11C is 1649 with indirect employment of around 1085. The additional manpower requirement for the proposed expansion will be about 132 direct employment and also provide indirect employment to 250 persons.

7.0 Environment Management Plan

Environmental Management aspects of the projects are being looked after by the Environment Management Cell, created at NMDC Corporate office and also at Kirandul project site. This cell comprises of professional drawn from different disciplines which includes environmental engineering and science. The functions and the responsibilities of the Environment Management Cell at the project are as follows:

- Provide overall co-ordination of environmental activities at project sites;
- Undertake medium term environmental planning in accordance with long term programme made at corporate level;
- submit periodical reports as may be prescribed in compliance with conditions stipulated by various statutory agencies such as MoEFCC / CECB / IBM.
- Supervise the environmental monitoring studies viz. work zone air emissions, ambient air quality, water and effluent quality, noise level, vibration studies etc. conducted by reputed laboratories recognised by MOEFCC / CPCB;
- Undertake environmental awareness and other training programmes at the project. Monitoring contractor's activity regarding impacts on environment such as land, water quality etc. and impact on local population by their work force; and
- Planning, managing and controlling community relation and introducing community participation process and developing and maintaining credibility of the organization and reducing the level of misconception and misinformation about the project on environmental issues.