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एन एम डी सी लिमिटेड N M D C Limited
(भारत सरकार का उद्यम / A Govt. of India Enterprise)
दोणिमलै लौह अयस्क खान / Donimalai Iron Ore Mine

Donimalai Township – 583 118, Dist.: Bellary, Karnataka.
Phones: 08395 – 274654 / 274618, Fax: 08395 – 274687 /274654



NMDC/KIOM/EC/2020/2289

Date:26.08.2020

Director / Scientist "F"
Ministry of Environment, Forest & Climate Change
I.A Division (Non-Coal Mining)
Indira Paryavaran Bhavan, 3rd Floor, Vayu wing
Jor Bagh Road, **New Delhi- 110 003.**

Sub: Environmental Clearance for Kumaraswamy Iron Ore Mine (ML No:1111, an area of 639.80 Ha., 8.6 MTPA total excavation (7.0 MTPA ROM Iron Ore & 1.6MTPA Waste excavation) of M/s.NMDC Limited, Ballari District, Karnataka –
Submission of Additional Information (ADS reply)–reg.

Ref: 1. Project proposal No: IA/KA/MIN/75088/2018
2. EAC meeting held on 23rd July 2020, Agenda no:2.9
3. Minutes of meeting of 19th EAC (Non-Coal Mining) uploaded in portal on 2nd August 2020.

Respected Sir,

This has reference to Appraisal of EIA/EMP report of Kumaraswamy Iron Ore Mine by EAC (NCM), MOEF&CC on 23/7/2020 at agenda no:2.9 for issue of Environmental Clearance under EIA, 2006 notification for total excavation of 8.6 MTPA. The minutes of meeting have been uploaded in Parivesh portal on 2/8/2020. On perusal of the minutes, the committee has sought the information on 8 points.

In this regard, consolidated reply for information sought on 8 points is prepared and enclosed for your kind perusal. The reply is also uploaded in Parivesh portal against the proposal number No. IA/KA/MIN/75088/2018.

We, therefore request you to kindly consider the above proposal in the next EAC meeting schedule to be held in the month of September, 2020.

Thanking you,

Yours Sincerely,


General Manager

Donimalai Complex.

Encl: As above.

हिन्दी में पत्र व्यवहार को हम प्राथमिकता देते हैं । हिन्दी में पत्र व्यवहार का स्वागत है ।
पंजीकृत कार्यालय :10-3-311/ए खनिज भवन, कैसल हिल्स मासाब टैंक, हैदराबाद 500 173
Regd.Office:10-3-311/A, Khanij Bhavan, Castle Hills, Masab Tank, Hyderabad 500 173

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(Kumaraswamy Iron Ore Mine. ML: 1111, 639.80 Ha)

NMDC Limited

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iv	PP shall submit list of schedule-1 species duly authenticated by concerned department. In case there is presence of Schedule-1 species than conservation plan needs to be prepared for the same. In addition to this PP should submit the proof of submission of conservation plan to chief wildlife warden.	40-86
v	PP shall provide the issues raised during previous PH and status of implementation of compliance made during PH.	87-156
vi	PP needs to provide the time line for implementation of the activities proposed under CER. The activities proposed also needs to be quantified for the future monitoring.	157-221
vii	PP should prepare the EMP till the lease validity and future extension and time bound, activity wise EMP along with budgetary provision both recurring & capital needs to be submitted	222-224
viii	PP shall submit the activities and budgetary provision till the proposed lease validity under OHS	225-250

(I) PP needs to verify the waste quantity submitted in the EIA report.

The waste quantity is verified and the quantity of waste generation shall be 33.545 million tons w.e.f 2019-20 till life of mine. The quantity of waste already generated till 2018-19 is 5.17 million tons and is dumped at AD-1 & AD-2 waste dumps. Thus, the total quantity of waste generation shall be 38.715 million tons.

- ii) **PP needs to undertake air quality modelling and should also submit the details for selection of monitoring stations, values at each sensitive receptor, etc.**

The monitoring stations for Ambient Air Quality is identified as per TOR condition no:25. The monitoring studies for AAQ were conducted during Summer season (March to May 2019) in the study area of Kumaraswamy Iron Ore Mine (ML no: 1111). One meteorological station was also set up at Mines Office for generation of meteorological data. The pre-dominant wind direction observed during summer season 2019 is SSW with wind speed varying from 2.40mm/sec to above 10.10mm/sec. The AAQ locations represent the study area, down wind direction, up wind direction, etc. The location of AAQ monitoring stations are given below at **Table no: 1.**

Table no: 1
Ambient Air Quality locations

Code	Name of location	Distance (Km)/ Direction	GPS co-ordinates	Remarks
A1	Mine office	--	15° 0'36.96"N 76°36'9.48"E	Within ML
A2	MTSS control room		15° 0'26.76"N 76°35'16.92"E	Within ML
A3	Devagirihalli	0.4 / NE	15° 1'9.64"N 76°36'52.56"E	down wind direction & habitation & residential area.
A4	Deogiri	1.3 / E	15° 0'31.08"N 76°37'33.00"E	Down-wind & Habitation and residential area. Iron ore transportation.
A5	Subbarayanahalli	1.3/sw	15° 0'31.50"N 76°33'17.76"E	Upwind & Habitation and residential area. Iron ore transportation.
A6	Swamihalli	3.6/ SE	14°58'18.60"N 76°36'1.14"E	Upwind & Habitation and residential area, Rly siding
A7	Narsingapura	4.1 / NE	15° 3'28.49"N 76°36'12.50"E	down wind Direction. Iron ore transportation.
A8	Dharmapur	6.4 / NW	15° 4'0.59"N 76°31'42.95"E	Habitation and residential area.

Air quality modelling

The air quality modelling for KIOM has been carried out and is presented at **Chapter: 4.1.5** of EIA/EMP report of Kumaraswamy Iron Ore Mine (December 2019). The contribution of KIOM due to existing operations at locations of Ambient air quality monitoring stations is also presented at Chapter-4.1.5 of report and again given in Table no: 4.9 of this reply. Further, as advised by EAC, the contribution of KIOM due to existing operations at sensitive receptor is carried out

and presented at **Table no: 10** of this reply. The details of Air quality modelling carried out for KIOM is discussed below:

Preamble

Impact assessment is an important part of Environmental Impact Assessment Study. There are various techniques available to predict the impacts. Mathematical modelling is an established and accepted technique to predict the impacts.

Since the mine is not going for any expansion and the contribution from the mine is already reflected in the baseline status, prediction is not required. However, modelling is done to assess the contribution exclusively from the KIOM due to mining and allied activities.

Emission Source and Emission Rates

Emission rates

Dust

Dust emission rate due to material handling in mining area is based on the following empirical formula (source: IMEJ-April 1982).

Dust emission due to excavation:

$$\text{Dust emission (DE)} = \frac{\text{Pa} \times 23.6}{\text{Wd} \times \text{Wh} \times 1000}$$

DE = Dust emission in kg/hr

Pa = Annual Excavation in tonnes

Wd = No. of days of operation in a year

Wh = Effective working hrs in a day

Quantity of dust emitted in kg for 1000 tonnes of excavation.

Total Quantity to be handled

Present excavation is taken as 8.60 MTPA.

The dust emission due to handling of iron ore and OB will be 12.87 g/s.

Similarly, dust emission due to transportation (600 trips shall be involved) will be 4.17 g/sec.

Total dust emission = 17.04 g/sec.

Since PM₁₀ has been considered it is one third of SPM and after controlled factor this will be 5.68 g/sec.

Emission Rates from Dust Extraction System and DG Sets

The emission rates from DG sets and dust extraction system are summarized below in **Table:2**.

TABLE: 2
EMISSION RATES FROM DG SETS AND DUST EXTRACTION SYSTEM

Details Description		DG Set Stack			
	1	2	3	4	5
Existing	625 KVA	625 KVA	625 KVA	625 KVA	625 KVA
Material consumption	Mild steel				
Stack Top	Circular				
Release height above Ground	4.0 m	4.0 m	4.0 m	4.0 m	4.0 m
Inside Diameter (m)	0.1524	0.1524	0.1524	0.1524	0.1524
Emission Rate (g/s) for PM	0.013	0.013	0.013	0.013	0.013
Emission Rate for NO ₂ (g/s)	0.030	0.030	0.030	0.030	0.030
Stack gas exit Temperature in Kelvin	464	464	464	464	464
Stack gas exit Velocity (m/s)	11.69	11.69	11.69	11.69	11.69

Emission Source Coordinates

The centre of mine was assumed (0, 0) in the mathematical modelling. The coordinates of DG sets and dust extraction system were taken, (1000,0).

Mathematical Model for Pollutants Dispersion

Aermod View model has been used to predict the impacts. This model for area sources uses the steady state Gaussian plume equation for a continuous source.

Further the model has following specialties:

- Simulates dispersion from single/multiple/area/line/volume sources.
- Allows calculations to be made at a user specified regular rectangular/radial grid or at specified special receptors.
- Provides estimates of concentrations for any averaging time period for the entire period of input meteorology.
- Allows calculations to be underwritten for source groups as selected by the user.
- Uses Pasquill-Gifford or Briggs dispersion curves (for urban areas) as selected by the user, to derive the plume spread parameters.
- Adjusts dispersion curves to account for user specified information on aerodynamic roughness.
- Adjusts for wind speed variation with height, using user specified default urban/rural power law coefficients.
- Simulates dispersion from buoyant, non-buoyant point sources, non-buoyant area, non-buoyant volume sources and non-buoyant line sources.
- Simulates dry deposition using a simple tilted plume model with user specified reflection coefficients.
- Simulates building wake effects.
- Can include the effects of exponential decay.
- Uses Briggs' 1975 plume rise algorithm to calculate plume height.

- The ground level concentration at a receptor located downwind of all or a portion of the source area is given by a double integral in the upwind (x) and crosswind (y) directions as:

$$C = \frac{Q_A K}{2\pi U_s} \int_{-\infty}^{\infty} \frac{\exp \left[-0.5 \frac{y^2}{\sigma_y^2} \right]}{\sigma_y} dy \int_{-\infty}^{\infty} \frac{\exp \left[-0.5 \frac{x^2}{\sigma_x^2} \right]}{\sigma_x} dx \quad (2)$$

where,

Q _A	=	Area source emission rate (mass per unit area per unit time)
K	=	units scaling coefficient
V	=	Vertical term.
D	=	Decay term as a function of x
σ _y , σ _z	=	standard deviation of lateral and vertical concentration distribution (m)
U _s	=	mean wind speed at release height

Vertical Term

The vertical term includes the effects of source elevation, receptor elevation, plume rise, limited mixing in vertical and gravitational settling and dry deposition of particulates (with diameters greater than about 0.1 micron).

In the present case effects on ambient air concentrations due to gravitational settling and dry deposition have been neglected. The vertical term without deposition effects is given by:

$$V = \left[(1 + \gamma) \exp \left(-\frac{H^2}{2\sigma_z^2} \right) - \sum_{i=1}^{\infty} \frac{(2n H_m - H)^2}{2\sigma_z^2} \exp \left(-\frac{(2n H_m + H)^2}{2\sigma_z^2} \right) \right] \quad (3)$$

where,

H	=	Effective release height of emissions (plume rise + physical stack height)
H _m	=	Mixing height
γ	=	reflection coefficient

The infinite series term in equation accounts for the effects of restrictions on vertical plume growth at the top of mixing layer. Complete reflection from earth surface has been assumed (γ = 1). For number of sources more than one simulation is done for each individual source and then added. In order to calculate σ_y and σ_z for various receptor points for given wind direction following equations are used.

$$X = (X_R - X(S)) \sin(WD) - (Y_R - Y(S)) \cos(WD) \quad (4)$$

$$y = (X^R - X(S)) \cos(WD) - (Y^R - Y(S)) \sin(WD) \quad (5)$$

where X^R , Y^R are receptor point coordinates and $X(S)$ and $Y(S)$ are source coordinates and WD is wind angle from north.

Dispersion Coefficients

Equations that approximately fit the Pasquill-Gifford curves (Turner, 1970) are used to calculate σ_y and σ_z in meters for rural area. The equations used to calculate σ_y is of the form

$$\sigma_y = 465.11628 (x) \tan(TH) \quad (6)$$

where,

$$TH = 0.017453293 [c-d \ln(x)] \quad (7)$$

In the above equations downwind distance 'x' is in kilometres and coefficients 'c' and 'd' are listed in **Table:2**. The equation used to calculate σ_z is of the form:

$$\sigma_y = axb \quad (8)$$

TABLE:3
COEFFICIENTS USED TO CALCULATE LATERAL VIRTUAL DISTANCES

$\sigma_y = \frac{\sigma_y^0 l/q}{P}$		
Pasquill Stability Category	P	Q
A	209.14	0.890
B	154.46	0.902
C	103.26	0.917
D	68.26	0.919
E	51.06	0.921

where downwind distance x is in kilometres and σ_z is in meters. The coefficients 'a' and 'b' are given in **Table:4**.

TABLE:4
PARAMETERS USED TO CALCULATE PASQUILL-GIFFORD VERTICAL DISPERSION COEFFICIENT (σ_z)

$\sigma_z \text{ (meters)} = axb \text{ (x in km)}$			
Pasquill Stability Category	x (km)	a	B
A*	<.10	122.800	0.94470
	0.10 – 0.15	158.080	1.05420
	0.16 – 0.20	170.220	1.09320
	0.21 – 0.25	179.520	1.12620
	0.26 – 0.30	217.410	1.26440
	0.31 – 0.40	258.890	1.40940
	0.41 – 0.50	346.750	1.72830
	0.51 – 3.11	453.850	2.11660
	>3.11	**	**
B*	<.20	90.673	0.93198
	0.21 – 0.40	98.483	0.98332
	>0.40	109.300	1.09710

C*	All	61.141	0.91465
D	<.30	34.459	0.86974
	0.31 – 1.00	32.093	0.81066
	1.01 – 3.00	32.093	0.64403
	3.01 – 10.00	33.504	0.60486
	10.01 – 30.00	36.650	0.56589
	>30.00	44.053	0.51179
E	<.10	24.260	0.83660
	0.10 – 0.30	23.331	0.81956
	0.31 – 1.00	21.628	0.75660
	1.01 – 2.00	21.628	0.63077
	2.01 – 4.00	22.534	0.57154
	4.01 – 10.00	24.703	0.50527
	10.01 – 20.00	26.970	0.46713
	20.01 – 40.00	35.420	0.37615
	>40.00	47.618	0.29592
F	<.20	15.209	0.81558
	0.21 – 0.70	14.457	0.78407
	0.71 – 1.00	13.953	1.68465
	1.01 – 2.00	13.953	0.63227
	2.01 – 3.00	14.823	0.54503
	3.01 – 7.00	16.187	0.46490
	7.01 – 15.00	17.836	0.41507
	15.01 – 30.00	22.651	0.32681
	30.01 – 60.00	27.074	0.27496
	>60.00	34.219	0.21716

* If the calculated value of σ_z exceeds 5000 m, σ_z is set to 5000 m.

** σ_z is equal to 5000 m.

Meteorological Conditions Used in Predictions

The hourly meteorological data has been generated at the site and the same has been used in the predictions. The hourly wind speed, temperature, direction and stabilities have been used. The hourly data was available for the months of March-May, 2019.

Atmospheric Stability

Many alternative models are developed by different authors to relate σ_y and σ_z with downwind distance x under different atmospheric stability conditions. Unfortunately, none of these have been found to be comprehensive enough to be applicable under all types of topographic and meteorological conditions. On the basis of available information, "Pasquill Gifford" stability classification system for study area has been followed. This classification is built in the model.

The Pasquill Gifford stability classification divides atmospheric stability into six classes based on solar insolation/cloud cover conditions. Details of this classification are given **Table: 5**.

TABLE:5
PASQUILL – GIFFORD STABILITY CLASSIFICATION

Surface wind speed (m / s)	Day time insolation			Night time conditions	
	Strong	Moderate	Slight	Thin low clouds <4/8	Overcast clouds >3/8
0 – 2	A	A – B	B	E	F
2 – 3	A – B	B	C	E	F
3 – 5	B	B – C	D	D	E
5 – 6	C	C – D	D	D	D
>6	C	D	D	D	D

A – Extremely unstable

B – Moderately unstable

C – Slightly unstable

D – Neutral

E – Slightly stable

F – Moderately stable

Plume Rise

Plume rise Δh has been determined according to Brigg's formula (CPCB guideline)

$$\Delta h = \frac{21.425 F^{3/4}}{U_s} \quad \text{for } F < 55$$

and

$$\Delta h = \frac{38.71 F^{3/5}}{U_s} \quad \text{for } F > 55$$

$$F = g V_s D^2 (T_s - T_a) / 4 T_s$$

Where

U_s = wind speed at stack level (m/s)

V_s = stack gas velocity (m/s)

T_s = stack gas temperature (0K)

T_a = ambient temperature (0K)

F = Buoyancy flux parameter (m^4/s^3)

Δh = Plume rise (m)

D = Diameter of the stack (m)

g = acceleration due to gravity, 9.807 (m/s^2)

Extrapolation of Wind Speed

Wind speed at stack level is calculated by power law as given below.

$$U_{stack} = U_{10} (\text{Stack height}/10)^p$$

Where U_{10} is the wind speed at 10-meter level and p is the power law coefficient (0.07, 0.07, 0.10, 0.15, 0.35 and 0.55 for stability classes A, B, C, D, E and F respectively) as per Irwin for rural areas (USEPA, 1987).

Ambient air quality and background concentrations

Ambient air quality standards promulgated by Central Pollution Control Board (CPCB) for industrial, residential and rural areas are as follows:

TABLE: 6
AMBIENT AIR QUALITY STANDARDS BY CPCB

Concentration ($\mu\text{g} / \text{m}^3$) (24 hours average)			
PM_{10}	$\text{PM}_{2.5}$	SO_2	NO_2
100	60	80	80

The above standards are for a sampling period of 24 hours. The maximum concentration of pollutants (PM_{10} , $\text{PM}_{2.5}$, NO_2 and SO_2) recorded at habitat in the study area during summer season is given below:

Plan and frame work of computations:

Selection of locations:

The AAQ locations have been selected around the KIOM Mining lease covering an area of 10 km radius from ML. The entire area has been put on grid network and grid spacing has been taken as 500 m. The AAQ levels recorded during summer season is given in **Table no: 7**.

TABLE: 7
AMBIENT AIR QUALITY LEVELS (SUMMER SEASON 2019)

Station Code	Location	Maximum Concentration in $\mu\text{g} / \text{m}^3$			
		PM_{10}	$\text{PM}_{2.5}$	NO_2	SO_2
A-1	Mine Office (within ML area)	85.70	54.20	28.10	16.50
A-2	MTSS control room (within ML area)	95.20	58.60	26.10	15.00
A-3	Devagirihalli	82.50	57.40	24.50	12.70
A-4	Deogiri	71.00	48.97	27.00	17.00
A-5	Subbarayanahalli	70.90	49.80	27.90	12.30
A-6	Swamihalli	67.00	38.20	27.90	14.00
A-7	Narsingapura	75.00	53.20	25.00	16.00
A-8	Dharmapur	68.00	50.45	28.10	15.30

Plan of computation

The emission rate, dispersion coefficients and other input data being now available to compute the following:

- The 24-hourly averaged concentration with hourly data for the summer season;

- The identification of grid point having peak concentration for the values; and Preparation of isopleths.

Results and discussions

Peak 24-hrly concentration

Table: 8
24 HOURLY PEAK CONCENTRATIONS COMPUTED

S. no	Season	Concentration ($\mu\text{g}/\text{m}^3$)			
		PM ₁₀	PM _{2.5}	SO ₂	NO ₂
1	Summer	10.10	5.50	1.02	1.32

The contribution of ground level concentrations due to operation of Kumaraswamy Iron Ore Mine at ambient air quality locations is given in **Table no: 9**.

Table: 9
Contribution of KIOM due to Present Operation at AAQ locations

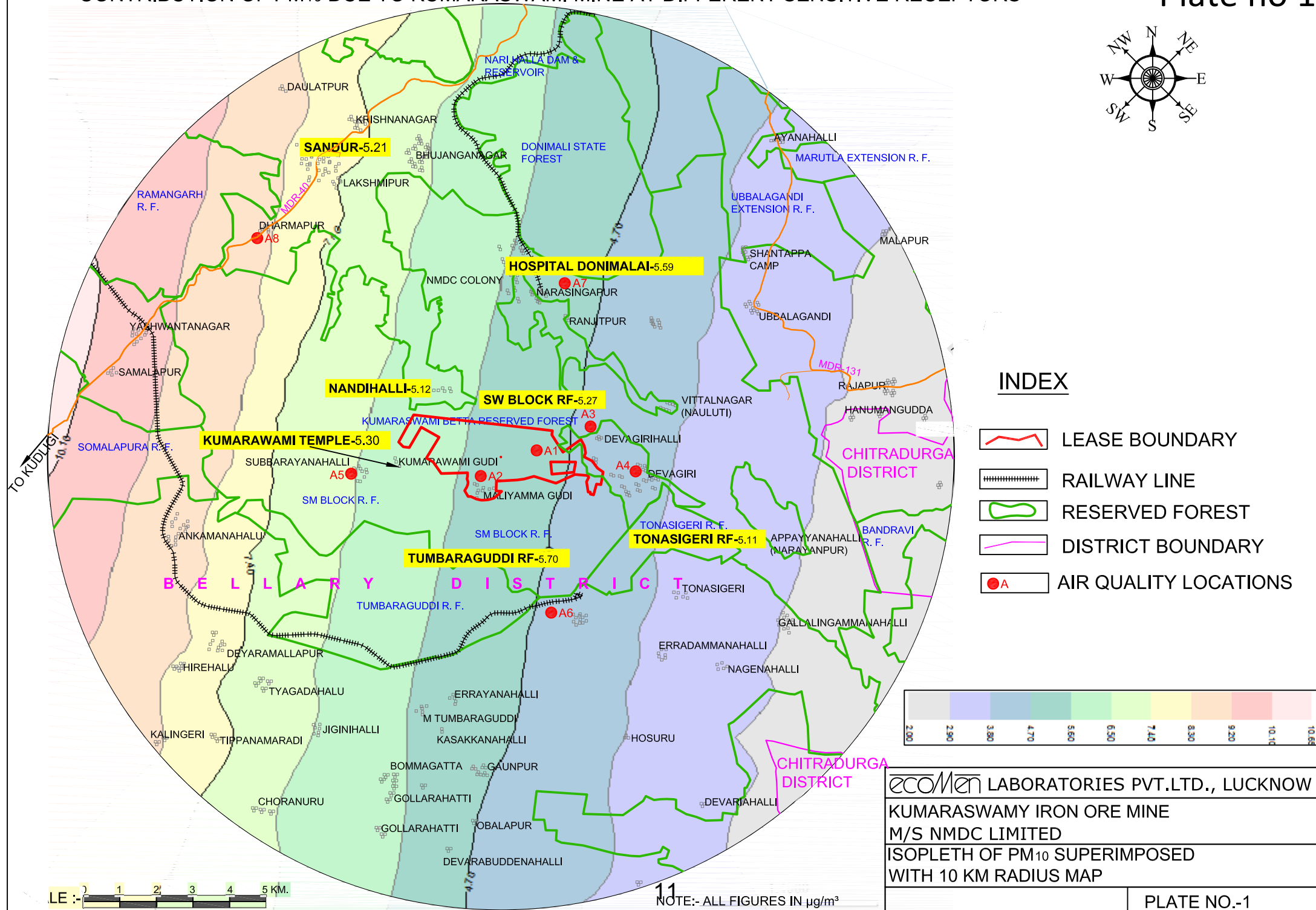
S. no	Location	Predicted GLCs ($\mu\text{g}/\text{m}^3$)			
		PM ₁₀	PM _{2.5}	NO ₂	SO ₂
1	Mine Office (Within lease)	6.95597	3.37596	0.89883	0.66508
2	MTSS control room (within ML area)	6.44141	3.08542	0.79703	0.60365
3	Devagirihalli	5.27408	1.75007	0.65257	0.50426
4	Deogiri	5.11962	1.69886	0.63347	0.48950
5	Subbarayanahalli	5.74044	1.77996	0.66371	0.50355
6	Swamihalli	3.95786	1.41868	0.48972	0.37842
7	Narsingapura	4.37889	1.45251	0.54161	0.41852
8	Dharmapur	4.21491	1.06231	0.56832	0.36508

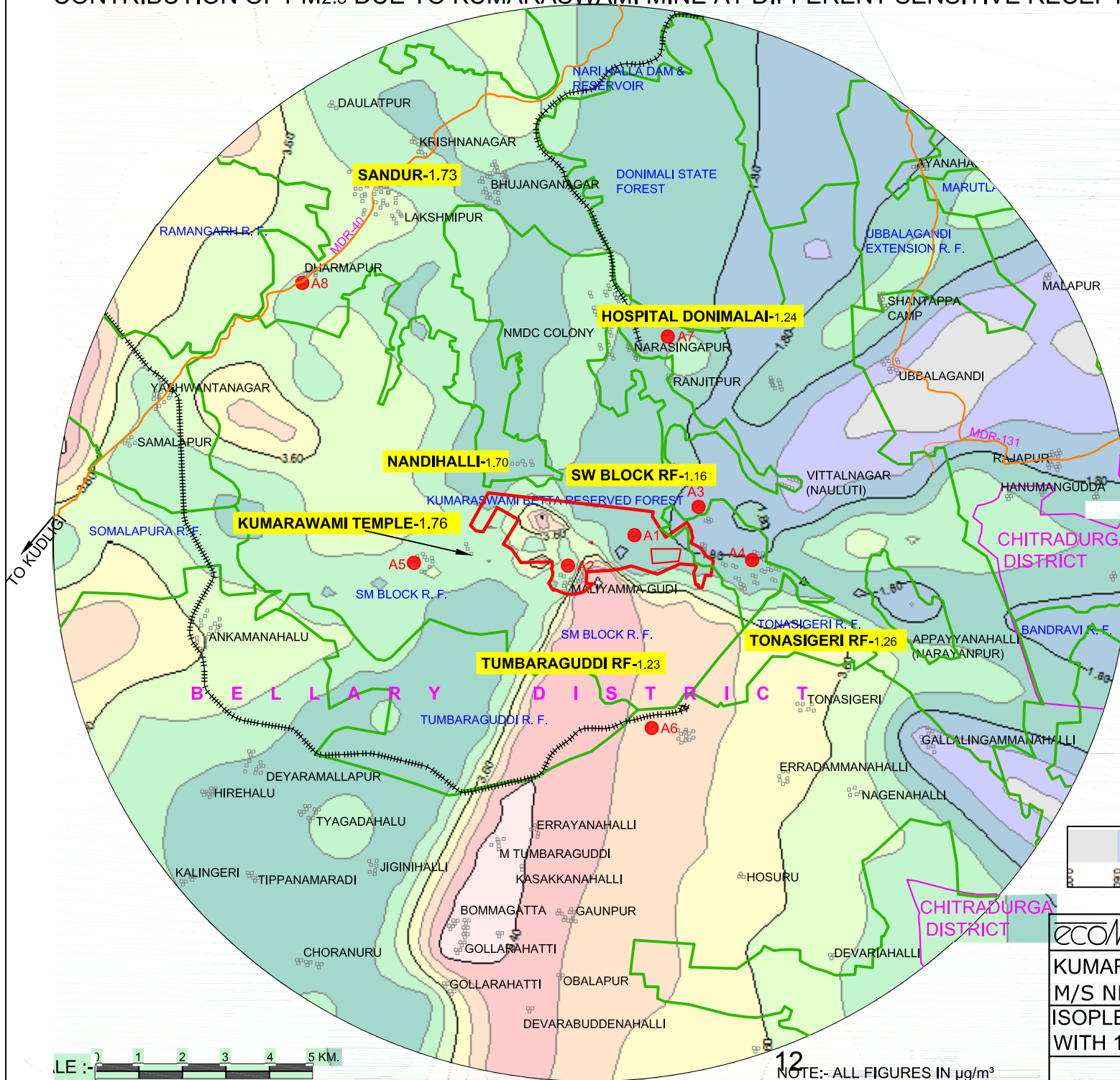
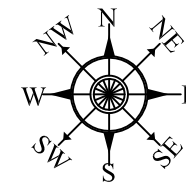
As reflected in base line status, the pollutants are found to be within the stipulated limits. Hence impacts due to the pollutants as discussed above are negligible. The contribution of ground level concentrations due to operation of Kumaraswamy Iron Ore Mine at sensitive receptors is given in **Table no: 10**.

Table no: 10
Contribution of KIOM due to Present Operation at Sensitive Receptors

S. no	Location	Contribution in $\mu\text{g}/\text{m}^3$			
		PM ₁₀	PM _{2.5}	NO ₂	SO ₂
1	Nandihalli	5.11962	1.69886	0.63347	0.48950
2	Sandur town	5.21491	1.73048	0.64526	0.49861
3	Kumaraswamy Temple	5.29635	1.75751	0.65534	0.50640
4	SW Block RF	5.26932	1.16230	0.65200	0.50382
5	Tonasigeri RF	5.10887	1.25931	0.63214	0.48847
6	Tumbargudi RF	5.69433	1.22568	0.66358	0.51277
7	Project Hospital Donimalai Township	5.58553	1.23650	0.69112	0.53405

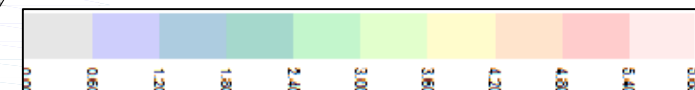
The isopleths of various concentrations have also been drawn and these are given in **Plate: 1** for PM₁₀, **Plate: 2** for PM_{2.5}, **Plate: 3** for NO₂ and **Plate :4** for SO₂.





INDEX

- LEASE BOUNDARY
- RAILWAY LINE
- RESERVED FOREST
- DISTRICT BOUNDARY
- AIR QUALITY LOCATIONS



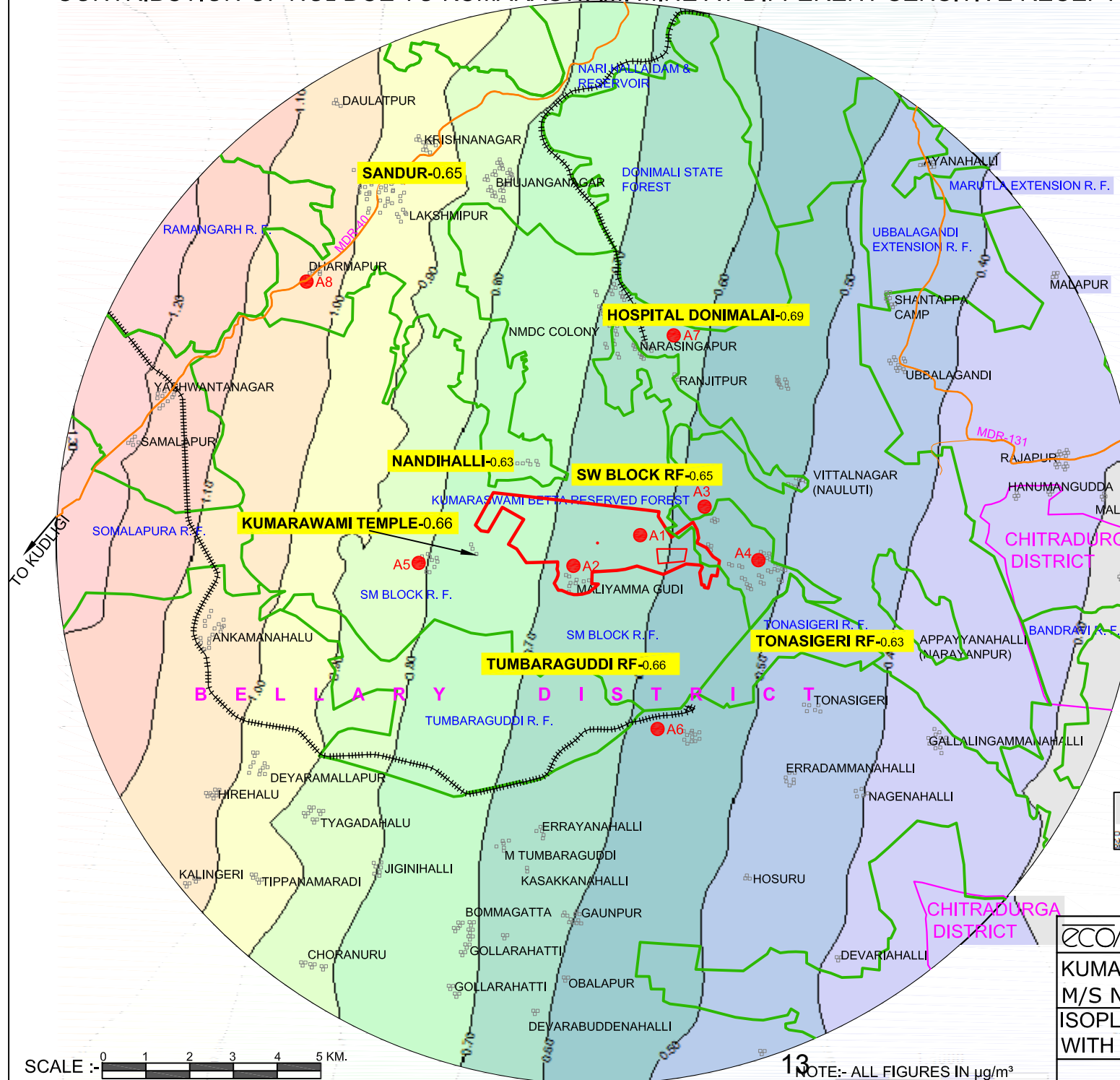
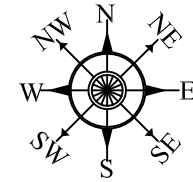
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KUMARASWAMY IRON ORE MINE

M/S NMDC LIMITED

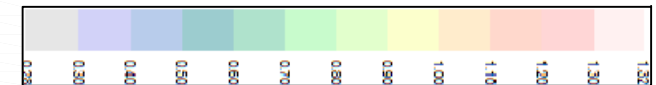
ISOPLETH OF PM_{2.5} SUPERIMPOSED
WITH 10 KM RADIUS MAP

PLATE NO.-2



INDEX

- LEASE BOUNDARY
- RAILWAY LINE
- RESERVED FOREST
- DISTRICT BOUNDARY
- AIR QUALITY LOCATIONS



SCALE :- 0 1 2 3 4 5 KM.

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NOTE:- ALL FIGURES IN µg/m³

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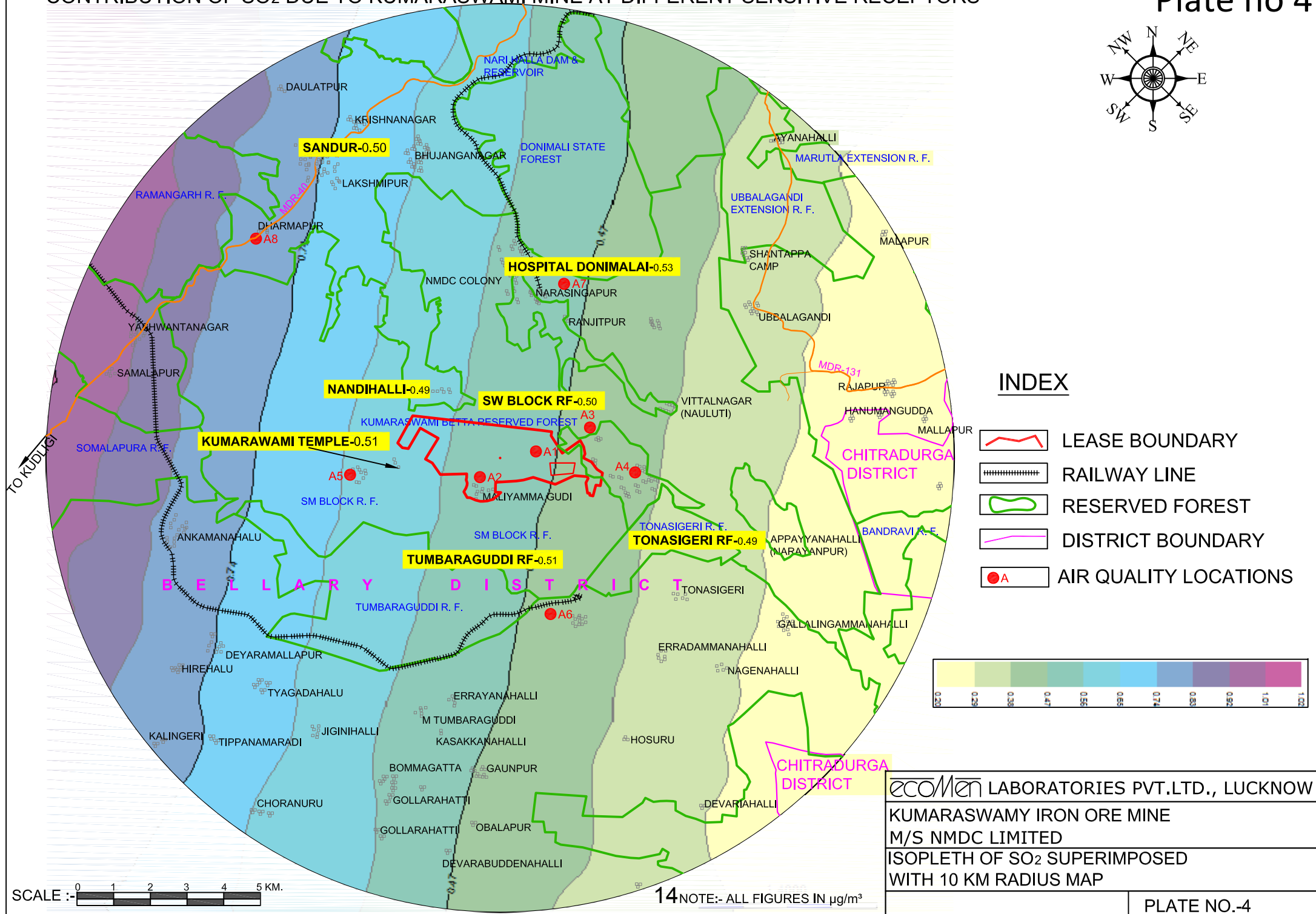
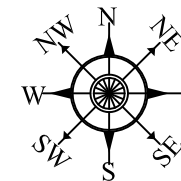
KUMARASWAMY IRON ORE MINE

M/S NMDC LIMITED

ISOPLETH OF NO₂ SUPERIMPOSED
WITH 10 KM RADIUS MAP

PLATE NO.-3

Plate no 4



(III) PP shall clarify whether the remaining forest land will be diverted or surrendered. In case it is diverted than status of Forest Clearance needs to be submitted.

The remaining forest land of 159.01 Ha shall be retained within Mining Lease of Kumaraswamy Iron Ore Mine as per guidelines issued by Director, F.C. Division, MOEF&CC, New Delhi vide F.No: 11-599/2014-FC dated 1/4/2015 (**Annexure-1**). In the guidelines, the relevant portion is re-produced below:

(v) In case of existing mining leases having forest land in part or in full, where approval under Section 2 of the FC Act for a part of the forest land has only been obtained, Central Government hereby accords general approval under Section 2(iii) of the FC Act for the remaining area of the forest land falling within such mining leases, subject to following conditions:

(a) State Government shall, within a period of one year from the date of issue of this letter, realize from the user agency, NPV of the entire forest land falling in the mining lease, in case NPV of such forest land has not already been realized;

In view of the above guidelines and based on request by NMDC to pay NPV charges for retaining remaining forest land within Mining lease, the PCCF (HOFF), Government of Karnataka, Bangalore vide letter no: A5(1)/MNG.GR.28/15-16 dated 29/4/2016 (**Annexure-2**) addressed to Chief Conservator of Forests, Ballari has clarified that the application of M/s. NMDC Ltd, ML No: 1111 is to be considered as per the MOEF guidelines and directed to take necessary action.

In view of the above, and as desired by the Dy. Conservator of Forests, Ballari, a joint survey has also been conducted by Dy. RFO, Sandur, AE-DMG, Hospet and Taluk Surveyor, Sandur. As per survey, it is concluded that the un-diverted forest land is having an area of 159.01 Ha. The copy of joint survey report is enclosed as **Annexure-3**.

Dy. Conservator of Forests, Ballari vide letter no: MI/MNG/NMDC/ML NO: 1111/AR/CR-13/2014-15 dated 12/8/2016 (**Annexure-4**) has issued demand notice for payment of NPV charges of Rs.12,76,85,030/- for remaining forest land of 159.01 Ha under section 2(iii) of F.C. Act, 1980 under general approval clause as accorded by Gol vide reference dated 1/4/2015.

Based on the above demand notice, NMDC has paid NPV charges of Rs.12,76,85,030/- on 23/8/2016 through Karnataka CAMPA AC (Corporation Bank, Bangalore) for the balance un-diverted area of 159.01 Ha forest land and same had been informed to the Dy. Conservator of Forests, Ballari vide DNM/ENV/85M/2015/1458 dt.27.08.2016 (**Annexure-5**).

Hence, deemed approval under section 2(iii) of FC Act, 1980 has been obtained as per guidelines issued by MOEF&CC vide letter dated 1/4/2015 for retaining the remaining forest land of 159.01 Ha within 639.80 Ha Mining Lease of Kumaraswamy Iron Ore Mine.

The general approval under section 2(iii) of FC Act has also been communicated to Ministry at the time of seeking TOR for above proposal and also taken into consideration by MOEF&CC while issuing Terms of reference vide letter no: J-11015/93/2018-IA.II(M) dated 10/12/2018 at page no:4 (**Annexure-6**).

In order to protect the remaining forest land, steel mesh fencing has already been done demarcating the separation of diverted and remaining forest land by erecting intermediate corner pillars.

At present, the life of Kumaraswamy Iron Ore Mine at rated capacity of 7 MTPA ROM Iron ore is 23 years from 2019-20. NMDC being Public Sector Enterprise under Ministry of Steel is committed to supply Iron Ore to Steel, Pellet and Sponge Iron Industries located in not only in Ballari but in other parts of the country also. One of the biggest customer of Iron Ore from Kumaraswamy Iron Ore Mine is JSW Steel (16 MTPA capacity) at Tornagallu, Ballari.

Further, the crude steel production is to be enhanced from existing 111 MTPA to 169 MTPA by 2024 as per Steel Ministry's National Steel Policy (NSP) 2017. NMDC is committed to meet the Iron Ore requirement of the country as per Policies of the Government of India specifically National Steel Policy.

The ore body at Kumaraswamy Iron Ore Mine is dipping towards remaining forest land and there is high probability of ore being present there. Hence, NMDC retained the remaining forest land within Mining lease for future exploration / proving of mineral reserves in this area. If the reserves are proved, it will add to the resource base, will increase life of mine and will be a great value addition to NMDC.

The Mining Plan was also approved for total lease area of 639.80 Ha and Government of Karnataka has also extended the lease period for entire 639.80 Ha under section 8A(8) of MMDR Amendment Act, 2015 read with Rule 3(1) of the Mineral (Mining by Government Company) Rules 2015. The above mining lease area is with NMDC since 1972.

In order to have Environmental Clearance compatible with approved Mining Plan and Lease area approved by Government of Karnataka, NMDC would like to retain the remaining forest land within sanctioned lease area as per guidelines issued by MoEF&CC vide F.No dated 1/4/2015 for the reasons explained as above.

MoEF&CC may kindly consider proposal of NMDC for retaining the remaining forest land within Mining Lease of Kumaraswamy Iron ore Mine (ML 1111) and Environmental clearance may be accorded for entire 639.80 Ha lease area.

F. No. 11-599/ 2014-FC
Government of India
Ministry of Environment, Forest and Climate Change
(Forest Conservation Division)

Indira Paryavaran Bhawan
Aliganj, Jorbagh Road
New Delhi - 110 003
Dated: 1st April, 2015

To

The Principal Secretary (Forests)
All State / Union Territory Governments

Sub: Guidelines for diversion of forest land for non-forest purposes under the Forest (Conservation) Act 1980- Submission of proposals to obtain approval for diversion of entire forest land located within a mining lease.

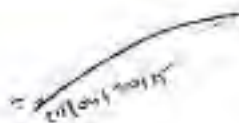
Sir,

I am directed to refer to this Ministry's letter No. 11-362/2012-FC dated 1st February, 2013 on the above-mentioned subject, wherein this Ministry informed *inter-alia* that in case of mines where approval under the Forest (Conservation) Act, 1980 (FC Act) for diversion of only a part of forest land located within the mining leases has been obtained, after two years from the issue of the said letter mining will be allowed only if the user agency either obtains approval under the FC Act for the entire forest land located within the mining lease or surrenders such forest land for which approval under the FC Act has not been obtained and execute a revised mining lease for the reduced lease area.

2. This Ministry received representations wherein it has *inter-alia* been stated that it is practically not possible to obtain approval under the FC Act for diversion of the entire forest land in two years as the whole process takes more than two years. This Ministry was requested to issue the revised guidelines to prevent disruption in the ongoing mining operations.

3. This Ministry has examined the matter in consultation with the Department of Legal Affairs, Ministry of Law and Justice. After careful examination of the matter and the advice of the Department of Legal Affairs, Ministry of Law and Justice, this Ministry in supersession of the said letter No. 11-362/2012-FC dated 1st February, 2013, hereby decides as below:

- (i) Henceforth, in case of mining leases, including those of Government Authorities, having forest land in part or in full, approval of Central Government under Section-2 (iii) of the FC Act, for the entire forest land located within a mining lease shall be obtained before execution (including by way of renewal) of a mining lease in accordance with the provisions of the Mines and Minerals (Development and Regulation) Act, 1957 (MMDR Act) and the Rules framed thereunder.



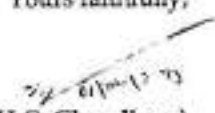
- (ii) User agencies while submitting application to obtain prior approval under Section 2 (iii) of the FC Act, if they so desire, may also seek prior approval of Central Government under Section 2 (ii) of the FC Act for use of the whole or a part of the forest land located within the mining lease for mining and allied non-forest activities. Area of forest land for which approval under Section 2 (ii) and 2 (iii) is sought shall separately be indicated in the proposals submitted by the user agencies. Where at the time of execution of the mining lease prior approval of Central Government under Section 2 (ii) to use the entire forest land falling in the mining lease for mining and allied non-forest activities is not obtained, the user agencies may submit proposal under Section 2 (ii) of the FC Act for the whole or a part of the remaining forest land falling within the mining lease, as and when such forest land is proposed to be utilised for mining and allied non-forest activities.
- (iii) Central Government after examination of a proposal and after such other enquiry as it may consider necessary, may accord approvals under Section 2 (iii) and 2 (ii) of the FC Act for assigning on lease and to utilize for mining and allied non-forest activities respectively, such areas of forest land, as it may consider expedient, or reject the same.
- (iv) Prior approval of Central Government under Section 2 (iii) of the FC Act shall be subject to payment of Net Present Value (NPV) of the forest land allowed to be assigned on mining lease. Similarly, prior approval of Central Government under Section 2 (ii) shall be subject to other usual conditions apart from realization of NPV of the forest land allowed to be utilised for mining and other allied non-forest activities.
- (v) In case of existing mining leases having forest land in part or in full, where approval under Section 2 of the FC Act for a part of the forest land has only been obtained, Central Government hereby accords general approval under Section 2 (iii) of the FC Act for the remaining area of the forest land falling within such mining leases, subject to following conditions:
 - (a) State Government shall, within a period of one year from the date of issue of this letter, realize from the user agency, NPV of the entire forest land falling in the mining lease, in case NPV of such forest land has not already been realised;
 - (b) In case State Government fails to realize from the user agency, NPV of the entire forest land falling in a mining lease within a period of one year from the date of issue of this letter, this general approval in respect of such mining lease, shall be kept in abeyance, and shall be deemed to have been kept in abeyance, and all mining activities in such mining lease shall be stopped, till such time, the NPV of such forest land is realised by the State Government;
 - (c) The general approval shall be valid for a period co-terminus with the period of mining lease in accordance with the provisions of the Mines and Minerals (Development and Regulation) Act, 1957, as amended, and the Rules framed thereunder;

[Signature]

- (d) This general approval does not, in any manner, exempt a user agency from obtaining prior approval under Section 2(ii) of the FC Act in regard to such area of forest land which is to be used for non-forest purpose;
 - (e) Grant of this general approval under Section 2 (iii) does not, in any manner, create any right or equity in favour of the user agency for grant of approval under Section 2 (ii) of the FC Act and decision on proposals under Section 2 (ii) will be taken purely on the merit of each case;
 - (f) This general approval will not be applicable to the forest land for which Central Government before the issue of this letter has already declined approval under Section 2 of the FC Act; and
 - (g) Grant of this general approval does not in any manner, exonerate the concerned authorities in the State Government or in any other Authority, from the proceedings under Section 3A and 3B of the FC Act, liable to be initiated for violation, if any, of the FC Act committed by them by assigning such forest land on mining lease without obtaining prior approval of Central Government under Section-2 of the FC Act.
- (vi) The user agency shall be responsible for protection of the forest land located in a mining lease for which prior approval of Central Government under Section 2 (iii) of FC Act, including by way of the afore-mentioned general approval, has only been obtained. However, administrative and management control of such forest land will remain with State Forest Department or other forest land owning agencies and the forests will be managed in accordance with the approved management plan till such time it is not diverted for non-forest purpose, i.e., mining and remains unbroken.

This issues with approval of the Hon'ble Minister of State (Independent Charge) for Environment, Forest and Climate Change.

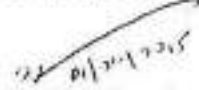
Yours faithfully,


(H.C. Chaudhary)
Director

Copy to:-

1. Prime Minister's Office (*Kind attn.: Shri Santosh D. Vaidya, Director*).
2. Secretary, Ministry of Mines, Government of India.
3. Secretary, Ministry of Coal, Government of India.
4. Secretary, Ministry of Steel, Government of India.
5. Principal Chief Conservator of Forests, all States/UTs.
6. Nodal Officer, the Forest (Conservation) Act, 1980, all States/UTs.
7. All Regional Offices, Ministry of Environment, Forest and Climate Change (MoEFCC).
8. Joint Secretary, In-charge, Impact Assessment Division, MoEF.

9. PS to the Hon'ble Minister of State (Independent Charge) for Environment, Forest and Climate Change.
10. Chairman, State Environment Impact Assessment Authority, all States/UTs.
11. Member-Secretary, State Environment Impact Assessment Authority, all States/UTs.
12. All Directors/ Assistant Inspector General of Forests in Forest Conservation Division, MoEFCC.
13. All Advisors/ Directors/ Dy. Directors in the Impact Assessment Division, MoEFCC.
14. Director, Regional Office (Headquarters), MoEFCC. .
15. Sr. Director (Technical), NIC, MoEFCC with a request to place a copy of this letter on website of this Ministry.
16. Sr. PPS to the Secretary, Ministry of Environment, Forest and Climate Change.
17. Sr. PPS to Director General of Forests and Special Secretary, Ministry of Environment, Forest and Climate Change.
18. Sr. PPS to Addl. Director General of Forests (Forest Conservation), Ministry of Environment, Forest and Climate Change.
19. PS to Inspector General of Forests (Forest Conservation), Ministry of Environment, Forest and Climate Change.
20. Guard File.


(H.C. Chaudhary)
Director

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No. A5(1)MNG.CR.28/15-16

Office of the
Principal Chief Conservator of Forests
(Head of Forest Force)
Aranya Bhavan, 18th Cross, Malleshwaram
Bengaluru-3, Dated: 29-04-2016.

To

Chief Conservator of Forests,
Ballary Circle,
Ballary.

Sub: Guidelines for diversion of forest land for non-forest purposes under the Forest (Conservation) Act, 1980 - Submission of proposals to obtain approval for diversion of entire forest land located within a mining lease - reg.

- Ref: 1. Guidelines letter F. No. 11-599/2014-FC dated: 01-04-2015, 19-10-2015 & 10-11-2015 of Ministry of Environment, Forest and Climate Change, Government of India, New Delhi.
2. Guidelines letter F. No. 11-85/2016-FC dated: 31-03-2016 of Ministry of Environment, Forest and Climate Change, Government of India, New Delhi.
3. Letter No. M1/MNG/NPV/BLY/2015-16 dated: 16-03-2016 of the Deputy Conservator of Forests, Ballary Division.
4. Your letter No. M1/MNG/DIV-Proposal/2015-16 dated: 18-03-2016.
5. Proceedings of the meeting held on 28-03-2016 which was communicated vide this office letter of even no. dated 31-03-2016.

The Deputy Conservator of Forests, Ballary Division, Ballary vide his letter cited at (3) above has requested to issue clarification for issue of Net Present Value Demand for the balance area, as per the MoEF guidelines cited at (1) above, duly submitting the details in respect of seven mining leases. Duly enclosing the said letter, you have requested to convene a meeting on the said issues vide your letter cited at (4) above.

Accordingly, a meeting was convened on 28-03-2016 and the meeting proceedings was communicated vide letter cited at (5) above. The decision taken on this issue as per the meeting proceedings is as follows:

"The guidelines issued by the MoEF vide its letter F. No. 11-599/2014-FC dated 01-04-2015 has been discussed in detail and it is decided to consider the requests of the user agencies who have already applied / requested for approval under Forest (Conservation) Act, 1980 for the balance forest area in

B5M111E: One of Two Pages

cases where mining lease deed (already executed) area is more than the DCth approved areath.

The details of the seven leases as verified from this office records are as follows:

Sl. No	Name of the lessee with ML No.	Extent as per lease executed under MMDR Act (in Ha.)	Extent approved under Forest (Conservation) Act, 1980 (in Ha.)
1.	M/s. Mysore Mineral Ltd. ML No. 2605	136.97	136.97 for mining + 10.00 ha. for approach road
2.	M/s. NMDC Ltd. ML No. 1111	647.50	324.70 for mining +16.50 ha. for approach road
3.	M/s. M Hanumantha Rao ML No. 2505	40.47	17.40 + 23.07 (Stage-I approval area) = 40.47
4.	M/s. SMORE ML No. 2580	1860.10 (forest 1615.64 & Revenue 244.38)	1615.14
5.	M/s. SMORE ML No. 2581	142.58	142.58
6.	Sri S.V. Srinivasulu ML No. 2604	149.73	60.00
7.	Sri H.G. Rangangouda ML No. 2549	54.64 (46.20 as per CBC finalized sketch)	36.50

As could be seen from the above table, the requests / applications if any made / filed by M/s. NMDC Ltd. ML No. 1111, Sri S.V. Srinivasulu ML No. 2604 and Sri H.G. Rangangouda ML No. 2549 are to be considered as per the MoEF guidelines and meeting proceedings cited above.

Further, it is to inform you that the MoEF vide letter cited at (2) above has extended the applicability of the said guidelines for a further period of six months (i.e. till 30th September 2016) (copy enclosed).

Therefore, you are hereby directed to take action for realizing from the concerned mining lessees, Net Present Value of the entire forest land falling in the mining lease (already executed), in case NPV of such forest land has not already been realized or otherwise and report the compliance so as to get sanctions for general approval or otherwise from the Government of Karnataka immediately.


Principal Chief Conservator of Forests
(Head of Forest Force), Bengaluru.

Copy to Deputy Conservator of Forests, Ballary and Chitradurga Divisions for information and immediate necessary action. Copy of MoEF guidelines cited at (2) above is enclosed.


29/04/16
M/s. sent through
a/c on 29/4/16
Jen

Mahazar report of "Joint Survey" conducted on 21st July 2016 of un-diverted area of 159.01 Ha. (as per approved CEC sketch) of Kumaraswamy Iron Ore Mines, ML No. 1111 of NMDC Limited.

As desired by the Deputy Conservator of Forests, Bellary Division, Bellary vide letter no. M1/MNG/NMDC/ML No. 1111/AR/CR-13/2014-15 dated 06-07-2016; a "Joint Survey" of the un-diverted forest land was scheduled on 21-07-2016 in connection with the application submitted by NMDC Limited for diversion of un-diverted Forest Land of ML No. 1111 of NMDC Limited. Accordingly, a team consisting of following officials from Forest Department, Department of Mines and Geology and Revenue Department arrived for Joint Survey at NMDC Limited on 21.07.2016 :-

1. Shri. R. Thippeswamy, Dy. Range Forest Officer, Sandur South Range.
2. Shri. K S Shirakol, AE-DMG, Hospet.
3. Shri. B R Ramanjineya, Taluk Surveyor, Sandur.

The team arrived at Administrative Building, NMDC Limited, Donimalai at 9:00 AM on 21-07-2016 and proceeded to Kumaraswamy Iron Ore Mine, ML No. 1111 of NMDC Limited for the purpose of joint inspection and survey of 159.01 hectare of un-diverted forest land within the total lease hold area of 639.80 hectare, as per CEC Mahazar Report approved by honorable Supreme Court of India. The team was accompanied by Shri Dhiren Bhushan, AGM(Mining)/Mines Manager, Kumaraswamy Iron Ore Mines, NMDC Limited and Shri A D Pipare, SM(Survey), NMDC Limited for the said purpose.

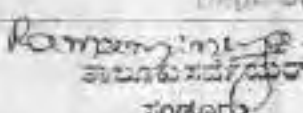
Starting from pillar no. 37, the team inspected all the pillars encircling 159.01 hectare un-diverted forest land i.e., pillar no. 37,36,35,34,33,32,31,30,80, 81,82,83&89 and verified the location of pillars with the available coordinates in CEC Mahazar report using GPS instrument. The team observed the followings:-

R Thippeswamy	K S Shirakol	B R Ramanjineya	Dhiren Bhushan	A D Pipare
				

- i. Area within the 13 nos. of pillars encircling the un-diverted forest land is having an extent of 159.01 hectares and all the pillars were found intact and their coordinates were matching with the coordinates provided with the CEC Mahazar report as reflected in the table below:

Sl.No.	Reference ML Corner Points	Latitude	Longitude
		Datum-WGS-84	
1	30	15° 01' 02.8"	76° 34' 36.2"
2	31	15° 01' 06.2"	76° 34' 55.6"
3	32	15° 01' 01.5"	76° 35' 09.2"
4	33	15° 01' 04.6"	76° 35' 19.2"
5	34	15° 00' 59.5"	76° 35' 26.4"
6	35	15° 01' 01.5"	76° 35' 42.3"
7	36	15° 00' 54.6"	76° 36' 05.4"
8	37	15° 01' 09.0"	76° 36' 09.3"
9	80	15° 01' 11.9"	76° 34' 19.9"
10	81	15° 00' 53.7"	76° 34' 09.1"
11	82	15° 00' 54.8"	76° 34' 03.5"
12	83	15° 00' 58.9"	76° 33' 59.3"
13	89	15° 01' 22.7"	76° 34' 13.2"

- ii. The intermediate pillars were provided all along the outer boundary of lease hold area as per the Rule 12[V](ii) of Minerals (other than atomic and hydrocarbon energy minerals) Concession Rules, 2016 and the outer boundary was also suitably fenced with steel wire mesh leaving minimum 7.5m of Safety Zone. The Deputy Range Forest Officer Sandur South Range suggested for erection of intermediate pillars between pillar no. 37 to 30.

(R Thippeswamy) Dy. RFO, Sandur South Range.	 Deputy Range Forest Officer Sandur South Range
(K S Shirakol) AE-DMG, Hospet	 Asst. Engineer Dept. of Mines & Geology HOSPET
(B R Ramanjineya) Taluk Surveyor, Sandur.	 Taluk Surveyor Sandur
(Dhiren Bhushan) Mines Manager – KIOM	 MINES MANAGER Karnataka Iron Ore Mines Donimalai, NMDC Ltd. Hospet, Karnataka
(A D Pipare) Surveyor - KIOM	 Surveyor Donimalai, NMDC Ltd. Karnataka-583114

PLAN SHOWING THE UNDIVERTED FOREST AREA (159.01 Ha.) OF KUMARASWAMY IRON ORE MINE, ML.HQ. 1111, NMDC LIMITED, PREPARED ON 21-07-2016 AFTER JOINT SURVEY BY FOREST, DMG AND REVENUE DEPARTMENT OFFICIALS USING THE CO-ORDINATES OF CORNER POINTS GIVEN AND DEMARCATED ON THE GROUND DURING 20-07-2012 TO 04-08-2012 BY THE JOINT SURVEY TEAM OF CEC / SUPREME COURT VIDE THE MAHADEVI DATED 04-08-2012

AREA AS PER CEC

TOTAL NMDC AREA = 427.80 Ha.
TOTAL DMG AREA = 20.00 Ha.
CHARTERED SURVEYOR'S OFFICE
CHARTERED SURVEYOR'S OFFICE
CHARTERED SURVEYOR'S OFFICE

NO. OF JOINT SURVEY TEAM

FOREST DEPT.

(NAME) *[Signature]*
The Deputy Conservator of Forests

DMG

(NAME) *[Signature]*
A.D. (DMG) *[Signature]*
1st Deputy Director of Mines

REVENUE DEPT.

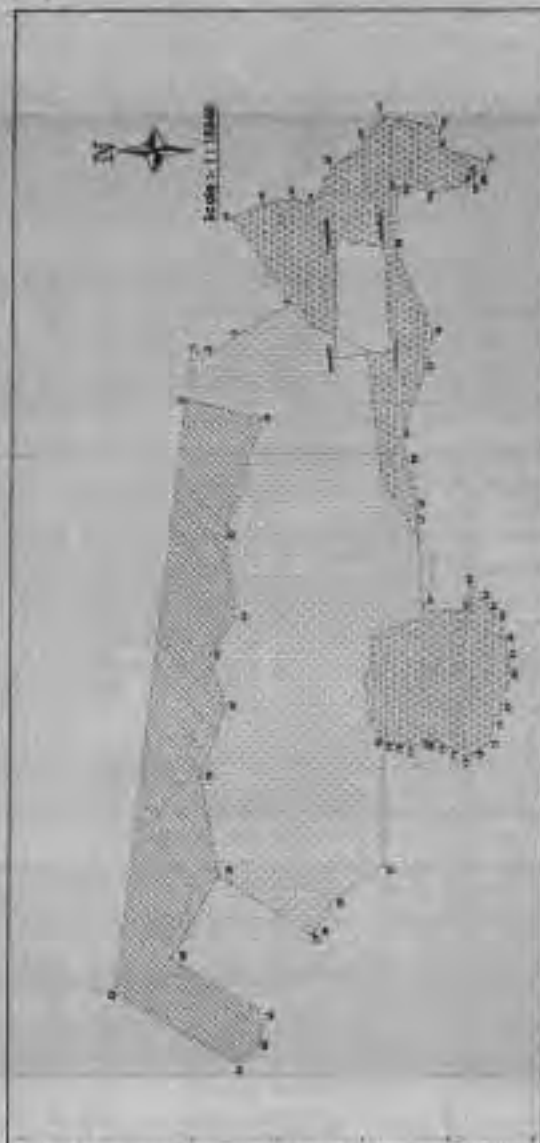
(NAME) *[Signature]*
A.D. (Revenue) *[Signature]*
The Deputy Commissioner

NMDC

(NAME) *[Signature]*
A.D. (NMDC) *[Signature]*
The Deputy General Manager

(NAME)

A.D. (Survey) *[Signature]*
The Deputy Surveyor



APPLIED AREA FOR FOREST DIVERSION 159.01 Ha. (AS PER CEC)

ALREADY DIVERTED FOREST AREA 20.00 Ha. (AS PER CEC)

REMAINING AREA 139.01 Ha. (AS PER CEC)

Sl. No.	Area (Ha.)	Remarks
1	159.01	Applied Area for Forest Diversion
2	20.00	Already Diverted Forest Area
3	139.01	Remaining Area

APPROVED BY THE DIRECTOR OF MINES AND GEOLOGY, GOVT. OF KARNATAKA
DATE: 21-07-2016
BY: *[Signature]*
DIRECTOR OF MINES AND GEOLOGY

No.M1/MNG/NMDC/MLL.No.1111/AR/CR-11/2014-15

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Office of the
Deputy Conservator of Forests,
Bellary Division, Bellary.
Date: 12.08.2016.**Demand Notice**

Sub : Diversion of additional area over an extent of 159.01 Hectares (originally 167.63 Ha) of Forest Land in ML No.1111 M/s. NMDC Ltd. of S.M. Block, Sandur South Range, Bellary Dist. Reg.

- Ref : 1) Letter No.F.No.11-599/2014-FC Dated : 01.04.2015 of MOEF, Govt. of India New Delhi.
 2) Letter No.F.No.11-85/2014-FC Dated : 31.03.2016 of MOEF, Govt. of India New Delhi.
 3) Letter No.A5(1)/MNG/CR-28/15-16 dtd.29.04.2016 of the Principal Chief Conservator of Forests (Head of Forest Force), Bangalore.
 4) Letter No. DNM/GM/MLL.1111/NPV/2016/1407 Dated : 02.07.2016 of M/s. NMDC Ltd. Donimalai.
 5) This office even no dated : 06.07.2016 and 27.07.2016.
 6) Joint survey conducted on 21.07.2016.
 7) Letter No.ACF&TA/NMDC/SM/1111/2016-17 dtd.12-08-2016 of Assistant Conservator of Forests, Ballari

With reference to the above subject, the MOEF, Government of India issued guidelines & general approval vide letter at reference (1) above as follows :

- (a) State Government shall, within a period of one year from the date of issue of the said letter, realise from the user agency, Net Present Value (NPV) of the entire forest land falling in the mining lease, in case NPV of such forest land has not already been realised.
- (b) In case State Government fails to realise from the user agency, NPV of the entire forest land falling in a mining lease within a period of one year from the date of issue of the said letter, this general approval in respect of such mining lease, shall be kept in abeyance, and shall be deemed to have been kept in abeyance, and all mining activities in such mining lease shall be stopped, till such time, the NPV of such forest land is realised by the State Government.

Further, the MOEF, Government of India issued guidelines vide letter at reference(2) above as follows :

- (4) After careful examination of this Ministry, I am directed to say that the said period of one year stipulated in the said guidelines issued vide letters No. 11-599/2014-FC dated 1st April, 015 and No.11-599/2014-FC dated : 10th November,2015 is extended for a further period of six months (i.e.till 30th September,2016).

And, also the Principal Chief Conservator of Forests (Head of Forest Force), Bangalore has directed to take action for realizing NPV from the M/s NMDC M.L. No-111 vide letter at reference (3) above. And, the M/s. NMDC Ltd. Domimolai has also requested to this office for issuing of demand notice for NPV vide letter at reference (4) above.

Accordingly, the Assistant Conservator of Forests, Ballari Sub-Division, Ballari and Range Forest officer, Sandur South has conducted the joint survey of the Mine lease area with Revenue Department and Mines & Geology department on 21.07.2016 and reported vide letter at reference (7) above. The joint survey team has concluded that the additional forest area held by the M/s. NMDC Ltd, M.L.No.111 is 159.01 ha only as against 167.63 Ha requested by M/s NMDC.

The NMDC has been granted mining lease ML.No-111 under MMDR Act for a total extent of 647.50 hectares as per Government of Karnataka notification No. CL35/MMM.2005 dated 04-04-2005. However, after digitization of the mining lease area by the CEC, on the directions of the Hon'ble Supreme Court, the mining lease area of the ML No.-111 is reduced to 639.80 hectares only. The details are tabled below:-

Lease area details of NMDC M.L.No.-111

Details	Before digitization by CEC; as per the lease deed & sketch (In ha)	After digitization by CEC of lease area & finalized by the Hon'ble Supreme Court of India (In ha)
Total lease area	647.50	639.80
Revenue area	155.17	159.01
Forest Area		
a) Diverted under FC Act	324.70	321.78
b) Not diverted under FC Act	167.63	159.01

The total lease area of M/s. NMDC M.L.No. 111 is the reduced after digitization by CEC, from 647.50 ha to 639.80 ha. Similarly, the forest area diverted under FC Act is also reduced after digitization from 324.70 ha to 321.78 ha. And thus, the remaining Forest area to be diverted is also reduced from 167.63 ha to 159.01 ha.

The additional area for which M/s NMDC has requested to issue Demand notice for NPV under the General Approval Clause of Government of India under Section 2(iii) of Forest (Conservation) Act 1980, is now reduced from 167.63 Ha to 159.01 Ha. The same area has been Joint surveyed by the Forest Department with Revenue Dept and Department of Mines and Geology and area sketch is prepared and reported by ACF vide letter at Ref(7).

Some portion of the M/s NMDC mining lease as approved under MMDR act falls within 1km of distance from Sri. Kumar-swami Temple (Archeologically Important Site). The extent of lease area falling within 1km of the Temple is 13.58 Hectares.

In this regard, the Hon'ble Supreme Court has issued direction to the State Government to constitute a committee to examine and recommend measures with respect to restriction on the mining activities, in the portion of mining leases falling within 1 km & upto 2Kms. of

archeologically important temples/sites in Karnataka vide its order in SLP No.20180/2010. In present case, the extent of 13.58 ha hectares mining lease portion falls in within 1 Km of Sri. Kumaraswamy temple. However, the NPV is being collected only for the purpose of Section-2(iii) of Forest (Conservation) Act, 1980, the restriction on mining activities within 1 km will be examined in detail at the time of processing application under Section-2(ii) of Forest (Conservation) Act, 1980 for allowing non-forestry activities.

The NPV is been collected under Section-2(iii) of Forest (Conservation) Act, 1980 under general approval clause as accorded by Government of India vide reference(1) above. The extent of area is 159.01 hectares and the type of Forest is Eco-class-III, Tropical Dry Deciduous forest; Dense forest.

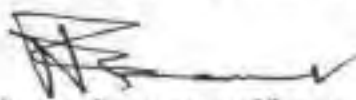
Hence, you are instructed to remit the NPV amount through RTGS and E-payment module of Forest Clearance portal- forestclearance.nic.in as detailed below:

Sl. No.	Particulars	Category	Extent	Rate	Amount (In rupees)
1.	Net Present Value amount	Eco-class-III Tropical Dry Deciduous; Dense Forest	159.01 Ha.	803000.00	12,76,85,030.00
			Total		12,76,85,030.00

The general approval under Section-2(iii) of Forest (Conservation) Act, 1980 as accorded by Government of India vide letter reference(1), does not, in any manner, exempt a user agency from obtaining prior approval under Section-2(ii) of the FC in regard to such area of forest land which is to be used for non-forest purpose.

Also, the Grant of the general approval under Section-2(iii) does not, in any manner, create any right or equity in favour of the user agency for grant of approval under Section-2(ii) of the FC Act and decision on proposals under Section-2(ii) will be taken purely on the merit of each case.

The rate of Net Present Value (NPV) is subject to revision by the orders of Hon'ble Supreme Court of India & Government of India, the Demand notice may stand revise accordingly.


Deputy Conservator of Forests,
Bellary Division, Bellary.

To,
The General Manager,
M/s. NMDC Ltd,
M.L.No.1111,
Dominalai Township-583118
Bellary District.



ISO 9001:2000
ISO 14001:2004

एन एम डी सी लिमिटेड N M D C Limited

(भारत सरकार का उद्यम / A Govt. of India Enterprise)

दोणिमलै लौह अयस्क खान / Donimalai Iron Ore Mine

Donimalai Township – 583 118, Dist: Bellary, Karnataka.

Phones: 08395 – 274654 / 274618, Fax : 08395 – 274687 / 274654

DNM/ENV/85M/2015/1456

Date: 27.08.2016

Dy. Conservator of Forests,
Forest Department, Bellary Division,
Bellary.

Sub: Diversion of additional area over an extent of 159.01 Ha (originally 167.33 Ha) of Forest land in ML No: 1111 M/s. NMDC Limited of S.M block, Sandur Forest Range, Bellary District under section 2(iii) of F.C. Act, 1980.

Ref: Your letter no: ML/MNG/NMDC/ML No: 1111/AR/CR-13/2014-15 dated 12/8/2016.

Sir,

With reference to your letter referred above, the NPV charges of **Rs.12,76,85,030/-** have been paid in Karnataka CAMPA AC on 23/8/2016 by generating online challan as per the details given below for obtaining general approval under section 2(iii) of F.C. Act, 1980 for retaining 159.01 Ha of forest land within KIOM ML No: 1111 of NMDC Limited,

1	Name of Lease	Kumaraswamy Iron Ore Mine (ML No.1111).
2	Total lease area after digitization by CEC & finalized by the Hon'ble Supreme Court.	639.80 Ha.
3	Revenue area	159.01 Ha.
4	Forest area already diverted under FC Act	321.78 Ha.
5	Forest area not diverted under FC Act	159.01 Ha.
6	NPV charges for obtaining general approval under section 2(iii) of F.C. Act	Rs.8.03 lakhs per Ha.
7	Total NPC charges for 159.01Ha.	Rs.12,76,85,030.00
8	Online payment generated on	22/8/2016.
9	Amount transferred through RTGS on	23/8/2016 in Karnataka CAMPA AC. (copy enclosed).

It is requested to kindly process for the general approval under section 2(iii) of F.C. Act, 1980 for remaining forest land of 159.01Ha. within KIOM lease, ML No.1111 of M/s. NMDC Limited at the earliest.

Thanking you

Yours faithfully

[Signature]
General Manager
27/8/16

Encl: a/a

Copy to:

1. CCF, Bellary for kind information please.
2. APCCF, Forest Dept, Bangalore for kind information.
3. Principal Secretary (Forests), Forest Dept, M.S. Building, Bangalore for kind information please.

हिन्दी में पत्र व्यवहार को हम प्राथमिकता देते हैं। हिन्दी में पत्र व्यवहार का स्वागत है।

पंजीकृत कार्यालय : 10-3-311/ए खनिज भवन, कैसल हिल्स मासाब टैंक, हैदराबाद 500 173

Regd.Office: 10-3-311/A, Khanij Bhavan, Castle Hills, Masab Tank, Hyderabad 500 173

STATE BANK OF MYSORE,
Branch: Donimalai

Annexure - 2
Dated: 23.08.2016

NATIONAL ELECTRONIC FUNDS TRANSFER APPLICATION FORM
(To be filled in by the Applicant in Block Letters)

Details of Applicant (Remitter)

By Cheque/Transfer for N.E.F.T.on

(1) Account Name :

(2) Account No. Type of Account:

Details of Beneficiary:

(1) Centre :

(2) Bank :

(3) Branch:

BY RTGS

- NMDC LTD.

- CURRENT A/C - 54050380070

- BANGALORE

- CORPORATION BANK

- BANGALORE

(4) IFSC Code of the Branch:

- CORP0000633

(5) Beneficiary Name:

- KARNATAKA CAMPA

(6) Type of A/c: Savings/Current/Cash Credit: -

(7) A/c No. - 15073MIN68582014971

(8) Bank's MICR Code -

Amount to be remitted Rs 12,76,85,030.00 (Rupees Twelve Crore Seventy Six Lakhs Eighty Five Thousand and Thirty only)

Bank Charges: Rs. -

Total Rs. -

Remit the amount as per above details, by debiting my/our account for the amount of remittance plus your charges.

Cheque No. 993223 dtd: 23.08.2016 -Rs.5,00,00,000/-

Cheque No. 993224 dtd: 23.08.2016 -Rs.5,00,00,000/-

Cheque No. 993225 dtd: 23.08.2016 -Rs.2,76,85,030/-

Total Rs. 12,76,85,030/-

Agnimitra Das.
Authorized Signatory

CONDITIONS OF TRANSFER

1. Remitting Bank shall not be liable for any loss or damage resulting from delay in transmission, delivery or non-delivery of electronic message or any mistake, Omission, or error in transmission or delivery thereof, or in deciphering the Message from any cause whatsoever, or from its misinterpretation or the action of the destination Bank or any act beyond our control.
2. All payment instructions should be checked carefully by the remitter.
3. Messages received after cut-off time will be sent on the next working day.

FOR BANK'S USE ONLY

(RUPEES

DEBITED APPLICANT'S A/C. DATE OF TRANSFER

REMITTANCE NO:



up
SBMY R 52016082302260095

AGENCY COPY	
NEFT / RTGS CHALLAN for Ad-HOC CAMPA	
Date : 22-08-2016	
Agency Name.	NMDC LIMITED DONIMALAI
Application No.	MIN68582014971
Location.	KARNATAKA
Address.	Donimalai Township, Dist. Bellary Pin: 5Bellary
Amount(in Rs)	127685030/-
Amount In Words : Twelve Crore Seventy-Six Lakh Eighty-Five Thousand and Thirty Rupees Only	
NEFT/RTGS to be made as per following details;	
Beneficiary Name:	KARNATAKA CAMPA
IFSC Code:	CORP0000633
Pay to Account No.	16073MIN68582014971
Bank Name & Address:	Corporation Bank FCS Bangalore 21/1, 3rd floor Jalika Towers Mission Road Bangalore -560027
• This Challan is strictly to be used for making payment to CAMPA by NEFT/RTGS only	

After making successful payment, User Agencies may :
Email: helpdeskampa@corpbank.co.in

Sl	Chq No	Chq Dt	Amount (IN)
1)	593223	23/08/2016	5,00,00,000.00
2)	443224	23/08/2016	5,00,00,000.00
3)	493225	23/08/2016	2,76,85,030.00
			<u>12,76,85,030.00</u>

SBMY R. 52016082302260095





No. J-11015/93/2018-IA.II (M)

Government of India

Ministry of Environment, Forest and Climate Change

Impact Assessment Division

Indira Paryavaran Bhavan,
Vayu Wing, 3rd Floor, Aliganj,
Jor Bagh Road, New Delhi-110 003

Dated: 10th December, 2018

To

M/s NMDC Limited,
10-3-311/A, Khanij Bhavan,
Castle Hills, Masab Tank,
Hyderabad - 500028

Sub: Kumaraswamy Iron Ore Mine (ML No: 1111, M.L. area 639.80 Ha, 7.0 MTPA ROM Iron ore production capacity) of M/s NMDC Limited, Tehsil Sandur, Ballari District, Karnataka (File No. J-11015/93/2018-IA. II(M) - reg.

Ref: Online proposal no. IA/KA/MIN/75088/2018

Sir,

The Proposal of M/s. NMDC Limited is for total excavation of 8.6 Million TPA of material [7.0 MTPA Iron Ore (ROM) & 1.6 MTPA waste] from Kumaraswamy Iron Ore Mine (Mining Lease Area 639.80 ha) and installation of 1800 TPH crushing and screening plant located at Villages Deogiri, Taluka- Sandur, District- Ballari Karnataka.

2. The Project Proponent submitted that the EC for the aforesaid project has already been issued vide Lr No J-11015/20/2002-IA. II(M) dated 29.10.2004 under EIA Notification 1994 for 7.0 Million TPA production of Iron Ore. The Ministry has notified S.O. 1530(E) on 06.04.2018 wherein inter-alia mentioned that the "Hon'ble Supreme Court vide judgment dated the 7th February, 2018 in Special Leave to Appeal (Civil) No. 32138 of 2015 in the matter of Goa Foundation versus M/s Sesa Sterlite Ltd., & Ors. has reiterated that the validity of the environmental clearance for mining projects granted under the EIA Notification, 1994 shall be five years" and due to this there are two category of the projects a)

mining projects, which were granted environmental clearance under the EIA Notification, 1994, and also granted environmental clearance for expansion / modernization / amendment under the EIA Notification, 2006; and b) mining projects, which were granted environmental clearance under the EIA Notification, 1994, and but not obtained environmental clearance for expansion / modernization / amendment under the EIA Notification, 2006. It has also mentioned in the above notification that "all mining projects mentioned in clause (b) of fourth paragraph above are required to obtain environmental clearance under the EIA Notification, 2006, in pursuance of the aforesaid judgments of the Hon'ble Supreme Court". Further, all the project proponent in all such cases involving validity of the environmental clearance and expansion of mining projects vis-à-vis the base production, shall make application within six months from the date of issue of this notification in Form-1 as given in Appendix-II of the EIA Notification, 2006, for grant of environmental clearance under the provisions of the EIA Notification, 2006, and all such applications shall be considered by the concerned Expert Appraisal Committee or the State Level Expert Appraisal Committee, as the case may be, who shall decide on the due diligence necessary including preparation of Environmental Impact Assessment Report and public consultation and the application shall be appraised accordingly for grant of environmental clearance.

3. As the Environmental Clearance has already been granted to PP vide Lr No J11015/20/2002-IA. II(M) dated 29.10.2004 under EIA Notification 1994, the PP has applied for getting environmental clearance under EIA Notification 2006. The PP applied online on 22.05.2018 and submitted Form-1, and PFR. As the information was not complete in all respect EDS was raised on 12.06.2018. The PP submitted the information on 26.07.2018 and the proposal was placed in EAC meeting held on 24.08.2018. The PP submitted that original mining lease deed was execution on 18.10.1972 for a period of 30 years w.e.f. 18.10.1972 to 17.10.2002. The 1st lease renewal order obtained on 04.04.2005 for further period of 20 years w.e.f. 18.10.2002 to 17.10.2022.

4. The PP submitted that the review & updation of Mining Plan with PMCP was approved vide LR NO 279/290/91/BNG/1765 dated 07.11.2016 for F.Y 2017-18 to 2021- 22. The PP submitted as per sketch prepared by the CEC the lease area is 639.8 Ha as against 647.5 Ha further the exploratory drilling was carried out and proved reserves were enhanced to 147.07 MT and due to this modification in the mining plan was carried out and same was approved vide LR No 279/290/91/BNG/1442 dated 07.07.2017.

5. The PP submitted that in the year 2011 the Central Empowered Committee (CEC) appointed by Hon'ble Supreme Court directed NMDC Limited to produce 1 MTPA per month i.e. 12 MTPA from both the mines in Karnataka viz. Donimalai &

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Kumaraswamy Iron Ore Mines and mining plan of both the mines were later fixed at 6 MTPA. Consequently, the annual capacity of Kumaraswamy Iron Ore mines was scaled up from 3.0 MTPA in 2012-13 to 6.0 MTPA in F.Y 2016-17. In the next year Departmental Ore Processing Plant with an annual capacity of 7 MTPA was commissioned. The CEC has permitted to produce only 1 MTPA by Departmental Ore Processing Plant and a proposal for increasing this threshold to 3 MTPA is pending with the CEC for approval. The CEC thereafter revised the maximum permissible annual production (MPAP) to 7 MTPA. The PP submitted that as the CEC and State Government approved the MPAP to 7 MTPA the modified mining plan has been prepared and approved by IBM vide LR dated 13.07.2018 for the period 2018-19 to 2021-22.

6. The PP submitted that the method of mining will be opencast mechanized with drilling & blasting. The production of Iron Ore is same at 7.0 MTPA (ROM) for which previous EC was granted under EIA Notification 1994. The PP submitted that as per CEC report dated 03.02.2012 the KIOM is Category 'A' mines. CEC gave its concurrence to R&R Plan prepared by ICFRE, Dehradun. The PP submitted the LR No.DMG/DDH/ML/2018-19 dated 26.06.2018 regarding past production details wherein the DMG certified the past production details from 2008-09 to 2017-18 based on H1 & F1 returns. The PP submitted that total mineable reserves as on 01.04.2018 are 162.64 million Tonne. The method of mining will be opencast fully mechanized. The ore to waste stripping ratio will be 1:0.22 and total waste generation shall be 35.19 Million Tonne. The waste generation during the plan period will be around 1.0 MTPA and at conceptual stage 1.6 MTPA. The expected life of the mine will be 23 years. The mine will be worked by forming the benches of 6 meter height and 12 meter width. The mining operation will be carried out in 3 shifts of 8 hrs each. The top and bottom bench RL will be 1078 and 964 respectively. The water requirement for the project shall be 400 KLD initially and which may be increase up to 600 KLD. The PP submitted that the total excavation from the mines shall be 8.6 MTPA [7.0 MTPA Iron Ore (ROM) and 1.6 MTPA waste]. PP submitted that there is no beneficiation is involved and only dry process is carried out for seizing of ore in crushers.

Details	Before CEC Survey (ha.)	After CEC Survey (ha)
Total Lease Area	647.50	639.80
Revenue Land	155.17	159.01
Forest Land	492.33	480.79
Break up of Forest Land as per FC Act 1980		
• Diverted under Section	324.70	321.78

2 (ii) of FC Act	167.63	159.01
• Un-diverted under FC Act		

- In compliance to MoEF&CC letter dated 1.04.2015, general approval obtained for remaining forest land of 159.01 Ha under section 2(iii) of FC Act, 1980 for payment of NPV charges of 12.76 Cr and payment has been made.
- Mining Plan for the reduced area of 639.80 ha has been prepared and approved by IBM for the period 2017-18 to 2021-22

The PP submitted that separate ToR for EIA Studies is not proposed due to following reasons:

- a) Permission by Hon'ble Supreme Court in August, 2011 to continue the iron ore production of 1 million tonne per month.
- b) There after approval of CEC for enhancing the permissible annual production level up to 7 MTPA as per EC limit.
- c) Monitoring of project done by RO, MOEFCC, Bangalore on 16/5/2017
- d) Mining plan approval for 7.0 MTPA RoM Iron Ore
- e) R&R Plan prepared by ICFRE and duly approved by CEC IS under implementation by project and being monitored by Monitoring Committee, Bangalore.

Based on the information submitted and discussion held the Committee deferred the proposal and sought the following requisite information:

- a) The Committee was of the view that record of payment of royalty is being maintained by Department of Mining & Geology of the Concerned State Government. Thus, the past production details since 1993-94 as per records of DMG, Karnataka needs to be submitted.
- b) The PP should submit a certificate from DMG clearly stating that Kumaraswamy Iron Ore Mine (KIOM) of M/s NMDC Ltd is not in violation of Hon'ble Supreme Court Order dated 02.08.2017 in W.P.(C) 114 of 2014 in the matter of Common Cause vs Union of India & Ors.
- c) The PP should clearly bring out the any change made in the mining plan submitted at the time of grant of provision EC under EIA 1994 and Mining plan now submitted in terms of a) Total Excavation, amount of mining to be mined, amount of waste to be handled, crushing capacity, installation of crusher and other equipment, mining machinery, blasting technology, land use pattern (conceptual stage), transportation of ore etc. so as to enable the committee to ascertain any increase in the pollution load.
- d) The PP has carried out dump mining during 2010-11 whether same was permitted as per previous EC granted and same was mentioned in the

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mining plan submitted to ministry while apprising the project for grant of EC under EIA 1994 notification.

- e) Location of the crusher and conveyor belt needs to be clearly brought out on surface plan. Whether the same is within the mining lease or outside mining lease. The number of the crusher with capacity to be installed as per previous EC, EIA/EMP and mining plan submitted to the Ministry for grant of EC under EIA 1994. What is the present status of the same and what will be the future proposal needs to be submitted.

M/s NMDC has submitted the following information vide letter dated 16.10.2018 as below:

- a) NMDC submitted the information as provided by Dy. Director, Department of Mines & Geology, Hosapete vide letter dated 18.9.2018 the details of royalty paid and quantity of iron ore sold (dispatch) during the year 1993-94 to 2011-12. For remaining years 2012-13 to 2017-18, NMDC submitted the details as provided by Monitoring Committee, Bangalore who is selling iron ore as per directives of Hon'ble Supreme Court.
- b) Kumaraswamy Iron Ore Mine (ML No: 1111) has not received any notice from office of DMG, Bangalore / Hosapete regarding any violation with respect to Hon'ble Supreme court order dated 2/8/2017 in W.P(C) 114 of 2014 in the matter of Common Cause Vs Union of India &ors. Kumaraswamy iron ore mine is located in Karnataka where all the mining operations are being monitored as per directives and under control of central empowered committee constituted by Hon'ble Supreme Court of India. Further, the Hon'ble Supreme Court of India vide judgement dated 5.8.2011 granted permission to NMDC iron ore mining projects Donimalai and Kumaraswamy to produce to the tune of one million ton per month till further orders. The Central empowered committee (constituted by Hon'ble Supreme Court), New Delhi also revised annual production capacity as 7.0 MTPA as per E.C limit on 23.3.2018.
- c) NMDC submitted that as per conceptual plan in the approved Mining Plan (approval date: 18.10.2002) submitted at the time of grant of previous E.C under 1994 is 350 Lakh ton per annum during 16th to 20th year which is 7.0MTPA whereas the capacity as per current Mining Plan approval is also 7.0MTPA. The waste excavation in previous mine plan period was varying from 0.08 MTPA (1st& 2nd year) to 1.652 MTPA (21st to 25th year) whereas current Mining Plan approval, it is 1.0 MTPA for 2018-19 and 2019-20 and 0.91 MTPA during 2020-21 and 0.89 MTPA during 2021-22. Hence, there is no increase in either ROM ore excavation or waste excavation and thereby there is no increase in

- pollution load. Other details in terms of crushing plant capacity, land use pattern, transportation of ore, etc. were also submitted.
- d) The low grade and sub-grade material excavated were stacked separately in temporary stockpiles within mining pit as there was no market for such subgrade/low grade ore. The dump working during 2010-11 refers to retrieval of the sub-grade/low grade material from such temporary stocks only. The same is also mentioned in approved mining plan pertaining to that period.
 - e) A Surface Plan clearly depicting crusher and conveyor has been submitted. As evident in Surface Plan, Crusher is within mining lease, however a portion of the conveyor area falls outside the lease area. It was mentioned in previous EC, EIA/EMP report and Mining Plan submitted to the Ministry for grant of EC under EIA 1994 that 7.0 Million tons per annum capacity crushing plant (average feed rate:1800 TPH) shall be installed. The crushing plant of 7.0 MTPA was constructed, commissioned and is under operation.

7. The proposal was placed in the EAC meeting held during 15th -16th November, 2018. The Committee noted that as per the notification dated 06.04.2018; the Project Proponent applied before 5th October 2018 and submitted the Form-1 and Pre-Feasibility Report. After due deliberation the committee noted that the **project proponent had carried out mining prior to 2004 without EC and hence would be covered under the ambit of the common cause judgement of the Hon'ble Supreme Court.** The committee instructed the project proponent to submit the undertaking by way of affidavit as required as per Ministry's O.M No 3-50/2017 -IA. II(M) dated 30.05.2018 to comply with all the statutory requirements and judgment of Hon'ble Supreme Court dated the 2nd August 2017 in Writ Petition (Civil) No. 114 of 2014 in the matter of Common Cause versus Union of India and Ors. The project proponent submitted the affidavit and after due deliberation the committee **recommended** the project.

8. The Committee noted that as per Notification dated 06.04.2018, the PP shall make an application within six months from the date of issue of this notification **in Form-1** of the EIA Notification, 2006, for grant of environmental clearance under the provisions of the EIA Notification, 2006, and all such applications shall be considered by the concerned Expert Appraisal Committee or the State Level Expert Appraisal Committee, as the case may be, who shall decide on the due diligence necessary including preparation of Environmental Impact Assessment Report and public consultation and the application shall be appraised accordingly for grant of environmental clearance. **In the instant case the Committee is of the view that as reported by the PP the public hearing has already been conducted for the same production capacity and the concerns of the general public have already been considered and the same is not required for this**

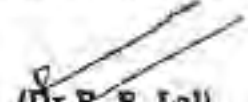
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instant project. The Committee therefore **recommended the proposal for applying in EC portal** with EIA/EMP Report with fresh baseline data as the data previously collected is more than 3 years old. The EIA/EMP Report (without PH) should inter-alia include the standard conditions of TOR and other information as mentioned above. The mine plan/scheme should be prepared in-line with observation of the Committee.

9. The matter was examined in the Ministry and the undersigned is directed to say that the Ministry of Environment Forest & Climate Change after accepting the recommendation of EAC, hereby request you to apply in Form-2 for grant of EC online along with above mentioned information and compliance of the Ministry's Office Memorandum No. F: 3-50/2017-IA.III (Pt.), dated 30.05.2018 on the judgment of Hon'ble Supreme Court, dated the 2nd August, 2017 in Writ Petition (Civil) No. 114 of 2014 in the matter of Common Cause versus Union of India needs to be submitted and included in the EIA/EMP Report.

10. This issues with the approval of Competent Authority.

Yours faithfully,

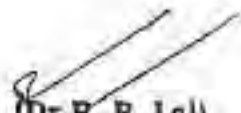

(Dr. R. B. Lal)

Additional Director/Scientist 'E'

Copy to:

- 1). The Secretary, Ministry of Mines, Government of India Shastri Bhawan, New Delhi.
- 2). The Secretary (Environment), Government of Karnataka, Multi Storeyed Building, Bangalore-560 001.
- 3). The Secretary, Department of Forests, Government of Karnataka, Bangalore-560003
- 4). The Secretary, Department of Mines and Geology, Government of Karnataka, Bangalore.
- 5). The Secretary, Department of Industries and Commerce (M-III), Govt Karnataka, Bangalore.
- 6). The Chairman, Karnataka State Pollution Control Board, No. 25, 6th - 9th Floor, Public Utility Building, M.G. Road, Bangalore - 560 001.
- 7). The Additional Principal Chief Conservator of Forests (C), Ministry of Environment, Forest and Climate Change, Regional Office (SZ), Kendriya Sadan, 4th Floor, E&F Wings, 17th Main Road, Karamangala II Block, Bangalore - 560034
- 8). The Chairman, Central Pollution Control Board, Parivesh Bhawan, CBD-Cum-Office Complex, East Arjun Nagar, New Delhi-110 032.

- 9). The Member Secretary, Karnataka State Pollution Control Board "Parisara Bhavan", #49, 4th & 5th Floor, Church Street, Bangalore-560001,
- 10). The Controller General, Indian Bureau of Mines, Indira Bhavan, Civil Lines, Nagpur- 440 001
- 11). The Chief Wildlife Warden, Govt. of Karnataka, Aranya Bhawan, 18th Cross, Malleswaram, Bangalore-560003
- 12). The District Collector, Ballari District, Government of Karnataka.
- 13). Guard File.


(Dr. R. B. Lal)

Additional Director/Scientist 'E'



(भारत सरकार का उद्यम / A Govt. of India Enterprise)

दोणिमलै लौह अयस्क खान / Donimalai Iron Ore Mine

Donimalai Township – 583 118, Dist.: Bellary, Karnataka.

Phones: 08395 – 274654 / 274618, Fax: 08395 – 274687 / 274654

 01:2015
 01:2015
 ISO 45001:2018
 SA 8000: 2014


NMDC/KIOM/WLCP/2020/22118

Date:24.08.2020

Pr. Chief Conservator of Forests /
 Chief Wildlife Warden, Karnataka Forest Department,
 Aranya Bhavan (2nd floor), 18th Cross,
 Malleshwaram, Bengaluru – 560 003.

Sub: Submission of Wildlife Conservation Plan by NMDC, Kumaraswamy Iron Ore Mine (ML No.1111, Area: 639.80 Ha) for approval – reg.

Respected Sir,

With reference to the above subject, the Kumaraswamy Iron Ore Mine (KIOM) (ML No.1111) of M/s. NMDC Limited is an existing Iron Ore mine located in Kammathuru village (Swamimalai Forest block) of Sandur Tehsil, Ballari District. The mining lease over an extent of 639.80 Ha. The KIOM is under process of regularization of Environmental Clearance under EIA,2006 Notification from EIA,1994 Notification. During the appraisal of EIA/EMP report by the members of EAC (NCM), MoEF&CC on 23/7/2020, the committee desired that in case of presence of any Schedule-I species, conservation plan needs to be prepared. In addition to this, Project proponent should submit the proof of submission of conservation plan to Chief Wildlife Warden. In this connection and on our request, DCF, Ballari vide letter no:M1/MNG/B/FF/2006-07 dated 13/4/2020 informed that as per approved schedule, the list of flora and fauna coming within the range of Ballari forest division is mentioned at page no: 551- 555 of working plan. According to the list, Seven Schedule-I faunal species (4 Mammals - Black buck, Panther, Sloth Bear, Indian Wolf and 2 Reptiles - Monitor lizard, Python and one Bird-Common peafowl have been reported) in Ballari Forest Division.

In view of the above, the Conservation Plan has been prepared for 7no.s schedule-I species with budget provision of **Rs.200 lakhs** on behalf of NMDC, Kumaraswamy Iron Ore Mine. The conservation plan is being submitted for kind perusal and approval of the same. Once the plan is approved, NMDC, Kumaraswamy Iron Ore Mine shall deposit the amount with Wildlife Department for implementation.

Thanking you,

Yours Sincerely,

General Manager
 Donimalai Complex

Encl: a/a

हिन्दी में यह व्यवहार को हम प्राथमिकता देते हैं । हिन्दी में यह व्यवहार का स्वागत है ।

पंजीकृत कार्यालय :10-3-311/ए खनिज भवन, कैसल हिल्स मासाब टैंक, हैदराबाद 500 173

Regd.Office:10-3-311/A, Khanij Bhavan, Castle Hills, Masab Tank, Hyderabad 500 173



एन एम डी सी लिमिटेड N M D C Limited
(भारत सरकार का उद्यम / A Govt. of India Enterprise)



ISO 9001:2015
ISO 14001:2015
ISO 45001:2018
SA 8000: 2014

दोणिमलै लौह अयस्क खान / Donimalai Iron Ore Mine
Donimalai Township – 583 118, Dist.: Bellary, Karnataka.
Phones: 08395 – 274654 / 274618, Fax: 08395 – 274687 / 274654

NMDC/KIOM/WLCP/2020/2586

Date:24.08.2020

Pr. Chief Conservator of Forests /
Chief Wildlife Warden, Karnataka Forest Department,
Aranya Bhavan (2nd floor), 18th Cross,
Malleshwaram, Bengaluru – 560 003.

Sub: Submission of Wildlife Conservation Plan by NMDC, Kumaraswamy Iron Ore Mine (ML No.1111, Area: 639.80 Ha) for approval – reg.

Respected Sir,

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Thanking you,



CC to: Deputy Conservator of Forest, Ballari Division, Ballari.

Encl: a/a

Yours Sincerely,

General Manager
Donimalai Complex

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Wildlife Conservation Plan for Kumaraswamy Iron Ore Mine of M/s NMDC Limited



**Kumaraswamy Iron Ore Mine
M/s NMDC Limited
Ballari (Dt.) - 583 118,
Karnataka**

August 2020

Prepared By
ecoMen

Ecomen Laboratories Pvt. Ltd.

Accredited by QCI/NABET Certificate No. NABET/EIA/1720/SA 95,

Valid up to September 20, 2020

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1.0 Introduction:

The Kumaraswamy Iron Ore Mine (KIOM) of M/s. NMDC Limited is an existing iron ore mine which is located in Kammathuru village of Sandur Tehsil, Ballari District of Karnataka State. The location map of KIOM showing on SOI toposheet is enclosed as **Plate no: 1**. The mining lease extends over 639.80 Ha under ML number 1111 in the Swamihalli Block Forest. The surface plan showing Mining Lease of KIOM is enclosed as **Plate no: 2**. The Kumaraswamy Mine is 30 km from Tornagallu Railway Station, 60 km from Ballari and 300km from Bangalore. The nearest Air Port is 22 km away at Vidyanagar (Tornagallu). The mining lease is covered under SOI Toposheet D43E12 (old 57 A/12) and bounded by Latitude between 15° 00' 00"N to 15° 01' 20"N and Longitude between 76° 33' 55"E to 76° 37' 10"E.

Kumaraswamy Iron Ore Mine (KIOM) was accorded Environmental Clearance under EIA Notification 1994 vide MOEFCC letter no. J-11015/20/2002-IA.II(M) dated 29.10.2004 for production of 7.0 MTPA of Iron Ore. Presently, the KIOM is producing 7.0 MTPA Run off Mine Ore per annum as per EC capacity. The Ministry has issued Gazette Notification S.O 1530 (E) on 06.04.2018 wherein it was mentioned that the projects proponents which obtained environment clearance for mining projects under EIA Notification 1994 are required to obtain Environmental Clearance under EIA notification 2006. Accordingly, NMDC, Kumaraswamy Iron Ore Mine has submitted application to MOEF&CC for obtaining Environmental Clearance for total excavation of 8.6 MTPA (ROM Iron ore 7.0 MTPA and Waste excavation 1.6 MTPA) and obtained Terms of Reference (TOR) vide letter no: J-11015/93/2018-IA.II(M) dated 10/12/2018 for preparation of EIA/EMP report with fresh baseline data (without Public consultation). The condition no: 21 (standard Terms of reference) for Mining Project is quoted below:

"PP shall submit list of schedule-1 species duly authenticated by concerned department. In case there is presence of Schedule-1 species than conservation plan needs to be prepared for the same. In addition to this PP should submit the proof of submission of conservation plan to chief wildlife warden"

With reference to above condition and as a part of EIA/EMP, the study of Flora & Fauna was undertaken by M/s Ecomen Laboratories Pvt. Ltd., Lucknow during March – May 2019 covering a study area of 10Km from KIOM ML boundary. The study area map is shown in **Plate no 3**. M/s. Ecomen Laboratory is accredited by QCI-NABET and the approved expert in Ecology & Biodiversity has been involved in the biological study. The biological study report (Flora & Fauna) was submitted to DCF, Ballari vide our letter no: NMDC/ DNM/ ENV/ KIOM/ EC/ 2019/2225 dated 11/10/2019 (**Annexure-1**) for obtaining certification / authentication of flora and fauna of the study area of KIOM. DCF, Ballari vide letter no: M1/MNG/B/FF/2006-07 dated 13/4/2020 informed that the working plan of Ballari Forest Division from 2013-14 to 2022-23 is approved as per the Central and State Government orders dated 9/12/2016 and 26/12/2016 respectively and as per said approved schedule, the list of flora

and fauna coming within the range of Ballari forest division is mentioned at page no: 551 to 555 and said list along with the letter is enclosed as **Annexure-2**. According to the list, Seven Schedule- 1 faunal species (4 Mammals - Black buck, Panther, Sloth Bear, Indian Wolf and 2 Reptiles - Monitor lizard, Python and one Bird-Common peafowl have been reported in Ballari Forest division.

While appraising the EIA/EMP report of Kumaraswamy Iron Ore Mine on 23/7/2020 (virtual VC) by Expert Appraisal Committee (Non-Coal Mining) of MoEF&CC, GoI, the committee desired that in case there is presence of Schedule-1 species then conservation plan needs to be prepared for the same. In addition to this, Project proponent should submit the proof of submission of conservation plan to Chief Wildlife Warden.

In view of the above, a site-specific conservation plan is prepared for the above seven faunal species by expert of M/s. Ecomen Laboratories (P) Ltd., Lucknow and is presented below.

2.0 Details of Schedule- I fauna

2(A) Indian Peafowl (*Pavo cristatus*)

Male Indian Peafowl, commonly known as the peacock, is one of the most recognizable birds in the world. These large, brightly colored birds have a distinctive crest and an unmistakable ornamental train.



When displaying to a female, the peacock erects this train into a spectacular fan, displaying the ocelli to their best advantage.

The more subtly colored female Peafowl is mostly brown above, with a white belly. Her ornamentation is limited to a prominent crest and green neck feathers. Though females (2.75-4.0 kg) weight nearly as much as the males (4.0-6.0 kg), they rarely exceed 1.0 meter in total body length.

i) Habitat and Behavior:

It is a bird of scrub-jungles and forest edges, showing affinity to moist and dry deciduous and semiarid biomes. It is also found in agriculture fields, along streams with good vegetation and close to human settlements. It stays on trees and also uses tall buildings where trees are scarce. It generally prefers a habitat mosaic of scrub and open areas, with adequate sites for 'dust bathing' and 'lekking', a phenomenon where males are known to congregate in open areas for displaying to attract females. Dust bathing is critical as this bird has to

condition its feathers and remove feather-degrading bacteria and other external parasites. It is likely that the availability of such habitats partly explains the relatively high abundance of this species in semi arid and flood plains.

ii) Diet:

Indian Peafowl do most of their foraging in the early morning and shortly before sunset. They retreat to the shade and security of the forest for the hottest portion of the day. Foods include grains, insects, small reptiles, small mammals, berries, wild figs, and some cultivated crops.

iii) Reproduction:

Indian Peafowl are polygamous. Males tend to be clumped together during the breeding season. They establish their breeding territories in close proximity to one another in a breeding arrangement known as a lek.

The precocial chicks are able to follow their mother nearly as soon as they hatch. The peahen leads them to appropriate feeding areas. The chick pecks at food items in imitation of their mother and are soon feeding themselves with little parental guidance.

iv) Conservation status:

The Indian Peafowl is listed as Least Concern species in the Red List of International Union for Conservation of Nature (Bird Life International 2008), probably owing to its widespread distribution, occurrence of locally abundant semi feral populations, and protection from people on religious grounds. In India, it is given the utmost protection by inclusion in the Schedule 1 of Indian Wildlife Act, 1972. Although the train feathers of the Indian Peafowl are traded for various reasons, it is not included on any Appendix of the Convention on International Trade of Endangered Species, perhaps on the claim that these feathers are naturally fallen ones, during annual molt of the species, and also that the scale of trade across international border is still to be understood.

v) Threats & Conservation Activities:

The Indian Peafowl is under threat from various quarters that includes the demand for feathers, wild meat, conflict with human, habitat degradation etc. The following needs to be studied and actions planned as needed:

- 1) Habitat and distribution status of the species across the country, inside and outside protected areas.
- 2) Times series analysis of habitat change to quantify the rate of change and identify high-risk areas and potential sites for further affirmative action
- 3) Estimation of population size by established count methods such as line transect call counts and roost counts
- 4) Intensive ecological investigations in representative sites in major biogeography zone with focus on the effects of threats in relation to breeding success and survival probability.

vi) Conservation Plan:

Following activities will be done to assist conservation of the species in the area:

- 1) Guards will be appointed as Watch and Ward.
- 2) Walkie-talkie will be provided to the watch and ward persons.
- 3) Awareness programs will be run with the help of experts
- 4) Strict vigil on trade of feathers.
- 5) Crating green belt and water harvesting structures so that it will increase its food in the natural habitat.

2(B) Indian Rock Python (*Python molurus*):

This is a non-venomous snake. The colour is dark brown and yellowish white in a blotched pattern. They are very good swimmers and take to water when disturbed, but on land, they hiss and remain motionless. The species is oviparous and lay up to 100 eggs in a clutch, protected and incubated by the female. Being exothermic, python basks in open but can also raise body temperature by muscular contractions.



i) Habitat:

Python occurs in wide range of habitats viz. rocky foot hills, grass lands, marshes, swamps, wood lands, open jungle besides rainforests, river valleys, woodlands, scrublands, grassy marshes, and semi rocky foothills. At times, they take refuge in mammal burrows, hollow trees etc. It has also been reported close to habitation and crop fields. They are usually found in habitats with areas that can provide sufficient cover. They are never found very far from water sources, and seem to prefer very damp terrain.

The snake feeds on mammals, birds and reptiles but prefers the first. Chital deer, fawns, hares, mouse deers, jungle fowl are natural food. It can swallow prey bigger than its size as the jaw bones are not hinged. The prey is constricted to death by muscular movement and swallows head first. Once held in Jaw prey cannot escape because of inward bent teeth.

ii) Physical Description:

Indian pythons are divided into two recognized subspecies, which can be distinguished by physical characteristics. Indian pythons, *P. molurus molurus*, stay smaller, reaching a maximum of about 6.4 m (21 ft) in length, and weighing as much as 91 kg (200 lbs.). The hides of both subspecies are marked

with a rectangular mosaic type pattern that runs the full length of the animal. *P. molurus bivittatus* is more darkly colored, with shades of brown and dark cream rectangles that lay over a black background. This subspecies is also characterized by an arrow-shaped marking present on the top of the head, which begins the pattern. *P. molurus molurus* has similar markings with light brown and tan rectangles placed over a typically cream background. *P. molurus molurus* only has a partial arrow-shaped marking on the top of the head. Each scale of *P. molurus molurus* is a single color.

Indian pythons are dimorphic with females of both subspecies being longer and heavier than males. Males have larger cloacal spurs, or vestigial limbs, than do females. The cloacal spurs are two projections, one on either side of the anal vent, that are thought to be extensions of posterior limbs.

iii) Reproduction:

Young Python *molurus* are precocial when they hatch. They become independent soon after hatching. Python *molurus* reaches sexual maturity between 2-3 years of age provided the proper body weight is met. At this time courting behavior may begin. During courtship, the male wraps his body around the female and repeatedly flicks his tongue across her head and body. Once they align their



cloacas, the male uses his vestigial legs to massage the female and stimulate her. Copulation ensues, with the female raising her tail to allow the male to insert one hemipenis (he has two) into the female's cloaca. This process lasts between 5-30 minutes. Approximately 3-4 months later, the female lay up to 100 eggs, each weighing as much as 207 g (7.3 oz). At this time the female generally coils around the eggs in preparation for an incubation period. Incubation lasts between 2-3 months.

iv) Key Reproductive Features:

During incubation female Python *molurus* use muscular contractions or "shivers" to raise their body temperatures slightly higher than the surrounding air temperature. It is very uncommon for a mother to leave the eggs during incubation. Once the eggs hatch, the young quickly become independent.

v) Behavior:

Python *molurus* is a solitary species. Mating is the only time that these snakes are commonly found in pairs. Indian pythons will generally move only when

food is scarce or when threatened. They may stalk prey, first locating it by scent or by sensing the body heat of the prey with their heat pits, and then following the trail. These snakes are primarily found on the ground, but will sometimes climb trees. Indian pythons are also very often found in or near water. They are expert swimmers, and can stay submerged without breathing for up to thirty minutes at a time. During colder months, starting in October and ending in February, Indian pythons stay hidden and will usually enter a brief period of hibernation until the temperature rises again.

vi) Communication and Perception:

Like all snakes, chemoreception is important for finding prey, and generally perceiving the environment. Python molurus also has heat sensing pits on its head that allow it to detect endothermic prey that are warmer than the surrounding environment. It has poor eyesight.

vii) Food Habits:

Python molurus is carnivorous. Its diet consists mostly of live prey. Its staples are rodents and other mammals. A small portion of its diet consists of birds, amphibians, and reptiles. When looking for food P. molurus will either stalk prey, ambush, or scavenge for carrion. These snakes have very poor eyesight. To compensate for this, the species has a highly developed sense of smell, and heat pits within each scale along the upper lip, which sense the warmth of nearby prey. Indian pythons kill prey by biting and constricting until the prey suffocates. Prey items are then swallowed whole. To accomplish the feat of swallowing the prey, P. molurus dislocates its jaw and stretches its highly elastic skin around the prey. This allows these snakes to swallow food items many times larger than their own heads. In cases of scavenging there is no constriction of the pr

viii) Ecosystem Roles:

Python molurus eats many rodents as well as a variety of vertebrates. It may be important in limiting populations of its prey.

ix) Threats:

The skin of Indian pythons is highly valued in the fashion industry due to its exotic look. In its native range it is also hunted as a source of food. There is a high amount of exportation for the pet trade.

Pythons are held endangered according to law. Many specimens are killed due to ignorance or out of fear when they enter habitation and capture goats or poultry. Python molurus is listed by IUCN as lower risk, near threatened.

x) Conservation Plan:

Conservation plan include educational materials, signs and instill pride amongst the locals as caretakers of the last populations of python in their habitation.

- Public awareness will be created
- Strict vigil will lead to reducing incidences of poaching and hunting

- Awareness will be created in local communities so as to not to harm the python and report any cases of poaching
- Effective communication network will be developed between local people, forest officers and conservation experts to reduce the risk of the human conflict with python, hunting and poaching activities.

2(C) Panther (*Pantherapardus*)

Panther are graceful and powerful big cats closely related to lions, tigers, and jaguars. They live in sub-Saharan Africa, northeast Africa, Central Asia, India, and China. However, many of their populations are endangered, especially outside of Africa. Size and weight ranges from head and body, 4.25 to 6.25 ft; tail, 3.5 to 4.5 ft and weight: 66 to 176 lbs respectively.

i) Habitat and Behavior:

On the Indian subcontinent, topographical barriers to the dispersal of this subspecies are the Indus River in the west, and the Himalayas in the north. In the east, the Ganges Delta and the lower course of the Brahmaputra River form natural barriers to the range of the Indochinese leopard. Indian leopard is distributed all over India, in Nepal, Bhutan and parts of Pakistan. Bangladesh has no viable leopard population but there are occasional sightings in the forests of Sylhet, Chittagong Hill Tracts and Cox's Bazar.

The Indian leopard inhabits tropical rain forests, dry deciduous forests, temperate forests and northern coniferous forests but does not occur in the mangrove forests of the Sundarbans.

Leopards are elusive, solitary, and largely nocturnal. They are on the top of the food chain in all the ecosystems it lives in. As such, it keeps populations of deer, wild boar, sambar and gaur in check.



They are known for their ability in climbing, and have been observed resting on tree branches during the day, dragging their kills up trees and hanging them there, and descending from trees headfirst. They are powerful swimmers, although are not as disposed to swimming as some other big cats, such as the tiger. They are very agile, and can run at over 58 kilometres per hour (36 mph), leap over 6 m (20 ft) horizontally, and jump up to 3 m (9.8 ft) vertically. They produce a number of vocalizations, including grunts, roars, growls, meows, and purrs.

ii) Diet:

The diet of Indian leopards includes axis deer, sambar deer, nilgai, wild pig, common langur, hare and peafowl. Although they are smaller than most other members of the genus *Panthera*, they are able to take large prey due to their massive skulls and powerful jaw muscles.

iii) Reproduction:

Female leopards can give birth at any time of the year. They usually have two grayish cubs with barely visible spots. The estrous cycle lasts about 46 days and the female usually is in heat for 6–7 days. Gestation lasts for 90 to 105 days. Cubs are usually born in a litter of 2–4 cubs. Mortality of cubs is estimated at 41–50% during the first year. Females give birth in a cave, crevice among boulders, hollow tree, or thicket to make a den. Cubs are born with closed eyes, which open four to nine days after birth.

iv) Conservation Status:

The Indian leopard (*Panthera pardus fusca*) is a leopard. Subspecies widely distributed on the Indian subcontinent. The species *Panthera pardus* is listed as Vulnerable on the IUCN Red List because populations have declined following habitat loss and fragmentation, poaching for the illegal trade of skins and body parts, and persecution due to conflict situations.

The Indian leopard is one of the big cats occurring on the Indian subcontinent, apart from the Asiatic lion, Bengal tiger, snow leopard and clouded leopard.

In 2014, a national census of leopards around tiger habitats was carried out in India except the northeast. 7,910 individuals were estimated in surveyed areas and a national total of 12,000-14,000 speculated.

v) Threats:

Hunting of Indian leopards for the illegal wildlife trade is the biggest threat to their survival. They are also threatened by loss of habitat and fragmentation of formerly connected populations, and various levels of human–leopard conflict in human–dominated landscapes.

vi) Poaching:

A significant immediate threat to wild leopard populations is the illegal trade in poached skins and body parts between India, Nepal and China. The governments of these countries have failed to implement adequate enforcement response, and wildlife crime remained a low priority in terms of political commitment and investment for years. There are well-organised gangs of professional poachers, who move from place to place and set up camp in vulnerable areas. Skins are rough-cured in the field and handed over to dealers, who send them for further treatment to Indian tanning centres. Buyers choose the skins from dealers or tanneries and smuggle them through a complex interlinking network to markets outside India, mainly in China. Seized skins

in Kathmandu confirm the city's role as a key staging point for illegal skins smuggled from India bound for Tibet and China.

It is likely that seizures represent a tiny fraction of the total illegal trade, with the majority of smuggled skins reaching their intended end market.

vii) Human–Leopard Conflict:

Expansion of agriculturally used land, encroachment of humans and their livestock into protected areas are main factors contributing to habitat loss and decrease of wild prey. As a result, leopards approach human settlements, where they are tempted to prey on dogs, pigs and goats — domestic livestock, which constitutes an important part of their diet, if they live on the periphery of human habitations. Human–leopard conflict situations ensue, and have increased in recent years. In retaliation for attacks on livestock, leopards are shot, poisoned and trapped in snares. The leopards are considered to be unwanted trespassers by villagers. Conservationists criticize these actions, claiming that people are encroaching on the leopard's native habitat. India's Forest Department is entitled to set up traps only in cases of a leopard having attacked humans. If only the presence of a crowd of people prevents the leopard from escaping, then the crowd has to be dispersed and the animal allowed escaping.

As urban areas expanded, the natural habitats of leopards shrunk resulting in leopards venturing into urbanized areas due to easy access of domestic food sources.

viii) Hunting Skills:

The leopard is so strong and comfortable in trees that it often hauls its kills into the branches. By dragging the bodies of large animals aloft it hopes to keep them safe from scavengers such as hyenas. Leopards can also hunt from trees, where their spotted coats allow them to blend with the leaves until they spring with a deadly pounce. These nocturnal predators also stalk antelope, deer, and pigs by stealthy movements in the tall grass. When human settlements are present, leopards often attack dogs and, occasionally, people. Leopards are strong swimmers and very much at home in the water, where they sometimes eat fish or crabs.

ix) Leopard Spots:

Most leopards are light colored with distinctive dark spots that are called rosettes, because they resemble the shape of a rose. Black leopards, which appear to be almost solid in color because their spots are hard to distinguish, are commonly called black panthers.

x) Conservation:

Since the majority of Leopard range is outside of protected areas, conflict mitigation strategies such as livestock husbandry, compensation/insurance

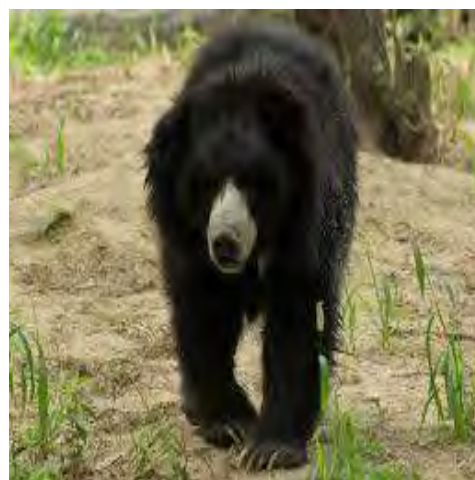
programmes and public awareness have all been used to assist farmers and increasing tolerance for living with leopards.

The MoEFCC has issued Guidelines for dealing with Man-leopard Conflict, through its Press Note. The guidelines suggest a three-pronged strategy to deal with man-leopard conflict as a means to their conservation:

1. Awareness generation among local communities, media and officials of various departments.
2. Established trained teams at two levels; the primary response team and the emergency response team, and
3. Use of latest technology and scientific know-how to improve efficacy of capture, handling, care and translocation of animal.
4. Implement programs like Assam Leopard Conservation information facility (ACLIF) for mitigating human-leopard conflict.
5. Follow MoEFCC guidelines to deal with man- leopard conflict.
6. Livestock sheds in the villages should be strong, robust and leopard proof.
7. Guards will be appointed as watch and ward.
8. Stop habitat conservations in known leopard habitats.

2 (D) Sloth bear (*Melursus ursinus*)

The sloth bear (*Melursus ursinus*), also known as the Stickney bear or Labiated bear is a nocturnal insectivorous bear species found wild within the Indian Subcontinent. The sloth bear evolved from ancestral brown bears during the Pleistocene and shares features found in insect eating mammals through convergent evolution. Unlike brown and black bears, sloth bears have lankier builds, long, shaggy coats that form a mane around the face, long, sickle shaped claws, and a specially adapted lower lip and palate used for sucking insects. Sloth bears breed during spring and early summer and give birth near the beginning of winter. They feed on termites, honeybee colonies, and fruits. Sloth bears sometimes attack humans who encroach on their territories. Historically, humans have drastically reduced their habitat and diminished their population by hunting them for food and products such as their bacula and claws. These bears have been used as performing pets due to their tameable nature.



i) Habitat and Behavior:

Sloth Bears once ranged throughout all the forests of India. Unfortunately, due to habitat loss the cubs are being poached and traded for illegal use as 'Dancing' Bears. Sloth bears live in a variety of dry and wet forests, and also in some grass lands, where boulders and scattered shrubs and trees provide shelter.

Adult sloth bears may travel in pairs, with the males being gentle with cubs. They may fight for food. They walk in a slow, shambling motion, with their feet being set down in a noisy, flapping motion. They are capable of galloping faster than running humans. Although they appear slow and clumsy, sloth bears are excellent climbers, including cubs. They climb to feed and rest, though not to escape enemies, as they prefer to stand their ground. Sloth bear mothers carry cubs up to 9 months old on their backs instead of sending their cubs up trees as the primary defense against attacks by predators, such as tigers, leopards, and other bears. They are capable of climbing on smooth surfaces and hanging upside down like sloths. They are good swimmers, and primarily enter water to play. To mark their territories, sloth bears will scrape trees with their forepaws, and rub against them with their flanks. Sloth bears have a great vocal range. Sounds such as barks, screams, grunts, roars, snarls, whickers, woofs, and yelps are made when angered, threatening, or when fighting. When hurt or afraid, they shriek, yowl, or whimper. Sounds such as gurgling or humming are made by bears resting or sucking their paws. Sows will emit crooning sounds to their cubs. The species is the most vociferous when mating, and make loud, melodious calls when doing so. Sloth bears do not hibernate. They make their day beds out of broken branches in trees, and rest in caves during the wet season.

ii) Diet:

Sloth bears are expert hunters of termites, which they locate by smell. On arriving at a mound, they scrape at the structure with their claws till they reach the large combs at the bottom of the galleries, and will disperse the soil with violent puffs. The termites are then sucked up through the muzzle, producing a sucking sound which can be heard 180 m away. Their sense of smell is strong enough to detect grubs three feet below ground. Unlike other bears, they do not congregate in feeding groups. They rarely prey on other mammals. Sloth bears may supplement their diet with fruit and plant matter; in March and April, they eat the fallen petals of mowha trees and are partial to mangoes, sugar cane, the pods of the golden shower tree and the fruit of the jack tree. Sloth bears are extremely fond of honey. When feeding their cubs, sows are reported to regurgitate a mixture of half-digested jack fruit, wood apples, and pieces of honeycomb. This sticky substance hardens into dark yellow, circular, bread like mass which is fed to the cubs. This "bear's bread" is considered a delicacy by some of India's natives.

iii) Reproduction:

The breeding season for sloth bears varies according to location: in India, they mate in April, May, and June, and give birth in December and early January. Sows gestate for 210 days, and typically give birth in caves or in shelters under boulders. Litters usually consist of one or two cubs, or rarely three. Cubs are born blind, and open their eyes after four weeks. Sloth bear cubs develop quickly compared to most other bear species: they will start walking a month after birth, become independent at 24–36 months, and become sexually

mature at the age of three years. Young cubs will ride on their mother's back when she walks, runs, or climbs trees until they reach a third of her size. Individual riding positions are maintained by cubs through fighting. Intervals between litters can last two to three years.

iv) Conservation Status:

IUCN estimates that less than 20,000 sloth bears survive in the wilds of the Indian subcontinent and Sri Lanka. The sloth bear is listed in Schedule I of the Indian Wildlife Protection Act, 1972, which provides for legal protection of sloth bears. International trade of the sloth bear is prohibited as it is listed in Appendix I of the Convention on International Trade in Endangered Species. To address the human bear conflict, people may be educated about the conservation ethics, particularly among locals. To resolve this conflict, the basic issue of deteriorating habitat, which is the reason for the conflict between people and bears, improvements through government or community based reforestation programmes, may be promoted. The population of sloth bears grows when they live in high profile reserves that protect species, such as tigers and elephants. Directly managed reserves could conserve the sloth bear and hence such reserves must be supported.

v) Threats and Conservation Activities:

There are many threats of Sloth Bear. Bengal tigers will occasionally prey on sloth bears. Indian leopards can also be a threat, as they are able to follow sloth bears up trees. Dhole packs may attack sloth bears, though they are not a usual prey item. Asian elephants apparently do not tolerate sloth bears in their vicinity.

The government of India has banned use of sloth bears for entertainment, and a 'Sloth Bear Welfare Project' in the country has the objective of putting an end to the use of sloth bears for entertainment. However, their number in such activity is still large. Many organizations are helping in the conservation and preservation of sloth bears in safe places.

There are two major bear sanctuaries in Karnataka for conservation of sloth bears:

1. Daroji bear sanctuary, Karnataka
2. Gudekote bear sanctuary (created recently), in Karnataka

vi) Conservation Measures:

1. Strict protection to Daroji and Gudikote bear sanctuaries that are known to harbor bear population.
2. Because the sloth bear is the umbrella species in the region, its habitats could be enriched by planting of native tree species (fruit-bearing or otherwise), which can serve as hiding, cover of food resource.
3. Moisture content of the soil is to be maintained within a range that facilitates nesting by termites (Wood 1988).

4. Long term monitoring of the population and emphasizes mitigation of human-bear conflict.
5. Creating awareness for protecting sloth bear.
6. Planting of fruit trees more particularly the spp. of Ficus.
7. Promoting native flower plant species that attracts honey bees in the area. This will improve availability of honey in the area.
8. Guards will be appointed as Watch and ward.
9. Walkie-talkie sets will be provided to the watch and ward.
10. Identifying critical habitats and corridors used by bears, especially those outside protected areas for vigil and monitoring.

2 (E) Monitor Lizard (*Varnus monitor*)

Monitor lizard differs greatly from other lizards in several ways, possessing a relatively high metabolic rate for reptiles, and several adaptations that benefit the hunting of live prey.

Morphological details of Indian Monitor Lizard are generally large reptiles, although some can be 20 cm in length.

They have long necks, powerful tails and claws. Indian monitor lizard is carnivorous. They are oviparous, laying from seven to thirty-seven eggs, which they often cover with soil or protect in a hollow tree stump.



i) Habitat and Behavior:

This large semi-aquatic lizard is found across south and Southeast Asia, including India and the Andaman and Nicobar Islands. The Andaman water monitor is found in not only in the Andaman Islands, but also in the southern Nicobar Islands.

Call hissing when threatened and sneezing like sound. Their primary method of communication is via their movement and their posture.

ii) Diet:

Predominantly carnivorous diet, eating eggs, smaller reptiles, birds and small mammals.

iii) Reproduction:

Regressed Phase (September - October), Recrudescent Phase (April - June), Post ovulatory Phase (June & July).

iv) Conservation status:

According to IUCN Red List of threatened species, most of the monitor lizards' species fall in the categories of least concern, but the population is decreasing globally. All but five species of monitor lizards are classified by the Convention

on International Trade in Endangered Species of Wild Fauna and Flora under Appendix II, which is loosely defined as species that are not necessarily threatened with extinction, but may become so unless trade in such species is subject to strict regulation to avoid use incompatible with the survival of the species in the wild.

The yellow monitor, *V. flavescens*, is protected in all range countries except Bhutan, Nepal, India, Pakistan, and Bangladesh.

In Tamil Nadu and all other parts of South India, catching or killing of monitor lizards is banned under the Protected Species Act.

v) Threats

Man has extensively exploited lizards including monitor lizards for food and his social needs. In India Monitor Lizards are eaten and they are also as source of leather. Live monitors are used in India in fertility rites, or serpent festivals. Over hunting combined with the problem of habitat loss, has resulted these species being pushed to endangered status. The greatest threat to lizard population is permanent habitat alteration or destruction, especially in complex and poorly understood regions of tropic and sub-tropics.

vi) Conservation Activities:

All monitors were reported diurnal, reaching their full activity level when the sun was up and their habitat has warmed up. The plains and the desert monitors use their claws as tools to dig out dens. All monitors feed on other animals, the smaller species prey on insects, small lizard and the nesting of small mammals. Monitors reported to have a very special preference for eggs.

These are reported to be facing threat due to human activity. These animals were still hunted for illegal export of skin through border counties like Bangladesh, Nepal, and Pakistan. They were also extensively used with the country to make musical instruments, extract oil for medicines for body ailments and meat for food. In some places, they were killed assuming them to be poisonous.

vii) Other Habits: Well adapted to their environment and well camouflaged.

viii) Scientific details: Varanus monitor from family varanidae.

ix) Distribution of the animal in the project area:

During field survey, monitor lizard was observed mainly in the Buffer area but not in core zone.

Following activities will be done to assist conversation of the species in the area:

1. Surveys of poorly known species to assess distribution in the area
2. Identification and Protection of critical habitats
3. Strict vigil to prevent illegal hunting and trade
4. Awareness programs to revive support for monitor lizard conservation
5. Training and awareness programs and Watch and Ward

2 (F) Black Buck (*Antelope cervicapra*):

The Blackbuck (*Antelope cervicapra*), also known as the Indian antelope, is an antelope found in India and Nepal. The blackbuck is the sole extant member of the genus *Antelope*. The antelope is native to and found mainly in India, while it is extinct in Bangladesh and Pakistan. The Blackbuck (*Antelope cervicapra*) is a Schedule- I of the Wildlife Protection Act of 1972 and is an integral part of Indian culture, religion and mythology for centuries. Blackbuck is well recognized for its ecological and aesthetical values.

i) Habitat and Behavior:

Blackbuck is the handsome of all- Asiatic Antelopes and members of Bovidae family. It's preference the open country and its punchant for crop raiding brought it in direct contact and conflict with human. Blackbucks are gregarious and social animals with herds generally ranging from 5 to 50 animals. The species inhabits open grassland, dry thorn scrub, scrubland and lightly-wooded country as well as agricultural margins. Blackbuck is grazers, they feed on short grass and various cultivated cereals and millets. They eat the leguminous tree species like *Acacia* species, *Ziziphus* species and *Capparis* species etc. The fruits of *Prosopis juliflora* are often eaten, and blackbuck may play a role in their dispersal. *Prosopis* pods become a significant food item if grasses are scarce.

ii) Diet:

Gap plantation can be done in the areas which lack natural regeneration in consultation with Forest Department. Planting suitable fodder species. The Blackbuck has been noticed to pick- up the highly nutritious suitable green or dried pods like as *Acacia* species and grass vegetation. The species suggested for gap plantation as part of habitat improvement are *Acacia nilotica* (Babool), *Prosopis cineraria* (Khejri), *Carissa spinarum* (Karonda), *Grewia tenax* (Phalsa Cherry/ Gondni), *Ziziphus xylopyrus* (Jungle ber), *Ziziphus nummularia* (Chotaber).

iii) Reproduction:

The blackbucks mate all year round while the peak of rutting season is March-April and August-October. After gestation period of 6 months, the female gives birth to a single baby. The baby blackbuck is able to run shortly after birth.

iv) Conservation Status:

Indian Blackbuck (*Antilope cervicapra*) is an antelope and is the only living species of the genus *Antilope*. Hunting of blackbuck is prohibited under



Schedule I of the Wildlife Protection Act of 1972. It has been categorised least concerned in IUCN Red Data Book. According to the PETA, blackbucks are an "extremely vulnerable species" and on the "endangered" list in India.

v) Threat and conservation Activities:

During the 20th century, blackbuck numbers declined sharply due to excessive hunting, deforestation and habitat degradation. Some blackbucks are killed illegally especially where the species is sympatric with nilagi.

Until India's independence in 1947, blackbuck and chinkara were hunted in many princely states with specially trained captive Asiatic cheetahs. By the 1970s, blackbuck was locally extinct in several areas. The total blackbuck population, estimated at 80,000 in 1947, was down to 8,000 by 1964, but it has since recovered to 25,000 in protected areas.

The blackbuck is listed under Appendix III of CITES. In India, hunting of blackbuck is prohibited under Schedule I of the Wildlife Protection Act of 1972. It inhabits several protected areas of India. The following needs to be studied and actions planned as needed:

1. Habitat and distribution status of the species across the country, inside and outside protected areas.
2. Times series analysis of habitat change to quantify the rate of change and identify high-risk areas and potential sites for further affirmative action
3. Estimation of population size by established count methods such as line transect call counts and roost counts
4. Intensive ecological investigations in representative sites in major biogeography zone with focus on the effects of threats in relation to breeding success and survival probability.

2 (G) Indian Wolf (*Canis lupus pallipes*):

The Indian wolf (*Canis lupus pallipes*) is a subspecies of grey wolf that ranges from Southwest Asia to the Indian Subcontinent. It is intermediate in size between the Himalayan wolf and the Arabian wolf, and lacks the former's luxuriant winter coat due to it living in warmer conditions. Within this subspecies, the "Indian plains wolf" is genetically basal to all other extant *Canis lupus* apart from the older-lineage Himalayan wolf, with both proposed as separate species. The Indian wolf travels in smaller packs and is less



vocal than other variants of the grey wolf and has a reputation for being cunning.

i) Habitat and Behavior:

The Indian wolf is similar in structure to the European wolf, but is smaller, more slightly built, and has shorter fur with little to no under fur. Like the Arabian wolf, it has short, thin fur in summer, though the hair on the back remains long even in summer, an adaptation thought to be against solar radiation. The fur is generally greyish-red to reddish-white with grey tones. The hairs are grizzled with black, particularly on the back, which sports a dark V-shaped patch around the shoulders. The limbs are paler than the body, and the under parts are almost completely white. Pups are born sooty-brown, with a milk-white patch on the chest that fades with age. Black specimens are rare, but have been recorded in India's Solapur district and two regions of Iran. In the latter country, the mutation was found to be naturally occurring, unlike in North American grey wolves, which have inherited the allele responsible for melanism from past interbreeding with dogs.

Their habit are similar to those of other grey wolf subspecies, though the Indian wolf generally lives in smaller packs rarely exceeding 6-8 individuals, and is relatively less vocal, having rarely been known to howl. Indian wolf vocalization includes howls, howl-barks, whimper, social squeals, and whines with howls an average fundamental frequency of 422 Hz and whines 906 Hz. The range of the Indian wolf overlaps with the golden jackal, sloth bear, leopard, brown bear, Asiatic lion and tiger.

ii) Diet:

It typically preys on antelopes, rodents, and hares. It usually hunts in pairs when targeting antelopes, with one wolf acting as a decoy while the other attacks from behind.

iii) Reproduction:

It tends to breed from mid-October to late December, and whelp in holes or ravines

iv) Conservation Status:

The Indian grey wolf is endangered and its population is estimated at 2,000-3,000. The wolf in India are accorded schedule '1' endangered species status under the Indian Wildlife Protection Act of 1972 and of CITES, and in last few decades federal efforts were initiated for wolf protection and conservation by setting up wildlife preserves in the country and captive breeding programs in few National Zoological Parks.

v) Threat and conservation Activities:

The highest level of protection accorded to the wolves in India, hunting remains rampant and is a major cause of concern. Killing of adult wolves and pups by local shepherders is common throughout the range of the wolf. Conflict with

humans for livestock depredation, depletion of prey species (like blackbuck, hare) due to livestock, exaggerated public fear regarding their danger, and fragmented habitats that are too small for populations with long-term viability are threatening their survival today.

The following needs to be studied and actions planned as needed:

- 1) Habitat and distribution status of the species across the country, inside and outside protected areas.
- 2) Times series analysis of habitat change to quantify the rate of change and identify high-risk areas and potential sites for further affirmative action
- 3) Estimation of population size by established count methods such as line transect call counts and roost counts
- 4) Intensive ecological investigations in representative sites in major biogeography zone with focus on the effects of threats in relation to breeding success and survival probability.

3.0 Conservation Plan:

i) Habitat Loss & Plantation:

The project proponent has already proposed to develop 10 Ha as Bio diversity conservation area in the Northern part of the lease (**Plate no 4**) into green cover with tall trees, followed by bush and shrubs and restrict the area from the approach of human, vehicles and poachers as a habitat. This will help peafowl and others to build their habitat and not get disturbed.

Apart from this 161.4 ha is earmarked for green belt/afforestation over non mineralized zone within ML area. Out of this 58.7 ha area is covered with 1,99,000 plants till 2018-19. Balance area will be covered under plantation by 2027-28. Similarly, out of 14.03 ha of Safety zone area, plantation under 6.0 ha has already been completed with 15000 samplings and in the balance area gap plantation shall be done (as the area is already covered with natural plantation). Hence at the end of life of mine, an area of 421.86 ha out of mining lease area of 639 80 ha shall be covered with plantation of 10,54,650 saplings. The progressive reclamation and afforestation plan of KIOM is enclosed as **Plate no-4**. The photographs of plantation carried out in the KIOM lease area is enclosed as **Plate no 5**.

Emphasis is given on local and native species and the species which are tolerant to pollution such as Albizialebeck, Azadiractaindica, Cassia fistula, Dalbergialatifolia, Dalburgiasisso, Ficus benglensis, Ficus religiosa, Annona squamosa, Syzygiumcumini, Terminalia arjuna, Pongamiapinnata, Phylanthusemblica, Terminalia bellarica, Pithacalobiumdulsii.

Survival rate of 80 to 85% is ensured. Post plantation care for minimum of 3 years which includes watch and ward for maintenance of saplings, casual replacement, weeding, manuring, fertigation, watering, earthing up pulverizing of soil, making of fire line, application of bio fertilizers, etc. shall be taken.

ii) Management plan for Fauna

The habitat management in and around the mine lease with site specific species will enable colonization of floral and faunal communities. Following are the suggestions, made to encourage the native fauna conservations in the mine rehabilitation program.

- 1) A dense greenbelt consisting of herbs, shrubs and trees of different species around the mine lease area and also the haul roads will not only act as a dust and noise barrier, but also improve the habitat conditions.
- 2) Suitable landscape based ecological restoration by planting shrubs, grasses and herbs to attract Herpetofauna assemblage and improve long term habitat connectivity.
- 3) Planting of fruits yielding and shelter providing species will attract birds and insects.
- 4) Awareness programmes amongst the local people as well as mining staff regarding the importance of wildlife, their habits and habitats should be organized.
- 5) The water stored in the engineering structures in the mine lease area will act as a water hole for the wildlife present in the region.
- 6) Adequate care may be taken during rainy season to reduce the sediment load and water quality to protect the aquatic faunal diversity in the water bodies around the ML.
- 7) Many faunal groups will quickly colonize in areas which contain resources they require such as food, shelter and breeding sites in many cases the main aim in a "Fauna Return Strategy" should be the re-establishment of the native vegetation. If this is successful, the fauna should colonize from surrounding areas.
- 8) Fauna may be slow to return where species require resources which are not available in young rehabilitation. The return of these species can be expedited by creating fauna habitats and corridors during rehabilitation using logs, stumps and other natural materials. Faunal corridors running from the surrounding areas to the center of the rehabilitated areas encourage smaller species of mammals and reptiles, which are reluctant to traverse long distances of open ground, to colonize.
- 9) Animals, particularly invertebrate species, are important in many ecological processes such as nutrient cycling, litter decomposition, soil aeration, seed dispersal, seed predation and pollination. Invertebrates also form part of the diet of a wide range of species from other fauna groups. The rate of re-colonization by fauna is influenced by a range of factors including the size of the rehabilitated area, the fauna populations in surrounding areas and the success of the re-vegetation programme.
- 10) The proposed rock fill dams and check dams to be constructed in the mine lease areas to prevent the soil erosion, store sufficient quantity of

filtered water in the area and to act as water holes for the faunal as well as other wild lives present in the region.

- 11) The loss of vegetation covers due to construction of haul roads and heavy vehicular movements will restrict the animal movements to the adjoining areas. All the mining and transportation operations after the sunset should be stopped.
- 12) Fire plays hazardous role in the destruction of habitat. It is suggested that lessee should take keen interest to protect the forests from fire. It is suggested that the lessee should take preventive measures in rehabilitated mined area. It is also suggested that fire preventing squad should be formed to fight the fire Training should be imparted to the squad members through the state forest department.

iii) Creation of habitat for Avifauna

Fruit, fodder and shelter providing trees such as *Alangium salvifolium*, *Annona squamosa*, *Bombax ceiba*, *Erythrina suberosa*, *Syzygium culmini*, *Ficus benghalensis*, *Ficus racemosa*, *Ficus religiosa*, *Madhuca longifolia*, wild *Mangifera indica*, *Muntingia calabura* and *Ziziphus mauritiana* may be planted to attract birds as well as other wildlife.

iv) Poaching:

Project proponent will take necessary action to protect the anti fauna activities, especially peafowl & panther from poaching. Awareness and regular monitoring shall be done to prevent this. Night watchers shall be appointed.

v) Water body / Bird bath:

The project proponent has constructed several engineering structures like Brushwood Check Dam, Logwood Check Dams, Loose Boulder Check Dam (LB CD), Wire crate (gabion) Check Dam (GCD), Stone Masonry Check Dam (SMCD), Rain Water Harvesting Pit (RWHP), Silt Settling Tank (SST) & Earthen Check dams (with Stone Pitching) as per the recommendations of ICFRE given in the R&R Plan of KIOM approved by Central Empowered Committee (CEC). The progress of R&R works carried out at KIOM is enclosed as **Annexure- 3**. The above structures help in storing water and act as water holes for fauna.

The proposed rock fill dams and check dams in the mine lease areas will prevent the soil erosion, store sufficient quantity of filtered water in the area and act as water holes for the faunal as well as other wild lives present in the region.

Birds cool themselves in summer by flapping their wings in water and bathing by dipping their heads. The bird baths shall be created at convenient points. These will be 60 cm deep and slanting to merge at ground level on one side. The dimensions are 3m x 3m and lined with HDPE and sides covered with boulders and soil. The HDPE sheets are further anchored by driving iron pegs in eyes, on the border. Clear water is filled everyday in this and all leaves and debris removed and Potassium Permanganate (KMnO₄) solution shall be added

to oxidize any organic matter and bacteria. Care shall be taken to see that the bath receives good sunlight. Perching trees, shrubbery and other local variety shall be planted in a grove at a distance of 5m. Direct and indirect evidences of utilization of waterholes by wild animals will be monitored. particularly in the dry season. Waterholes shared by wildlife and cattle in the fringe should be continuously monitored for water quality to prevent chances of spreading of any disease.

vi) Noise / light pollution control:

Proper machine maintenance, air silencers to modulate noise, synchronized blasting in different mines and tree belt are effective means to act as acoustic barriers. Dispersion of light shall be minimized by covering upper half of headlight with black paint, orienting all overhead light towards mine pits, allowing light only to the required area by proper shades etc. Low Mast Streetlight shall be installed by the side of haul road for less dispersion of light during night hours. Blasting shall be controlled in nature at the mine. Vehicle movement shall be avoided to the extent possible from the plantation zone.

vii) Fire control:

In addition to whole time Van Sahayaks, who will patrol the area, villagers of nearby villages will be provided proper incentives to prevent fire. Each village shall be given an incentive of Rs.20,000/- to take proactive steps in creation and maintenance of outer fire line, be vigilant during fire season and attend at once to extinguish any accidental fire. The incentive shall be released only after the fire season is over and job entrusted shall be achieved.

Fire-prone areas, primarily grasslands comprising tall grass areas, are protected with various strategies including clearing fire lines, engaging fire gangs and practicing participatory fire management. Fire lines are used to prevent natural or man-made fires from spreading out of control. Controlled pre-burning of small areas in patches also helps to minimize the risk of fires spreading. However, the recent trend to leave a few meters of grassland in between the fire-line and the forest periphery is a very positive approach which will be taken to promote regeneration of trees and thereby expansion of tree cover, slowly and steadily into adjoining grassland.

viii) Fuel wood

There is no habitation found near the biodiversity site. The project employees do not depend on forest for firewood. Project has provided facilities such as electricity connections at discounted rates. The employees have been provided with gas connections. Canteen facilities are available in the Mines where food is served at subsidized rates. Contract labour are provided food coupons.

In order to reduce the pressure on nearby forest for need of firewood by the people, Pradhan Mantri Ujjwala Yojana is being implemented by Government under which LPG connections are given to an adult woman of a BPL family.

ix) Grazing

Grasslands are the prime habitats of herbivores. In order to maintain the existing grasslands and to increase the forage. To promote herbivores all efforts will be taken like removal of weeds, etc from Mining Lease area.

x) Awareness:

A small booklet containing details on the biodiversity components (Plants, few birds and butterflies etc.) of the area along with color photographs shall be published for distribution to school and college students to create awareness in them on biodiversity and its importance.

Undertaking outreach activities to sensitize local communities, which may be carried out by a network of students/clubs community shall be encouraged. Local youth in different schools shall be sensitized on forest and wildlife conservation and their role in curbing the degrading factors. Emphasis shall be laid on fire conservancy and self-protection.

Conservation of soil, water, flora and fauna will be possible only when the villagers of nearby area understand their duties and responsibilities well. Sensitization seminars shall be done during Van Mahotsava and wildlife week every year when local leaders, Forest and Revenue officials shall be invited to deliberate on the prevailing scenario and to develop the environment to near natural condition. Villagers shall be encouraged to open up and speak their minds. At such functions, suitable rewards shall be given to members of public/workers taking keen interest in the conservation.

xi) Control of vehicle speed:

The speed of vehicle, in no case, shall exceed 25 km/hr. The drivers are advised to maintain a gap of at least 50m between the vehicles to allow dust to settle and to break noise. Fitness of each vehicle shall be examined periodically.

xii) Habitat management

Each of these habitat types demands individually unique management strategies to maintain their viability and species richness. These include species-specific management interventions, keeping in mind the habitat requirements of various endangered and endemic species.

For carnivores the major prey species are sambar, gaur and wild boar. Prime habitats of these species are grasslands of hill top, grasslands of hill slope. Fire, invasive weeds such as Lantana camara, Eupatorium odoratum, etc will be major threat for habitation.

To conserve habitat all necessary precautions, need to be taken like training to the all patrolling staff, putting the posters in all necessary places as how to behave, taking precautions etc.

xiii) Monitoring and evaluation:

The plantation raised, their establishment, reclamation plan etc. shall be monitored once/twice every year by a committee consisting of G.M. (Environment), two members from the adjacent villages, a member from the labour union and the Sarpanch of the area. If possible, representative forest department shall be included.

xiv) Assisted Natural Regeneration:

A nursery has already been established where seedlings of different species are being raised. Natural growth shall be cleared and singled out prior to planting. Usual procedure of planting and post care for 5 years shall be adopted. Villagers of the area are involved in the regeneration work. This improves the food for animals.

xv) Alternate cropping:

Simultaneously with habitat protection and rejuvenation, alternate cropping of vegetables and flowers, fruits like papaya, guava, sapota, pineapple and medicinal plants etc. shall be promoted with collaboration of horticulture department.

xvi) Nearby Sanctuaries

Two sanctuaries namely Daroji Bear Sanctuary and Gudekote Sloth Bear Sanctuary are located more than 25 kms away from the KIOM which are home to sloth bears and other species.

4.0 Funding:

The activity wise budget proposed for conservation plan of above schedule – 1 species is provided below:

S. no	Activity	INR (Lakhs)
1	Contribution of funds to Daroji National Park	25.00
2	Contribution of funds to Gudikote National Park	25.00
3	Soil and Water conservation (creation of ponds and water holes, trenches / check dams / grasslands)	40.00
4	Improvement of Fodder and Pasture development	20.00
5	Extraction and eradication of weeds in the areas rich in wildlife.	7.00
6	Gap Plantation in nearby Reserved and Protected Forests.	35.00
7	Fire Protection works in lease area	5.00
8	Provision of artificial bird net	3.00
9	Vehicle for regular patrolling	15.0
10	General protection measures such as boundary maintenance, protection from grazing, illicit felling of trees etc.	8.0
11	Awareness programs for Human- animal conflict in the nearby areas.	4.0

12	Promoting mix culture and development of grasslands and fodder species.	3.0
13	Communication networks (walkie Talkie sets)	2.0
14	Camera near check dams and Rain Water Harvesting ponds for recording presence and movement of wild animals in the area.	2.0
15	Watch and Ward	5.0
16	Purchase of Education and awareness materials	1.0
Total		200.00

The conservation plan is being submitted to Chief Wildlife Warden, Government of Karnataka, Bangalore for approval with or without modifications. NMDC is committed to contribute the funds once the plan is approved by Chief Wildlife Warden.



ISO 9001:2015
ISO 14001:2015
OHSAS 18001:2007
SA 8000: 2014

(भारत सरकार का उद्यम / A Govt. of India Enterprise)
दोणिमलै लौह अयस्क खान / Donimalai Iron Ore Mine
Donimalai Township – 583 118, Dist.: Bellary, Karnataka.
Phones: 08395 – 274654 / 274618, Fax: 08395 – 274687 / 274654

Ref: NMDC/DNM/ENV/KIOM/EC/2019/1035

Date: 11/10/2019

To

Dy. Conservator of Forests,
Ballari Division. Ballari.
Karnataka.

Sub: Report on Flora and Fauna of Kumaraswamy Iron Ore Mine (ML No.1111) for authentication by Forest Department - reg.

Ref: ToR (Vide order No. J-11015/93/2018-IA.II (M) dt.10.12.2018 issued by MOEF, New Delhi.

Dear Sir,

With reference to the above subject, we have applied for Environment Clearance under EIA notification, 2006 in lieu of MoEF&CC notification No. SO 1530 (E) dated 06.04.2018 for 8.6MTPA total excavation (7.0MTPA RoM&1.6MTPA Waste excavation) for Kumaraswamy Iron ore Mine (ML no.1111) to MoEF, New Delhi. Ministry of Environment, Forests & Climate Change Impact Assessment Division had issued Terms of Reference for submission of EIA/EMP report (ToR copy enclosed as **Annexure-I**.)

Point no.21 of aforesaid TOR stipulates that "A detailed biological study of the study area [core zone & buffer zone (10 km radius of the periphery of the mine lease)] shall be carried out".

Accordingly, in Summer Season-2019 consultant has carried out the Flora and Fauna studies around the mine lease area of KIOM (10km radius) through M/s. Ecomen Laboratories Pvt. Ltd., Lucknow. We are here with enclosing 4nos reports on Flora & Fauna of Kumaraswamy Iron Ore Mine (ML No.1111) at **Annexure-II** for kind examination with a request to issue authentication of the report in order to enable us to include in EIA/EMP report.

Thanking You,



Encl; As above.

Yours Sincerely,

11/10/19.
General Manager

हिन्दी में पत्र व्यवहार को हम प्राथमिकता देते हैं। हिन्दी में पत्र व्यवहार का स्वागत है।

ಸಂಖ್ಯೆ : ಎಂ1/ಎಂಎನ್‌ಜೆ/ಬ/ಎಫ್‌ಎಫ್/2006-07

ಉಪ ಅರಣ್ಯ ಸಂರಕ್ಷಣಾಧಿಕಾರಿ, ಬಳ್ಳಾರಿ

ಬಳ್ಳಾರಿ ವಿಭಾಗ, ಬಳ್ಳಾರಿ.

ದಿನಾಂಕ:13-04-2020.

ಇವರಿಗೆ,

ಬನರಲ್ ಮ್ಯಾನೇಜರ್,

ಮೆ|| ಎನ್‌ಎಂಡಿಸಿ ಲಿ.,

ಕುಮಾರಸ್ವಾಮಿ ಐರಾನ್ ಓರ್ ಮೈನ್ಸ್,

ಸಂಡೂರು,

ಮಾನ್ಯರೇ,

ವಿಷಯ : ಸಂಡೂರು ತಾಲ್ಲೂಕಿನ ಮೆ|| ಎನ್‌ಎಂಡಿಸಿ ಇವರಿಗೆ ಸಂಬಂಧಿಸಿದ ಕುಮಾರಸ್ವಾಮಿ ಐರಾನ್ ಓರ್ ಮೈನ್ಸ್ ಅರಣ್ಯ ಪ್ರದೇಶದಲ್ಲಿ ಇರುವ ಫ್ಲೋರಾ ಮತ್ತು ಫೋನಾಗಳ ಬಗ್ಗೆ ವರದಿ ನೀಡುವ ಕುರಿತು.

ಉಲ್ಲೇಖ :1) ಕೇಂದ್ರ ಸರ್ಕಾರದ ಪತ್ರ ಸಂಖ್ಯೆ : ಎಫ್.(ಸಿ)ಎ/11.6/47/ಡಬ್ಲ್ಯುಸಿ/ಕೆ.ಎ.ಆರ್ /1155 ದಿನಾಂಕ : 09.12.2016

2) ರಾಜ್ಯ ಸರ್ಕಾರದ ಪತ್ರ ಸಂಖ್ಯೆ : ಎಫ್.ಇ.ಇ-184, ಎಫ್.ಎ.ಪಿ-2014 ದಿನಾಂಕ : 26.12.2016.

3) ನಿಮ್ಮ ಮನವಿ ಪತ್ರ ದಿನಾಂಕ: 11-10-2019

* * * * *

ಮೇಲ್ಕಂಡ ವಿಷಯಕ್ಕೆ ಸಂಬಂಧಿಸಿದಂತೆ, ಸಂಡೂರು ತಾಲ್ಲೂಕಿನ ಮೆ|| ಎನ್‌ಎಂಡಿಸಿ, ಲಿ., ದೋಣಿಮಲ್ಯ ಇವರಿಗೆ ಸಂಬಂಧಿಸಿದ ಕುಮಾರಸ್ವಾಮಿ ಐರಾನ್ ಓರ್ ಮೈನ್ಸ್ ಅರಣ್ಯ ಪ್ರದೇಶದ ಸುತ್ತಮುತ್ತಲಿನ 10 ಕಿ.ಮೀ ಪ್ರದೇಶ ವ್ಯಾಪ್ತಿಯಲ್ಲಿ ಬರುವ ಫ್ಲೋರಾ ಮತ್ತು ಫೋನಾಗಳ ಪಟ್ಟಿಯನ್ನು ಮತ್ತು ಕುಮಾರಸ್ವಾಮಿ ಐರಾನ್ ಓರ್ ಮೈನ್ಸ್ ಅರಣ್ಯ ಪ್ರದೇಶದ ಸುತ್ತ ಮುತ್ತಲಿನ 10 ಕಿ.ಮೀ ಪ್ರದೇಶ ವ್ಯಾಪ್ತಿಯಲ್ಲಿ ಪರಿಸರ ಸೂಕ್ಷ್ಮ ವಲಯಗಳು/ವನ್ಯಧಾಮಗಳು ಇರುವ ದೃಢೀಕೃತ ಬಗ್ಗೆ ವರದಿ ಸಲ್ಲಿಸಲು ಉಲ್ಲೇಖ (3) ರ ಪತ್ರದಲ್ಲಿ ಕೋರಿರುತ್ತೀರಿ.

ಉಲ್ಲೇಖ(1) ಮತ್ತು (2) ರ ಕೇಂದ್ರ ಮತ್ತು ರಾಜ್ಯ ಸರ್ಕಾರಗಳ ಆದೇಶದಂತೆ Working Plan of Ballari Forest Division - 2013-14 ರಿಂದ 2022-23 ರವರೆಗೆ ಅನುಮೋದನೆಗೊಂಡಿರುತ್ತದೆ. ಸದರಿ ಅನುಮೋದನೆಗೊಂಡ ಕಾರ್ಯಾಯೋಜನೆಯ ಪುಟ ಸಂಖ್ಯೆ : 551 ರಿಂದ 555 ರವರೆಗೆ ಬಳ್ಳಾರಿ ಅರಣ್ಯ ವಿಭಾಗದ ವ್ಯಾಪ್ತಿಯಲ್ಲಿ ಬರುವ ಫ್ಲೋರಾ ಅಂಡ್ ಫೋನಾಗಳ ಪಟ್ಟಿಯನ್ನು ನಮೂದಿಸಿರುತ್ತಾರೆ. ಸದರಿ ಪಟ್ಟಿಯನ್ನು ಅನುಬಂಧ-1 ಮತ್ತು 2 ರಲ್ಲಿ ಈ ಪತ್ರದೊಂದಿಗೆ ಲಗತ್ತಿಸಲಾಗಿದೆ. ಈ ಪಟ್ಟಿಯಂತೆ ಕ್ರಮಕೈಗೊಳ್ಳಲು ತಿಳಿಸಿದೆ. ಹಾಗೂ ಪ್ರಸ್ತುತ ಈ ವಿಭಾಗದಲ್ಲಿ ಫ್ಲೋರಾ ಅಂಡ್ ಫೋನಾಗಳ ಪಟ್ಟಿಗಳನ್ನು ತಯಾರಿಸಲು ಕ್ರಮಕೈಗೊಂಡಿದ್ದು, ಸದರಿ ಕಾರ್ಯವು ಪೂರ್ಣಗೊಂಡ ನಂತರ ಪರಿಷ್ಕೃತ ಪಟ್ಟಿಯನ್ನು ನಿಮಗೆ ಕಳುಹಿಸಲಾಗುವುದು.

ಆದುದರಿಂದ ನೀವು ಕೋರಿದಂತೆ ಅನುಮೋದನೆಗೊಂಡ ಕಾರ್ಯಾಯೋಜನೆಯ ಪುಟ ಸಂಖ್ಯೆ : 551 ರಿಂದ 555 ರವರೆಗೆ ಬಳ್ಳಾರಿ ಅರಣ್ಯ ವಿಭಾಗದ ವ್ಯಾಪ್ತಿಯಲ್ಲಿ ಬರುವ ಫ್ಲೋರಾ ಅಂಡ್ ಫೋನಾಗಳ ಪಟ್ಟಿಯನ್ನು ಅನುಬಂಧ-1 ಮತ್ತು 2 ರಲ್ಲಿ ಮತ್ತು ಕುಮಾರಸ್ವಾಮಿ ಐರಾನ್ ಓರ್ ಮೈನ್ಸ್ ಅರಣ್ಯ ಪ್ರದೇಶದ ಸುತ್ತ ಮುತ್ತಲಿನ 10 ಕಿ.ಮೀ ಪ್ರದೇಶ ವ್ಯಾಪ್ತಿಯಲ್ಲಿ ಪರಿಸರ ಸೂಕ್ಷ್ಮ ವಲಯಗಳು/ವನ್ಯಧಾಮಗಳು ಇರುವ ಕುರಿತು ನಕಾಶೆಯನ್ನು ಈ ಪತ್ರದೊಂದಿಗೆ ಲಗತ್ತಿಸಿ ಕಳುಹಿಸಲಾಗಿದೆ.

ತಮ್ಮ ವಿಶ್ವಾಸಿ

ಉಪ ಅರಣ್ಯ ಸಂರಕ್ಷಣಾಧಿಕಾರಿ,
ಬಳ್ಳಾರಿ ವಿಭಾಗ, ಬಳ್ಳಾರಿ.

APPENDIX - XXVIII
FLORA OF BALLARI FOREST DIVISION.

Sl.no.	Botanical name	Family.	Local name.
1.	<i>Acacia latronum.</i>	Mimosoidae	Hottejali, Anegobli.
2.	<i>Acacia nilotica.</i>	"	Babul, Karijali, Gobli.
3.	<i>Acacia senegal.</i>	"	Mugli.
4.	<i>Acacia chundra.</i>	"	Kempu jali.
5.	<i>Acacia leucophloea.</i>	"	Bili jali.
6.	<i>Acacia intia.</i>	"	Korinda kanajige.
7.	<i>Acacia catechu.</i>	"	Kaggali.
8.	<i>Acacia ferruginea.</i>	"	Banni.
9.	<i>Acacia pennata.</i>	"	Kaadu seege.
10.	<i>Acacia auriculiformis.</i>	"	Bengali jali.
11.	<i>Albizia lebbeck.</i>	"	Bage, Siris.
12.	<i>Albizia amara.</i>	"	Tugli.
13.	<i>Albizia procera.</i>	"	Belati, Safed siris.
14.	<i>Albizia odoratissima.</i>	"	Bilwara.
15.	<i>Aegle marmelos.</i>	Rutaceae	Bael, Bela.
16.	<i>Ailanthus excelsa.</i>	Meliaceae	Kudrebevu, Helarimara.
17.	<i>Abrus precatorius.</i>	Faboideae	Gulganji.
18.	<i>Anogeissus latifolia.</i>	Combretaceae	Dindiga.
19.	<i>Annona squamosa.</i>	Annonaceae	Seethaphal.
20.	<i>Azadirachta indica.</i>	Meliaceae	Bevu.
21.	<i>Aloe vera</i>	Liliaceae	Lolesara
22.	<i>Agave sisalana.</i>	"	Kattaie, Sisal fibre.
23.	<i>Bridelia retusa.</i>	Euphorbiaceae	Kavanchi.
24.	<i>Bauhinia racemosa.</i>	Caesalpiniaceae	Sannabasavanapada.
25.	<i>Bauhinia purpurea.</i>	"	Doddabasavanpada
26.	<i>Boswellia serrata.</i>	Burseraceae	Dhupa.
27.	<i>Buchanania latifolia.</i>	Anacardiaceae	Mallr, Chiranji.
28.	<i>Buchanania angustifolia.</i>	"	Maradi, madi.
29.	<i>Butea monosperma.</i>	Papilionaceae	Muttuga, Flame of the forest.
30.	<i>Bombax malabaricum.</i>	Bombacaceae	Buruga.
31.	<i>Bambusa arundinacea.</i>	Poaceae	Female Bamboo.
32.	<i>Cassia fistula.</i>	Caesalpiniaceae	Kakke.
33.	<i>Cassia auriculata.</i>	"	Thangadi.
34.	<i>Cassia siamea.</i>	"	Seemethangadi.
35.	<i>Cymbopogon celoratus.</i>	Poaceae	Bodha grass, Bade.
36.	<i>Chloroxylon swietenia.</i>	Meliaceae.	Mashival, Bitu.
37.	<i>Carissa carandus.</i>	Apocynaceae.	Kavale.
38.	<i>Cymbopogon martinii.</i>	Poaceae.	Rosha grass.
39.	<i>Celiba pentandra.</i>	Bombacaceae.	Bili Buruga, Silk cotton tree.
40.	<i>Casuarina equisetifolia.</i>	Casurinaceae.	Sarve mara.
41.	<i>Cordia dichotoma.</i>	Boraginaceae	Challe.
42.	<i>Diospyros melanoxylon.</i>	Ebenaceae.	Tupra, Tumri.
43.	<i>Diospyros Montana</i>	"	Jagalaganti.
44.	<i>Dalbergia sissoo.</i>	Papilionaceae	Sissoo.
45.	<i>Dalbergia latifolia.</i>	"	Rosewood, Beete.
46.	<i>Dalbergia paniculata.</i>	"	Pachchali.
47.	<i>Delonix regia.</i>	Caesalpiniaceae	May flower, Gulmohar.
48.	<i>Dendrocalamus strictus.</i>	Poaceae	Male Bamboo.
49.	<i>Dodonia viscosa.</i>	Sapindaceae	Bandarika.

Sl.no.	Botanical name	Family.	Local name.
50.	<i>Emblica officinalis.</i>	Euphorbiaceae	Amla, Nelli.
51.	<i>Eucalyptus spp.</i>	Myrtaceae	Nilagiri.
52.	<i>Euphorbia tirucalli.</i>	Euphorbiaceae	Kalli.
53.	<i>Euphorbia nivulia.</i>	"	Dubakalli.
54.	<i>Elaeodendron glaucum.</i>	Celastraceae	Mukartha.
55.	<i>Erythrina indica.</i>	Papilionaceae	Hariwana, Alavana
56.	<i>Erythroxylon monogynum.</i>	Linaceae	Devadari, Dadyari.
57.	<i>Ficus species bengalensis.</i>	Moraceae	Aala.
58.	<i>Ficus species religiosa.</i>	"	Arali, Peepal.
59.	<i>Ficus species mysorensis.</i>	"	Goni.
60.	<i>Ficus species glomerata.</i>	"	Atti.
61.	<i>Ficus species infectoria.</i>	"	Kari basari.
62.	<i>Feroma elephantum.</i>	Rutaceae	Wood apple, Bilwar, Beladamara.
63.	<i>Grewia tiliaefolia.</i>	Tiliaceae	Tadasalu, Jane.
64.	<i>Garuga pinnata.</i>	Burseraceae	Godde.
65.	<i>Gardenia gummifera.</i>	Loganiaceae	Bikke.
66.	<i>Gardenia latifolia.</i>	Loganiaceae	Adavi Bikke.
67.	<i>Gymnosporia montana.</i>	Celastraceae	Thondarsi, Danti.
68.	<i>Gmelina arborea.</i>	Verbenaceae	Shivani
69.	<i>Givolia rotleriformis.</i>	Euphorbiaceae	Butala, Bettathavare
70.	<i>Gliricidia sepium.</i>	Papilionaceae	Gobbaradagida.
71.	<i>Hardwickia binata.</i>	Caesalpiniaceae	Kanara, Anjan
72.	<i>Holeptelia integrifolia.</i>	Urticaceae	Tapasi.
73.	<i>Ixora arborea.</i>	Rubiaceae	Goravi, Kored.
74.	<i>Kigelia pinnata.</i>	Bignoniaceae	Aane toradu.
75.	<i>Lantana camara</i>	Verbenaceae	Lantana.
76.	<i>Lagerstroemia parviflora.</i>	Lythraceae	Channangi.
77.	<i>Lawsonia inermis.</i>	"	Mayilanchs, Gorante (Henna).
78.	<i>Mangifera indica.</i>	Anacardiaceae	Mango, Mavu.
79.	<i>Morinda tinctoria</i>	Rubiaceae	Fadu kumbala.
80.	<i>Moringa oleifera.</i>	Moringaceae	Nugge.
81.	<i>Melilotus philippensis.</i>	Euphorbiaceae	Kunkumadamara.
82.	<i>Michelia champaca.</i>	Magnoliaceae	Sampige.
83.	<i>Melia azadirach.</i>	Meliaceae	Arebevu, Huchbevu.
84.	<i>Mitragyna parviflora.</i>	Rubiaceae	Kadavala, Kadam.
85.	<i>Mimusops elongii.</i>	Sapotaceae	Bakula, Pagade.
86.	<i>Murraya koenigii</i>	Rutaceae	Karibevu.
87.	<i>Nerium odoratum.</i>	Apocynaceae	Kanagala.
88.	<i>Opuntia dillenii.</i>	Cactaceae	Papaskalli.
89.	<i>Ocimum sanctum.</i>	Labiatae	Karithulasi, Krishnathulasi.
90.	<i>Ocimum americanum.</i>	"	Nai-thulasi.
91.	<i>Pongamia pinnata.</i>	Papilionaceae	Honge, Kanige.
92.	<i>Pterocarpus marsupium.</i>	"	Honne.
93.	<i>Phoenix sylvestris.</i>	Palmae	Ichalu.
94.	<i>Premna tomentosa.</i>	Verbenaceae	Narane.
95.	<i>Prosopis juliflora.</i>	Mimosoidae	Ballari jali.
96.	<i>Parthenium hysterophorus.</i>	Asteraceae	Congress grass, parthenium.
97.	<i>Peltophorum ferrugineum.</i>	Caesalpiniaceae	Peltoform.
98.	<i>Polyalthia longifolia.</i>	Annonaceae	Kambada mara, False Ashoka tree.

Sl.no.	Botanical name	Family.	Local name.
99.	<i>Randia dumetorum.</i>	Rubiaceae	Mangare.
100.	<i>Randia uliginosa.</i>	Rubiaceae	Kare.
101.	<i>Samanea saman.</i>	Mimosoidae	Rain tree.
102.	<i>Santalum album.</i>	Santalaceae	Shrigandha, Sandalwood.
103.	<i>Semecarpus anacardium.</i>	Anacardiaceae	Geru, Marking nut.
104.	<i>Soymida febrifuga.</i>	"	Some.
105.	<i>Shorea talura.</i>	Dipterocarpaceae	Jalari.
106.	<i>Syzygium cumini.</i>	Myrtaceae	Nerale.
107.	<i>Stereospermum chelonoides.</i>	Bignoniaceae	Uded.
108.	<i>Sterculia urens.</i>	Sterculiaceae	Kembutale.
109.	<i>Tamarindus indica.</i>	Caesalpiniaceae	Tamarind, Hunse.
110.	<i>Tectona grandis.</i>	Verbenaceae	Teak, Tega, Sagawani.
111.	<i>Terminalia tomentosa.</i>	Combretaceae	Karimatti.
112.	<i>Terminalia chebula.</i>	"	Alale, Harda.
113.	<i>Terminalia arjuna.</i>	"	Arjun, Holematti, Bilimathi.
114.	<i>Terminalia belerica.</i>	"	Tare.
115.	<i>Tetrameles nudiflora.</i>	Dasticeae	Kadbende.
116.	<i>Typha angustata.</i>	Typhaceae	Aapu, Anechundu.
117.	<i>Vitex negundo.</i>	Verbenaceae	Lakki.
118.	<i>Wrightia tinctoria.</i>	Apocynaceae	Hale, Halgouri.
119.	<i>Zizyphus xylopyrus.</i>	Rhamnaceae	Gotte.
120.	<i>Zizyphus jujuba.</i>	"	Bore.


 Deputy Conservator of Forests,
 Bellary Division, Bellary.

APPENDIX - XXIX

FAUNA OF BALLARI FOREST DIVISION.

SLNo.	Common Name.	Scientific name.
[a] Mammals		
1.	Black buck	<i>Antelope cervicapra</i>
2.	Common langur	<i>Presbytis entellus</i>
3.	Common fox	<i>Vulpes bengalensis</i>
4.	Fruit bat	<i>Cynopterus sphinx</i>
5.	Hyaena	<i>Hyaena hyaena</i>
6.	Hare	<i>Lepus nigricallis</i>
7.	Indian porcupine	<i>Hystrix indica</i>
8.	Indian wolf	<i>Canis lupus pallipes</i>
9.	Jackal	<i>Canis aureus</i>
10.	Jungle cat	<i>Felis chaus</i>
11.	Mice	<i>Mus musculus</i>
12.	Mongoose	<i>Herpestes Spp.</i>
13.	Panther	<i>Panthera pardus</i>
14.	Rat	<i>Rattus rattus</i>
15.	Squirrel	<i>Funambulus pennanti</i>
16.	Sloth bear	<i>Melursus ursinus</i>
17.	Spotted Deer	<i>Axis axis</i>
18.	wild boar	<i>Sus scrofa</i>

[b] Birds.

1.	Asiatic wren warbler	<i>Prinia socialis</i>
2.	Black drongo	<i>Dicrurus adsimilis</i>
3.	Black winged kite	<i>Elanus caeruleus</i>
4.	Blossom headed parakeet	<i>Psittacula cyanocephala</i>
5.	Blue pigeon	<i>Columba livia</i>
6.	Blue jay	<i>Coracias benghalensis</i>
7.	Black headed oriole	<i>Oriolus xanthornus</i>
8.	Common weaver bird	<i>Ploceus philippinus</i>
9.	Crow pheasant	<i>Centropus sinensis</i>
10.	Chestnut bellied nut-hatch	<i>Sitta castanea</i>
11.	Common myna	<i>Acridotheres tristis</i>
12.	Common hawk	<i>Cuculus varius</i>
13.	Cattle egret	<i>Babulus ibis</i>
14.	Common peafowl	<i>Pavo cristatus</i>
15.	Common kingfisher	<i>Alcedo atthis</i>
16.	Grey babbler	<i>Turdoides malcolmi</i>
17.	Grey wagtail	<i>Motacilla caspica</i>
18.	Grey jungle fowl	<i>Gallus sonnerata</i>
19.	Great horned owl	<i>Bubo bubo</i>
20.	Grey partridge	<i>Francolinus pondicerianus</i>
21.	Golden backed wood pecker	<i>Dinopium benghalensis</i>
22.	House sparrow	<i>Passer domesticus</i>
23.	Indian robin	<i>Saxicoloides fulicata</i>
24.	Jungle babbler	<i>Turdoides striatus</i>

Deputy Conservator of Forests,
Bellary Division, Bellary.

Sl.No.	Common Name.	Scientific name.
25.	Jungle myna	<i>Acridotheres fuscus</i>
26.	Jungle crow	<i>Corvus macrohynchos</i>
27.	Koel	<i>Eudynamys scolopacea</i>
28.	Luggar falcon	<i>Falco biarmicus jugger</i>
29.	Munia	<i>Lonchura Spp.</i>
30.	Pied wagtail	<i>Motacilla maderaspatensis</i>
31.	Pariah kite	<i>Milvus migrans</i>
32.	Red vented bulbul	<i>Pycnonotus cafer</i>
33.	Red turtle dove	<i>Streptopelia Spp.</i>
34.	Rose ringed parakeet	<i>Psittacula krameri</i>
35.	Whistling thrush	<i>Myiophonus horsfieldii</i>

[c] Reptiles

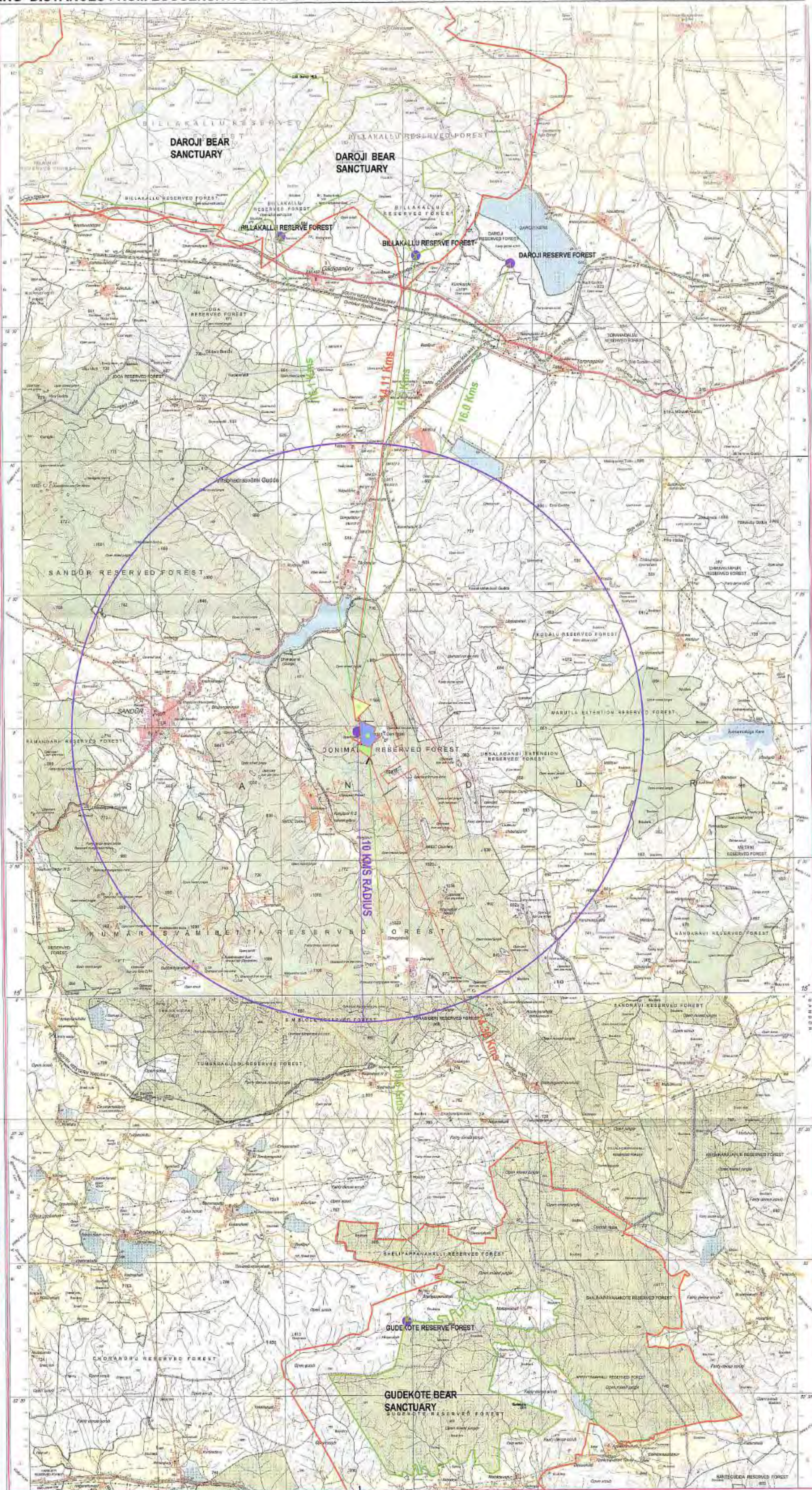
1.	Cobra	<i>Naja tripudians</i>
2.	Chameleon	<i>Chameleo calcaratus</i>
3.	Garden lizard	Gecko gecko
4.	Krait	<i>Bangarus ceruleus</i>
5.	Monitor lizard	<i>Varanus spp.</i>
6.	Python	<i>Python molurus</i>
7.	Rat snake	<i>Coluber mucosus</i>
8.	Tortoise	-
9.	Viper	<i>Echis carinata</i>

[d] Crustaceans and insects.

1.	Butterflies and moths
2.	Beetles
3.	Crabs
4.	Scorpions


Deputy Conservator of Forests,
Bellary Division, Bellary.

MAP SHOWING DISTANCES FROM ECOSENSITIVE ZONE OF THE PROTECTED AREA NOTIFIED UNDER WILD LIFE PROTECTION ACT 1972



INDEX		
1. Screening Plant - II	-	☐
2. Tailing Dam - I	-	☒
3. Tailing Dam - II	-	☐
4. Water Pipe Line	-	☐

Dy. Range Forest Officer
D.M.B. Section
Sandur South Range

RANGE FOREST OFFICER
Sandur South Range
Sandur

Assistant Conservator of Forests,
Bally Sub-Division, Bally

अधिशासी निदेशक
Executive Director
एनएमडीसी लि. दो.लौ.अ.खा.
NMDCLTD, DIOM

DUMP MANAGEMENT PLAN													
Status	Dump	Particulars of work		As executed/As Recommended				Rate per unit	Amount in Lakhs	Addition al	Shortfall	Remark	
				Dimension in m			Qty.						
				Length	Width								Height
TOP	BOT												
Active	AD-1	Toe Wall at the toe of waste dump TW-1	Foundation in hard soil mixed with boulders including hard rock	245/990	2.5/2.5		0.80/0.80	490/1980	0/111	0/2.2	0	2.2	Work is in progress
			Plain cement concrete (1:4:8) in foundation	245/990	2.2/2.2		0.15/0.15	80.85/326.76	0/1860	0/6.08	0	6.08	Work is in progress
			Toe wall R-R stone	245/990	1/1	2/2	3/3	1102/4455	0/1232	0/54.89	0	54.89	Work is in progress
		Garland DrainGD-1a	Garland drain (1 m bottom width, 2 m top width and 1 m deep below toe wall)	245/1020	2/2	1/1	1/1	367.5/1530	0/111	0/1.7	0	1.7	Work is in progress
		Coir Matting	Providing coir mat on outer surface of slope of waste dump					0/2	0/1000000	0/20	0	20.0	Work is in progress
Active	AD-2	Toe Wall at the toe of waste dump TW-2	Foundation in hard soil mixed with boulders including hard rock	400.15/370	2.60/2.50		0.80/0.80	832.31/740	96/111	0.8/0.82	0	0.02	Work completed
			Plain cement concrete (1:4:8) in foundation	400.15/370	2.2/2.2		0.15/0.15	132.05/122.10	3927/1860	5.19/2.27	2.92	0	Work completed
			Toe wall R-R stone masonry in cement sand mortar (1:6)	400.15/370	1.1/1	2/2	3.65/3	2263.85/1665	3042.50/1232	68.88/20.51	48.37	0	Work completed
		Garland DrainGD-2	Garland drain (1 m bottom width, 2 m top width and 1 m deep below toe wall)	150/400	2.10/2	2.80/1	1.25/1	459.38/600	253.5/111	1.16/0.67	0.49	0	Work completed
		Coir Matting	Providing coir mat on outer surface of slope of waste dump					0.491/0.5	3000000/1000000	14.73/5	9.73	0	Work completed
Sliding Dump	SD-1	Toe Wall at the toe of waste dump TWSD-1	Foundation in hard soil mixed with boulders including hard rock	50/50	2.1/2		0.85/0.80	89.25/80	300/111	0.27/0.09	0.18	0	Work completed
			Plain cement concrete (1:4:8) in foundation	50/50	1.7/1.7		0.15/0.15	12.75/12.75	4903/1860	0.63/0.24	0.39	0	Work completed
			Toe wall R-R stone masonry in cement sand mortar (1:6)	50/50	0.5/0.5	1.5/1.5	3/2.5	150/125	4654.5/1232	6.98/1.54	5.44	0	Work completed
Sliding Dump	SD-2	Toe Wall at the toe of waste dump TWSD-2	Foundation in hard soil mixed with boulders including hard	80/80	2.1/2.0		0.85/0.80	142.8/128.0	300/111	0.43/0.14	0.29	0	Work completed
			Plain cement concrete (1:4:8) in foundation	80/80	1.7/1.7		0.15/0.15	20.4/20.4	4903/1860	1.0/0.38	0.62	0	Work completed
			Toe wall R-R stone masonry in cement sand mortar (1:6)	80/80	0.5/0.5	1.5/1.5	3.0/2.5	240/200	4654.5/1232	11.17/2.46	8.71	0	Work completed
Sliding Dump	SD-3	TToe Wall at the toe of waste dump TWSD-3	Foundation in hard soil mixed with boulders including hard	60/60	2.10/2.00		0.85/0.80	107.10/96.00	300/111	0.32/0.11	0.21	0	Work completed
			Plain cement concrete (1:4:8) in foundation	60/60	1.7/1.7		0.15/0.15	15.30/15.30	4903/1860	0.75/0.28	0.47	0	Work completed
			Toe wall R-R stone masonry in cement sand mortar (1:6)	60/60	0.50/0.50	1.50/1.50	3.00/2.50	180/150	4654.5/1232	8.38/1.85	6.53	0	Work completed

Table 5.3. PROPOSED ENGINEERING MEASURES OF SURFACE WATER MANAGEMENT ML No.1111

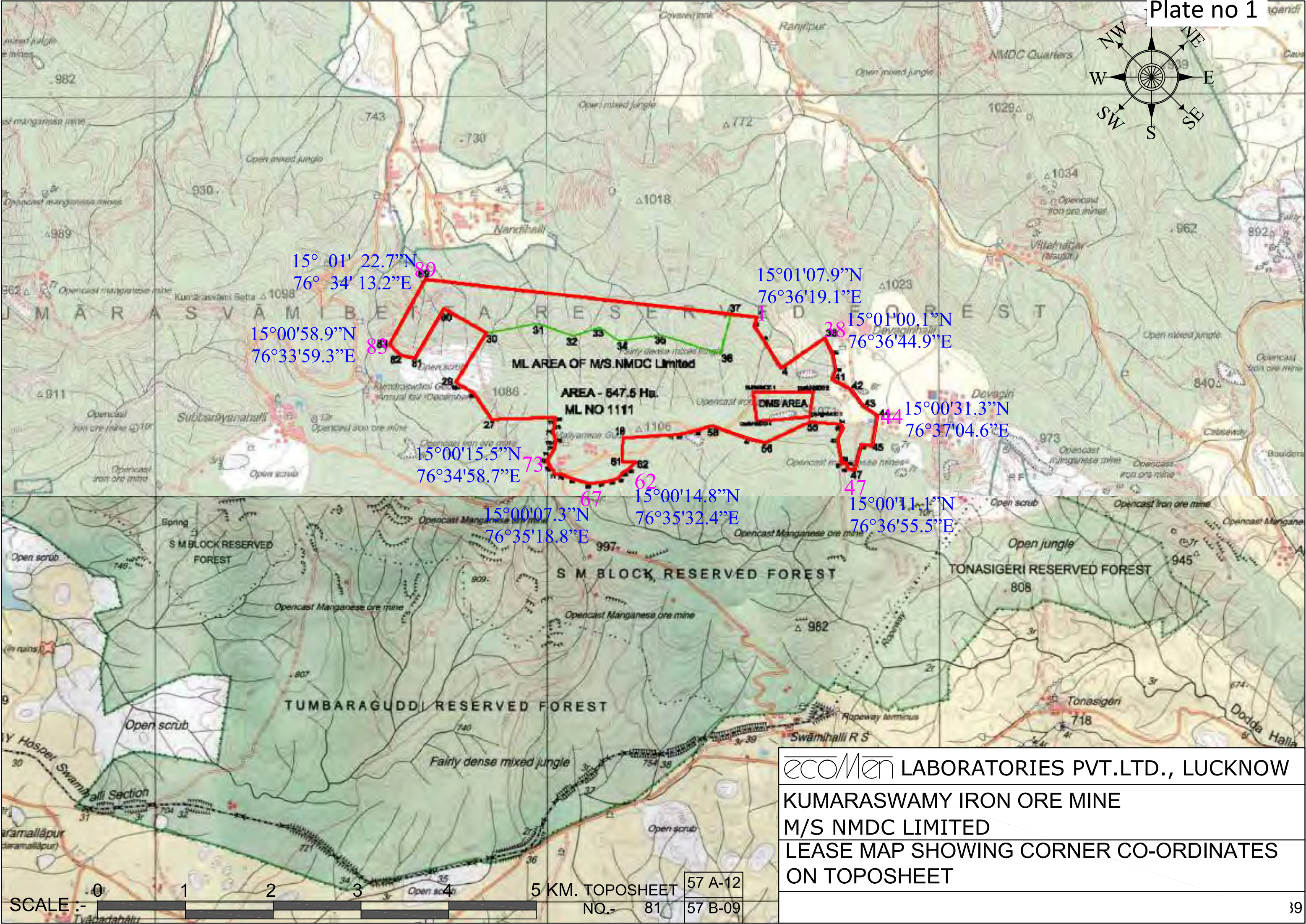
DUMP MANAGEMENT PLAN													
Status	Dump	Particulars of work	As executed/As Recommended				Qty.	Rate per unit	Amount in Lakhs	Addition al	Shortfall	Remark	
			Dimension in m			Height							
			Length	Width									
TOP	BOT												
		Gully plug for Dumps											
AD-1 and AD-2 (up to conceptual period)		i. Brush Wood check Dam										These works are proposed as per modified time schedule for implimentation for LWCD,BWCD & LBCD up to conceptual period (Refer leter from ADG(EM) ICFRE dated 11.07.2018 addressed to The Chairman, Monitoring committe	
		BWCD	0/1000	0/2	0/1.5	0/1	0/2000	0/300	0/6	0	6.00		
		BWCD	0/800	0/3	0/1.5	0/1	0/2400	0/300	0/7.20	0	7.20		
		BWCD	0/600	0/4	0/1.50	0/1	0/2400	0/300	0/7.20	0	7.20		
		BWCD	0/500	0/5	0/1.50	0/1	0/2500	0/300	0/7.50	0	7.50		
		ii. Logwood check Dam											
		LWCD	0/750	0/4	0/2	0/1	0/3000	0/1200	0/36	0	36.00		
		LWCD	0/600	0/5	0/2	0/1	0/3000	0/1200	0/36	0	36.00		
		LWCD	0/450	0/6	0/2	0/1	0/2700	0/1200	0/32.4	0	32.40		
		LWCD	0/300	0/7	0/2	0/1	0/2100	0/1200	0/25.20	0	25.20		
		iii. Loose boulder check dam											
		LBCD	0/400	0/4	0/1	0/2	0/1.5	0/3600	0/400	0/14.4	0		14.40
		LBCD	0/300	0/5	0/1	0/2	0/1.5	0/3375	0/400	0/13.50	0		13.50
	LBCD	0/200	0/6	0/1	0/2	0/1.5	0/2700	0/400	0/10.80	0	10.80		
	LBCD	0/100	0/8	0/1	0/2	0/1.5	0/1800	0/400	0/7.20	0	7.20		
		Check Dams for Nallah											
	N-1	LBCD-1	1/1	43/60	2.20/2	5/4	3/2	464.4/360	1506.62/400	7/1.44	5.56	0	Work completed
	N-2	LBCD-2	1/1	40/40	2/2	4.10/4	2.40/2	292.80/240	1506.62/400	4.41/0.96	3.45	0	Work completed
	N-2	LBCD-3	1/1	23/30	2.15/2	5.10/4	2.80/2	233.45/180	1506.62/400	3.52/0.72	2.8	0	Work completed
	N-2	LBCD-4	1/1	15.50/25	2.20/2	4.60/4	3.20/2	168.64/150	1506.62/400	2.54/0.60	1.94	0	Work completed
	N-4	LBCD-5	1/1	0/30	0/2	0/4	0/2	0/180	1506.62/400	0/0.72	0	0.72	Work completed
	N-4	LBCD-6	1/1	0/40	0/2	0/4	0/2	0/240	1506.62/400	0/0.96	0	0.96	Work completed
	N-4	LBCD-7	1/1	25/45	3/2	4.10/4	3.10/2	275.13/270	1506.62/400	4.15/1.08	3.07	0	Work completed
	N-4	LBCD-8	1/1	32/50	2.20/2	4.20/4	2.90/2	296.96/300	1506.62/400	4.47/1.20	3.27	0	Work completed
	N-7	LBCD-9	1/1	38/40	2.30/2	3.80/4	2.50/2	289.75/240	1506.62/400	4.37/0.96	3.41	0	Work completed
	N-7	LBCD-10	1/1	55/50	2.40/2	5.20/6	3.50/3	731.50/600	1506.62/400	11.02/2.40	8.62	0	Work completed
	N-9	LBCD-11	1/1	45/60	2.20/2	4/4	2.70/2	376.65/360	1506.62/400	5.67/1.44	4.23	0	Work completed
	N-9	LBCD-12	1/1	55/70	2.10/2	4.20/4	2.50/2	433.13/420	1506.62/400	6.53/1.68	4.85	0	Work completed
	N-11	LBCD-13	1/1	58/80	2/2	4/4	2.80/2	487.20/480	1506.62/400	7.34/1.92	5.42	0	Work completed
	N-13	LBCD-14	1/1	31/60	2.50/2	4.30/4	3.20/2	337.28/360	1506.62/400	5.08/1.44	3.64	0	Work completed
	N-13	LBCD-15	1/1	40/70	3/2	5/4	3.10/2	496/420	1506.62/400	7.47/1.68	5.79	0	Work completed
	N-14	LBCD-16	1/1	61.50/80	2.20/2	4/4	3.10/2	591.02/480	1506.62/400	8.90/1.92	6.98	0	Work completed
	N-14	LBCD-17	1/1	50/100	2.50/2	4.50/4	3/2	525/600	1506.62/400	7.91/2.40	5.51	0	Work completed

		Gabion/ Wire Crate Check Dam											
N-1	GCD-1	o/1	o/50	o/1	o/3	o/3	o/300	o/1200	o/3.60	o	3.60	Work To be Started.	
N-1	GCD-2	o/1	o/40	o/1	o/3	o/3	o/240	o/1200	o/2.88	o	2.88	Work To be Started.	
N-1	GCD-3	o/1	o/40	o/1	o/3	o/3	o/240	o/1200	o/2.88	o	2.88	Work To be Started.	
N-2	GCD-4	o/1	o/40	o/1	o/3	o/3	o/240	o/1200	o/2.88	o	2.88	Work To be Started.	
N-2	GCD-5	o/1	o/40	o/1	o/3	o/3	o/240	o/1200	o/2.88	o	2.88	Work To be Started.	
N-3	GCD-6	o/1	o/40	o/2	o/4	o/3	o/360	o/1200	o/4.32	o	4.32	Work To be Started.	
N-3	GCD-7	o/1	o/50	o/2	o/4	o/3	o/450	o/1200	o/5.40	o	5.40	Work To be Started.	
N-3	GCD-8	o/1	o/60	o/2	o/4	o/3	o/540	o/1200	o/6.48	o	6.48	Work To be Started.	
N-4	GCD-9	o/1	o/60	o/1	o/3	o/3	o/360	o/1200	o/4.32	o	4.32	Work To be Started.	
N-4	GCD-10	o/1	o/80	o/1	o/3	o/3	o/480	o/1200	o/5.76	o	5.76	Work To be Started.	
N-5	GCD-11	o/1	o/80	o/2	o/4	o/3	o/720	o/1200	o/8.64	o	8.64	Work To be Started.	
N-6	GCD-12	o/1	o/80	o/2	o/4	o/3	o/720	o/1200	o/8.64	o	8.64	Work To be Started.	
N-6	GCD-13	o/1	o/130	o/2	o/4	o/3	o/1170	o/1200	o/14.04	o	14.04	Work To be Started.	
N-6	GCD-14	o/1	o/140	o/2	o/4	o/3	o/1260	o/1200	o/15.12	o	15.12	Work To be Started.	
N-7	GCD-15	o/1	o/60	o/2	o/4	o/3	o/540	o/1200	o/6.48	o	6.48	Work To be Started.	
N-7	GCD-16	o/1	o/80	o/2	o/4	o/3	o/720	o/1200	o/8.64	o	8.64	Work To be Started.	
N-8	GCD-17	o/1	o/100	o/2	o/4	o/3	o/900	o/1200	o/10.80	o	10.80	Work To be Started.	
N-9	GCD-18	o/1	o/120	o/2	o/4	o/3	o/1080	o/1200	o/12.96	o	12.96	Work To be Started.	
N-10	GCD-19	o/1	o/80	o/2	o/4	o/3	o/720	o/1200	o/8.64	o	8.64	Work To be Started.	
N-11	GCD-20	o/1	o/100	o/2	o/4	o/3	o/900	o/1200	o/10.8	o	10.80	Work To be Started.	
N-12	GCD-21	o/1	o/100	o/2	o/4	o/3	o/900	o/1200	o/1.80	o	10.80	Work To be Started.	
N-15	GCD-22	o/1	o/120	o/2	o/4	o/3	o/1080	o/1200	o/12.96	o	12.96	Work To be Started.	
N-15	GCD-23	o/1	o/140	o/2	o/4	o/3	o/1260	o/1200	o/15.12	o	15.12	Work To be Started.	
	Stone masonry check dam cement sand mortar (1:6)												
N-3	SMCD -1	o/1	61.0/50	0.85/1.0	1.85/2.0	2.25/2.0	61.0/50.0	32567.0/10000.0	19.87/5.0	14.87	0.00	Work Completed	
N-5	SMCD -2	o/1	70.05/70.0	0.85/1.0	1.85/2.0	2.25/2.0	70.05/70.0	32567.0/10000.0	22.81/7.0	15.81	0.00	Work Completed	
N-8	SMCD -3	o/1	74.80/70.0	0.85/1.0	1.85/2.0	2.25/2.0	74.80/70.0	32567.0/10000.0	24.36/7.0	17.36	0.00	Work Completed	
N-10	SMCD -4	o/1	86.10/100.0	0.85/1.0	1.85/2.0	2.25/2.0	86.10/100	32567.0/10000.0	28.04/10.0	18.04	0.00	Work Completed	
N-12	SMCD -5	o/1	120.0/120.0	0.85/1.0	1.85/2.0	2.25/2.0	120.0/120.0	32567.0/10000.0	39.08/12.0	27.08	0.00	Work Completed	
N-15	SMCD -6	o/1	80.10/80.0	0.85/1.0	1.85/2.0	2.25/2.0	80.10/80.0	32567.0/10000.0	26.09/8.0	18.09	0.00	Work Completed	

Rain Water Harvesting Pit												
N-1	RWHP-1	o/1	28x29/30x30	21x22/20x20	3.0/3.0	1911/1950	o/190	o/3.71	o	3.71	Work in progress	
N-2	RWHP-2	o/1	30x30/30x30	20x20/20x20	3.0/3.0	1950/1950	o/190	o/3.71	o	3.71	Work in progress	
N-3	RWHP-3	o/1	28x31/30x30	21x27/20x20	3.0/3.0	2152.50/1950	o/190	o/3.71	o	3.71	Work Completed	
N-4	RWHP-4	o/1	28x30/30x30	21x25/20x20	3.0/3.0	2047.5/1950	o/190	o/3.71	o	3.71	Work Completed	
N-5	RWHP-5	o/1	28x30/30x30	21x25/20x20	3.0/3.0	2047.5/1950	o/190	o/3.71	o	3.71	Work Completed	
N-6	RWHP-6	o/1	29x33/30x30	25x30/20x20	3.0/3.0	2560.5/1950	o/190	o/3.71	o	3.71	Work Completed	
N-7	RWHP-7	o/1	23x33/30x30	15x32/20x20	3.10/3.00	1897.2/1950	o/190	o/3.71	o	3.71	Work Completed	
N-8	RWHP-8	o/1	28x29/30x30	21x31/20x20	3.0/3.0	2194.5/1950	o/190	o/3.71	o	3.71	Work Completed	
N-10	RWHP-9	o/1	29x32/30x30	23x23/20x20	3.0/3.0	2496/1950	o/190	o/3.71	o	3.71	Work Completed	
N-11	RWHP-10	o/1	27x29/30x30	18x24/20x20	3.10/3.00	1883.25/1950	o/190	o/3.71	o	3.71	Work Completed	
N-12	RWHP-11	o/1	29x31/30x30	21x29/20x20	3.10/3.00	2337.4/1950	o/190	o/3.71	o	3.71	Work Completed	
N-12	RWHP-12	o/1	29x33/30x30	25x30/20x20	3.0/3.0	2560.5/1950	o/190	o/3.71	o	3.71	Work Completed	
N-15	RWHP-13	o/1	30x3/30x30	23x31/20x20	3.0/3.0	2554.5/1950	o/190	o/3.71	o	3.71	Work Completed	
Silt Settling Tank												
N-5	SST-1	Dimension	30.05/30	15/15	3.20/3	1/1	2796457.33/800000	27.96/8	19.96	o	Work completed	
N-12	SST-2	Dimension	30.05/30	15/15	3.20/3	1/1	2796457.33/800000	27.96/8	19.96	o	Work completed	
N-15	SST-3	Dimension	30.05/30	15/15	3.20/3	1/1	2796457.33/800000	27.96/8	19.96	o	Work completed	
Earthen Check Dam(with stone pitching)												
N-1	ECD-1	1/1	76/80	2.10/2	4.50/4	3.10/3	76/80	7488.30/1500	5.69/1.20	4.49	o	Work completed
N-2	ECD-2	1/1	60/80	2.05/2	4.20/4	3.05/3	60/80	7488.30/1500	4.49/1.20	3.29	o	Work completed
N-3	ECD-3	1/1	50/60	2.10/2	4.50/4	3.05/3	50/60	7488.30/1500	3.74/0.90	2.84	o	Work completed
N-4	ECD-4	1/1	80/80	2.05/2	4.20/4	3.10/3	80/80	7488.30/1500	5.99/1.20	4.79	o	Work completed
N-6	ECD-5	1/1	70/120	2.20/2	4.10/4	3.20/3	70/120	7488.30/1500	5.24/1.80	3.44	o	Work completed
N-7	ECD-6	1/1	45/70	2.10/2	4.10/4	3.15/3	45/70	7488.30/1500	3.37/1.05	2.32	o	Work completed
N-8	ECD-7	1/1	131/120	2.05/2	4.90/4	3.10/3	131/120	7488.30/1500	9.81/1.80	8.01	o	Work completed
N-10	ECD-8	1/1	115/140	2.50/2	5/4	3.50/3	115/140	7488.30/1500	8.61/2.10	6.51	o	Work completed
N-12	ECD-9	1/1	146/150	2.10/2	4.60/4	3.15/3	146/150	7488.30/1500	10.93/2.25	8.68	o	Work completed
N-15	ECD-10	1/1	146/80	2/2	4.50/4	3.10/3	146/80	7488.30/1500	10.93/1.20	9.73	o	Work completed

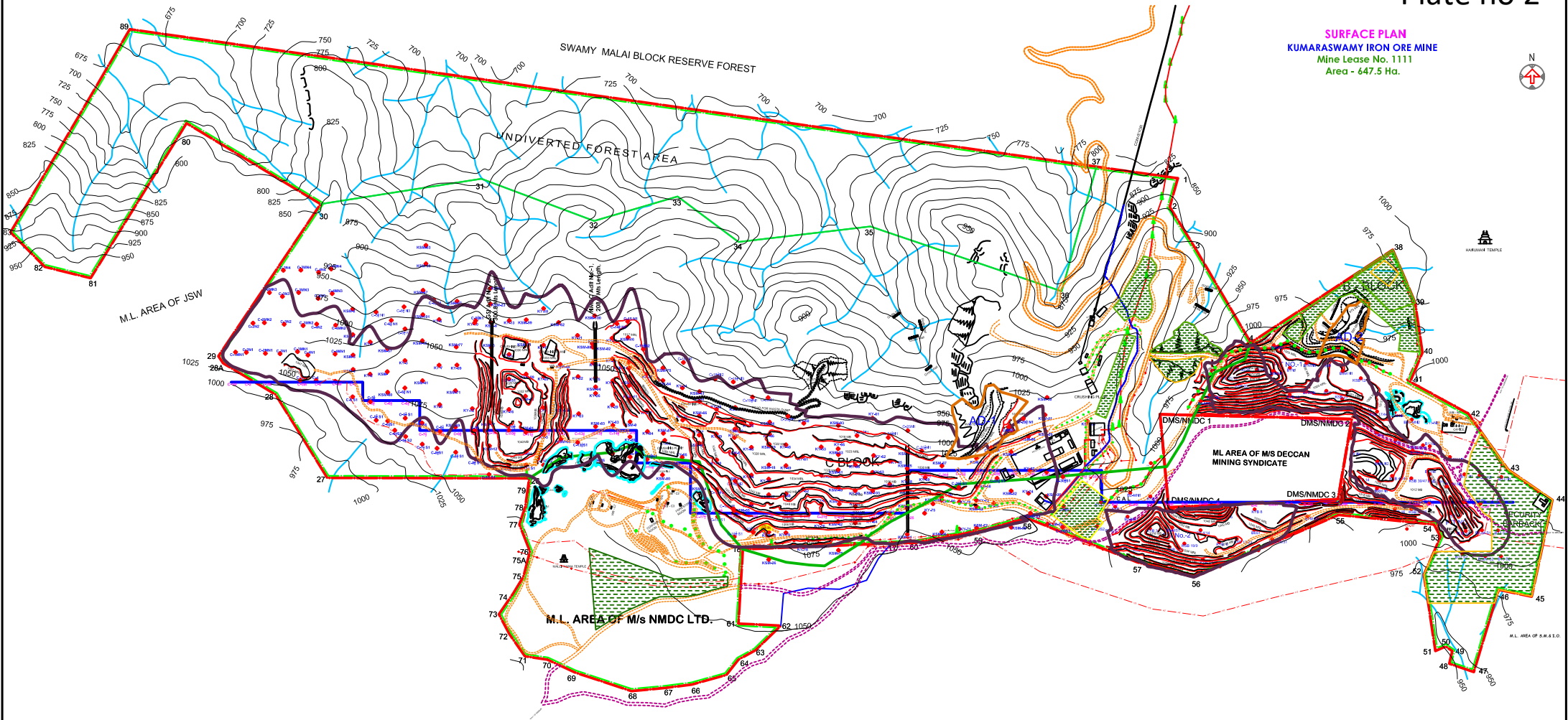
Bio-Engineering Measures.

Sl. No.	Activities	For the year 2016-17 and 2017-18			For the year 2018-19			Schedule for the year 2019-20			Schedule for the year 2020-21		
		Qty (Ha.)	Progress in %	Details of Work	Qty (Ha.)	Progress in %	Details of work	Quantity (Ha.)		Details of work	Quantity (Ha.)		Details of work
	Afforestation												
a	Avenue Plantation on Roads	0.49	100%	Service Center area (In and around) in 3 blocks near V-dump towards mining office (Total 1210 saplings)	0.85	100%	Haul road along the back side of mining office leading towards Gayatri Camp area=592 saplings, Main road towards Mine field office=631 saplings, V-dump towards sethu dump=1030 saplings, B-Block Garden area=1248 saplings, and B-Block dump area=976 saplings. (Total 4477 saplings) .	0.47	100%	Mining Office (in and around), Mining Office front side, All along haul road, Over head tank to mining office (Left Side), all along haul road over head tank to pill no.18. (Total 1663 saplings)	As per Approved R&R Plan total Avenue Plantation work completed, no further targets.		
b	Plantation on dumps/ Afforestation	5.0	100%	1. Nallah Dump and Dump No.23=10000 saplings, 2. V-Dump, B-Block area and sethu dump area=8233 saplings. (Total 18233 saplings)	53.50	100%	1.Area Near Sethu Dump and Gayathri camp to Substation=11369 saplings. 2.Towards B-Block garden area and Gayatri Camp side=10752 saplings, 3. Crusher Side area, KIOM road side near nallah dump=12000 saplings, 4.Near Geology shed, rocktech back side, sethu dump area near check post side, V-Dump road side=14024 saplings. 5. Sethu dump left side towards mining office and down slope road side towards substation=10970 saplings. (Total 59115 saplings) .	20.0	100%	1) 14391 saplings plantation work in progress from Fly over bridge up to Rasiddeshwara dump slopes towards BMM. 2) 15000 plants planting work at C-Block & 3) 14300 & 17000 plants planted at V-turn above dumping area. Work Completed. Total 60691 saplings	16.0	20%	48000 saplings proposed to be planted at C-Block area in different plots: Total 48000 saplings.
c	Haul Road Plantation	Nil	Nil	Haul Road plantation not done.	0.80	100%	Haul road plantation done at Main road near mine field office up to C-block area. (Total 3755 saplings).	Total target for Haul road plantation is completed, no further targets.			Total target for Haul road plantation is completed, no further targets.		
d	Plantation on encroached area	1.37	100%	Pillar No.55 to 56, pit -2 mining pit encroached area, pillar no.1 to 37, D4 area at Pit-2 and ZP road area. (Total 1553 Saplings)	0.80	100%	At Encroached area near pillar no.43 to 45. (Total 5064 saplings) .	0.75	100%	At Encroached area at Pillar No.69 to 72 (Total 5063 saplings)	The balance area of 4.53 Ha. To be planted on encroached area during the year 2021-22, proposal is in tender stage.		
e	Strengthening & Gap Plantation/ Safety Zone Plantation.	2.5	100%	Pillar No.44-46, at New CISF new barrack towards Kamattur village. (Total: 10440 saplings)	1.00	100%	From pillar No.3 to 4.Pillar No.4 to 38 and Pillar No.42 to 44 in two blocks. (Total 3000 saplings) .	0.98	100%	From Pillar No.54 to 55, Pillar No. 55 to 73. (Total 3000 saplings) .	The balance area of 1.31 Ha. To be planted on encroached area during the year 2021-22, proposal is in tender stage.		
f	Seed broadcasting on inactive dumps (Based on availability of area)	3.0	100%	1. Seed Broadcasting at V-Point dump. (3.00Ha. Area Covered).	3.00	100%	On Waste dump along with road side towards KIOM. (3.0 Ha towards KIOM mining office).	3.0	100%	Wotk in progress at C-Block.(3.00Ha. Near V Dump)	3.0	20%	Area proposed at B Block and C Block.



ecoMen LABORATORIES PVT.LTD., LUCKNOW
 KUMARASWAMY IRON ORE MINE
 M/S NMDC LIMITED
 LEASE MAP SHOWING CORNER CO-ORDINATES
 ON TOPOSHEET

SURFACE PLAN
KUMARASWAMY IRON ORE MINE
 Mine Lease No. 1111
 Area - 647.5 Ha.

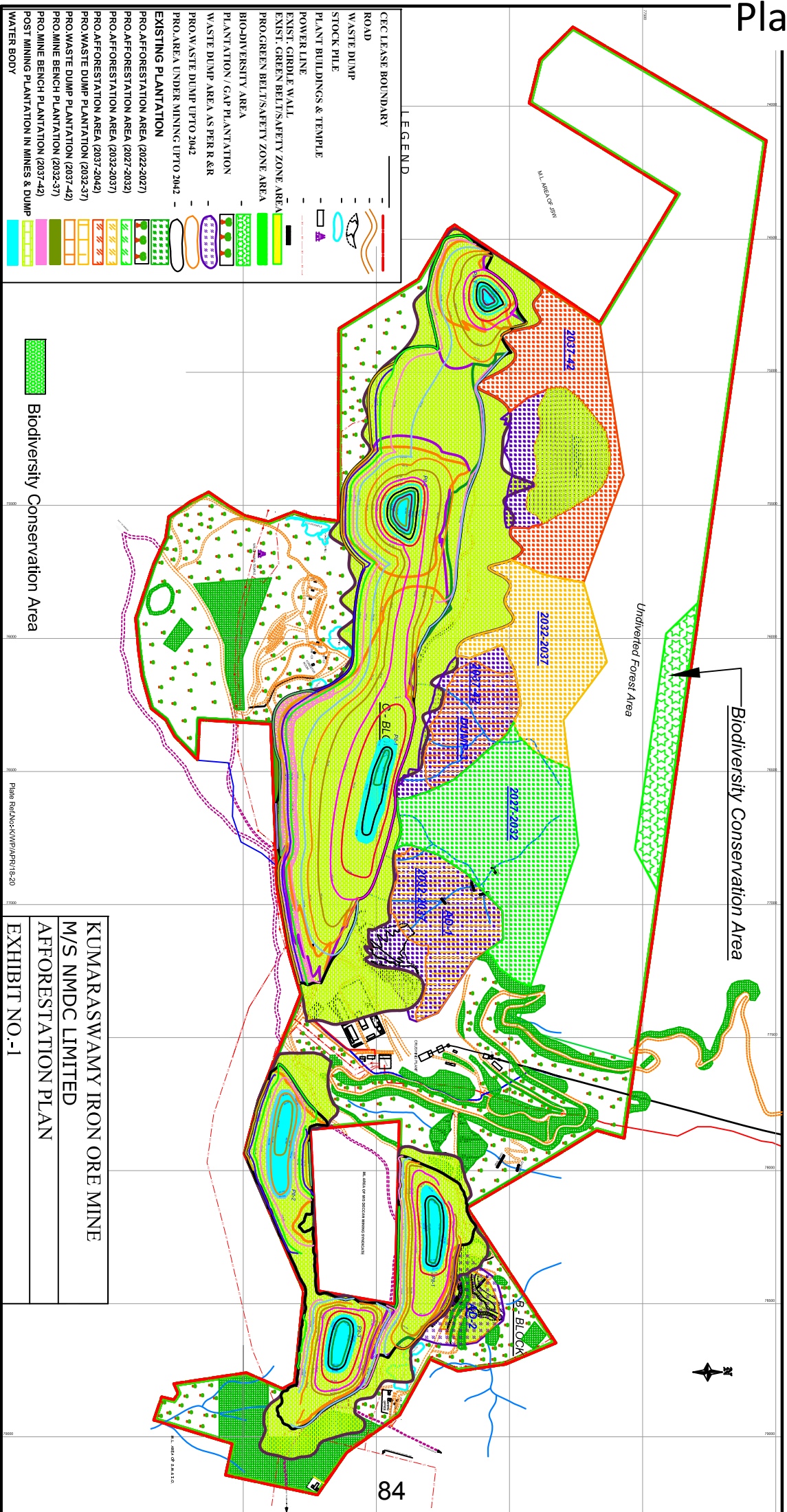


LEGEND	
CEC LEASE BOUNDARY	
WORKING	
ROAD	
STOCK PILE	
WASTE DUMP	
PLANT BUILDINGS & TEMPLE	
POWER LINE, ELE. POLE, TOWER	
BENCH MARK	
CONTOURS	
WATER PIPE LINE	
NALLAH	
AREA ALREADY AFFORESTED	
GREEN BELT/SAFETY ZONE	
BORE HOLES	
CLIFF	
ULTIMATE PIT LIMIT	

SCALE :- 0 100 200 300 400 500Mts.

KUMARASWAMY IRON ORE MINE
 M/S NMDC LIMITED
 SURFACE PLAN
 PLATE NO.-2.1





PHOTOGRAPHS (PLANTATION)



Plantation for the year 2017-18 near V-Dump and Sethu dump



Plantation along road side



Plantation along road side



Plantation along road



Seed Broadcasting work at KIOM (Near Crushing plant Dump)



V. **PP shall provide the issues raised during previous Public Hearing and status of implementation of compliance made during PH.**

The public hearing for Kumaraswamy Iron Ore Mine was held on 6/8/2001 and the proceedings of the Environmental Public Hearing duly signed by Dy. Commissioner and the Chairman, Environment Public Hearing Committee, Bellary District, Bellary is enclosed as **Annexure-1**. The status of the implementation and compliance made by NMDC, Kumaraswamy iron ore mine is given below:

Sl. No.	Public Hearing Points	Action by Project / Present Compliance Status
1.	The project proponent should strictly implement soil conservation, dump stabilization measures and continuous afforestation measures to avoid run off and siltation in the valleys as per commitment submitted in the Environment Management.	➤ Agreed and compliance is in progress. ➤ Kumaraswamy Iron Ore Mine is implanting Soil conservation, Dump stabilization measures and continuous afforestation measures to avoid runoff and siltation in the valleys as per the plan submitted in the EMP. ➤ The engineering measures works such as construction of loose boulder check dams, Gabion check dam, brush wood check dams, silt setting tanks are being implemented for control surface water pollution. ➤ The following is the status of works undertaken: • Check dams for Nallah-17 no.s. • Gabion/wire crate check dam -23 no.s. • Stone masonry check dams-6 no.s. • Rain water harvesting pits - 13 no.s. • Silt setting tanks -3 no.s – completed. • Earthen check dams (with stone pitching) - 10 no.s completed. ➤ Dump stabilization measures: • Toe wall, garland drains and geo-coir matting for waste dump-1 is in progress. • Toe wall, garland drain and geo-coir matter for waste dump-2 is completed. • Similar measures shall be taken for proposed waste dump no: 3 & 4. ➤ As per approved R&R Plan Gully Plugs (Brush wood check dams, Logwood check dams, Loose boulder check dams) will be constructed at the time of Conceptual Stage. ➤ Soil conservation measures:

Sl. No.	Public Hearing Points	Action by Project / Present Compliance Status
		➤ 1,99,000 saplings of native species have been planted under afforestation till March,2019.
2.	The project proponent shall strictly adhere to the conditions and guide lines stipulated by the Forest Department, Ministry of Environment & Forest, New Delhi and Karnataka State Pollution Control Board.	➤ Agreed and complied with. ➤ Project is being adhere to the conditions and guidelines stipulated by the Forest Department, MoEF&CC, New Delhi and Karnataka State Pollution Control Board on time to time. ➤ The six-monthly compliance reports are being regularly submitted to MOEF&CC, RO once in 6 months and the latest report from October 2019 to March 2020 uploaded in Parivesh portal is enclosed as Annexure-2.
3.	The project proponent shall prepare reclamation plan on annual basis for another 5 years and the plan shall have to be submitted to the Forest Department for monitoring the implementations.	➤ Agreed and complied with. ➤ The compliance report on the conditions stipulated in Forest clearance verified by RFO, Sandur is enclosed as Annexure- 3. ➤ Project is also implementing measures given in the EIA/EMP report and R&R plan duly approved by Monitoring Committee constituted by Hon'ble Supreme Court of India.
4.	Further, the committee expressed that there is a proposal by the State Government i.e Forest Department to raise Compensatory Afforestation over double the lease area in degraded forest land. The committee recommends that the vast degraded forest land which is available in Bellary Dist., hence the committee recommended the State Government to take the respective Compensatory Afforestation programme in Bellary district degraded forest area itself.	➤ Agreed and complied with. ➤ According to this condition and the terms & conditions of the Stage-I approval, project has paid CA charges of Rs.369.86 lakhs for raising compensatory afforestation over 682.40 Ha degraded forest land (double the forest land of 341.20 Ha being diverted). (details enclosed at Annexure: 4.4 of EIA/EMP report).

PROCEEDINGS OF THE ENVIRONMENT PUBLIC HEARING HELD ON 6.8.2001 AT 11.00 AM IN RESPECT OF ESTABLISHMENT OF KUMARSWAMY IRON ORE MINES AT DEOGIRI VILLAGE BY M/S NATIONAL MINERAL DEVELOPMENT CORPORATION LIMITED, DONIMALAI, SANDUR TALUK, BELLARY DISTRICT.

a) Venue of the Public Hearing	: Conference Hall Office of the Deputy Commissioner, Bellary District, Bellary.
b) Members Present	: Annexure-I
c) Members Absent	: Annexure-II
d) Special Invites	: Annexure-III
e) Representatives of the Project	: Annexure-IV
f) Officers present	: Annexure-V
g) Name of the public participated	: Annexure-VI

PREAMBLE:

M/s. National Mineral Development Corporation Ltd. is operating a mechanized iron ore mines at ML. No. 839 in Donimalai Forest Range in an extent of 608 hectares of forest land and are engaged in extraction of iron ore fines and lumps with the production capacity of 4.0 MTPA. Besides the said company is operating one more mines at ML. No. 1111 in Kumaraswamy range forest, Deogiri village, Sandur Taluk, Bellary District. At present the mining activity is confined to revenue area in Block 'B' to an extent of 74 hectares with the production of 3.0 lakh tons per annum. The said corporation proposed to establish an iron ore mines in the same ML area in "C" block of Swarnamalai range forest in an extent of 492.33 hectares. The total lease area in 'B' and 'C' blocks is 647.5 hectares out of which 492.33 hectares belongs to Forest Department in 'C' block and 155.17 hectares of Government and Private patna lands. Further they also proposed to increase the production capacity from the existing 4 MTPA to 7 MTPA by working the existing Donimalai and the proposed Kumaraswamy Iron Ore Mines as an integrated mining complex.

The said company authorities have submitted the Executive Summary of the proposed project Kannada and English along with water consent application in prescribed Form-XIII and air consent application in prescribed Form-I to the Karnataka State Pollution Control Board, Bangalore, as laid down in the procedures of EIA notification 1997. The Karnataka State Pollution Control Board issued public notice in the leading newspapers on 5.7.2001 and also issued paper notification in local newspaper of Bellary District regarding the proposed project establishments by inviting objections/suggestions from the bonafide residents and general public who are affected from the proposed project.

The Environment Public Hearing scheduled on 6.8.2001 at 11.00 AM started with the welcome speech by the Deputy Environment Officer, Regional Office, Bellary. The Deputy Commissioner and the Chairman of the Public Hearing Committee Bellary addressed the gathering on the need of conducting Environment Public Hearing for the proposed project and informed the project proponents to present the case before the committee as well as to the public.

Shri Paragopal Dasappa General Manager of the said company gave a brief presentation of the proposed project and highlighted the various aspects of Donimalai iron ore mines operating at ML. No. 839 in an area of 608 hectares by highlighting the

production capacity of 4 MTPA ROM and various aspects of soil conservation, solidification and wet beneficiation activities being carried out in the existing mines. He informed that the ore body will last for another 10-12 years and in order to augment the demand, NMDC is proposing to establish iron ore mines in 1st block of Khamrawany range tract and to increase the production capacity from 4 to 7 MTPA by working existing Dominalai and the proposed Khamrawany iron ore mines as an integrated complex. In this context they proposed to acquire 647.5 hectare area out of which 492.33 hectares of forest and 155.17 hectares of Revenue and patta lands in the area. He highlighted that the proposals has already been submitted to the State & Central Govt. for getting Forest Clearances from the MOEF, New Delhi.

Further he informed that the company proposed to invest 9.5 % of the total project cost for environment management and to utilize the existing facilities of Dominalai iron ore mines such as screening plant, tailing pond, electricity and colony. He introduced Sri. S. Venkatesh Murthy, consultant Mayavathi Ann Labs Ltd., Hyderabad to present the findings of the RDA studies conducted for the proposed project.

The consultant briefed the various environment impacts arising from the proposed mining activity with base line water, air and soil quality data with future predictions. He informed that details about base line data collected for analyzing the air quality, water quality, noise, land, ecology of the area, socio economic details are collected in the study area upto 10 kms radius and the data is utilized for preparation of environment management plan. He informed that the water requirement for the existing and proposed mines is from Nachalla reservoir and they require about 16000m³/day of water. For the run off and erosion from the rainy season they are proposing to install gabion drains, valley checks and check dams and for the discharge from the screening plant which contains suspended solids as polluted, the existing tailing dam will be used for slime settling to enter the additional land they prepared to raise the height of existing tailing dam by another 5.0 metre. Since the existing storage life is for another 5 years at full rated capacity of Dominalai and Khamrawany iron ore mines (7 MTPA). It was also informed that they are planning to set up a steel plant using Romelto technology for using the iron scale slimes accumulated in the tailing pond which is being tried out at their Dhalbokda Iron Ore Mines, Madhya Pradesh. Further he highlighted that the domestic effluent from the colony is being treated in oxidation ponds and the treated effluent is being utilized for horticulture purposes.

With respect to air quality studies the consultant highlighted that the base line that the air quality has been collected at 6 locations and maximum base line concentration in the area 111 ug/m³ and the predicted concentration 79.2 ug/m³ and the overall concentration is 192.2 ug/m³. It was also informed that it is less than the limits of 200 ug/m³ as laid down in the NAAQ standards. The baseline data for noise levels were collected at 9 stations and it was predicted that noise levels will be within the limit of 90 dB(A) for 8 hours exposure period at service center, crushing, screening plant and loading center. He also briefed about land environment, impact on ecology of the area, socio economic status and informed that there is no adverse impacts due to mining and allied operations.

After brief presentation on the proposed project the Deputy Commissioner and the Chairman of the Environment Public Hearing informed the public that the Karnataka State Pollution Control Board issued public notifications in the leading News Papers on the proposed project establishment by inviting objection / suggestions from the public. So far, nobody has filed objections/ suggestions on the proposed project to the State Pollution Control Board as well as to the District Administration Office. Further, the Deputy Commissioner invited the panel members and the public to express their comments/ views/ suggestions on the proposed project.

production capacity of 4 MTPA ROM, and various aspects of soil conservation, afforestation and wet beneficiation activities being carried out in the existing mines. He informed that the ore body will last for another 10-12 years and in order to augment the demand, NMDC is proposing to establish iron ore mines in 'C' block of Kamsarwamy range forest and to increase the production capacity from 4 to 7 MTPA by working existing Domimalai and the proposed Kamsarwamy iron ore mines as an integrated complex. In this context they proposed to acquire 647.5 hectare area out of which 492.33 hectares of forest and 155.17 hectares of Revenue and patta lands in the area. He highlighted that the proposal has already been submitted to the State & Central Govt. for getting Forest Clearance from the MOEF, New Delhi.

Further he informed that the company proposed to invest 2.5 % of the total project cost for environment management and to utilize the existing facilities of Domimalai iron ore mines such as screening plant, tailing pond, electricity and colony. He introduced Sri. Chandra Murthy consultant Bhagavathi Ana Labs Ltd., Hyderabad to present the findings of the REIA studies conducted for the proposed project.

The consultant briefed the various environment impacts arising from the proposed mining activity with base line water, air and soil quality data with future predictions. He informed that details about base line data collected for analyzing the air quality, water quality, noise, land, ecology of the area, socio economic details are collected in the study area upto 10 Kms radius and the data is utilized for preparation of environment management plan. He informed that the water requirement for the existing and proposed mines is from Narihalla reservoir and they require about 16000m³/day of water. For the run off and erosion from the rainy season they are proposing to install gashold drains, gulleychecks and check dams and for the discharge from the screening plant which contains suspended solids as pollutant, the existing tailing dam will be used for slime settling to enter the additional load they proposed to raise the height of existing tailing dam by another 5.0 metre. Since the existing storage life is for another 5 years of full rated capacity of Domimalai and Kamsarwamy iron ore mines (7 MTPA). It was also informed that they are planning to set up a steel plant using Romelto technology for using the low grade slimes accumulated in the tailing pond which is being tried out at their Balleddla Iron Ore Mines, Madhya Pradesh. Further he highlighted that the domestic effluent from the colony is being treated in oxidation ponds and the treated effluent is being utilized for horticulture purpose.

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Sri. M.S.R. Rao, the panel member expressed his views that the project details shall have to be explained in Kannada so that the public will understand project proposal. Later on the said consultants and Electrical Engineer of the said company translated the various aspects of the projects in Kannada.

Sri. Srivastava, the panel member and the Executive Director, Karnataka Udyog Mitra, enquired about the diversion of PWD road and depletion of groundwater due to mining operations. Sri. Parohit, Executive Director informed that in case of requirement, the PWD road will be diverted and same will be done in consultation with concerned departments. The consultant informed that the water table has drastically increased due to sludge discharge in tailing dam and the near by agriculturists are harvesting 2 to 3 crops in a year.

The Deputy Commissioner and the Chairman of the EPH Committee enquired about the availability of data on groundwater quality and ground water levels due to mining activity in this area for which the consultant informed that they will be submitting the data for consideration.

Sri. Ashwathnarayan, Scientist, DEE sought clarification regarding the higher literacy levels in Donimalai town ship compared to Sandur & Bellary taluk mentioned in Table 4.6 of REIA report. The consultant clarified that data is as per 1991 census and now there is an increase in literacy rate in other areas also. The said scientist again sought the clarification regarding studies carried out at Narahalla with regard to Bio-assay test (Page No. 4.75 of REIA). The consultant clarified the same to the scientist by explaining the details mentioned in table 4.32 of REIA.

The Deputy Commissioner and the Chairman of the EPH Committee sought clarification regarding rate of denudation, rate of siltation, area to be covered for mining activity and the environmental conservation measures carried out so far and for the future expansion programme. In continuation to the question Sri. Ganesh Rao, panel member enquired about how much forest area will be cleared, how much afforestation will be done, What is active mine area, how to regenerate the forest. The consultant and Dr. Sethi, Junior Manager (Env.) of the said corporation informed that afforestation measures in existing Donimalai mines is taken up in an extent of 210 hectares out of 608 hectares of land. The active mining area is 160 hectares about 6.5 lakh of saplings and seedlings have been planted in the afore said areas which have shown 90% survival. Further he informed that the existing active dumps will be stabilized in the next 10 years by 2012. The afforestation plan of 10 years and the budget allocations on the said activity has already been submitted to the MOEF.

Sri. Ganesh Rao, the panel member enquired that Salgoankar is conservative about permitting mining in forest area nothing much has been saved and how are you going to recover the denuded area and what is the budget allocated towards Environment. Sri. Pradeep Sethi, Junior Manager (Envt.) informed that 19 crores on environment aspect and 20 lakhs / annum towards plantation is earmarked in the budget. The Executive Director informed that there is a separate budget for implementation of environment measures as for the Forest Clearance guidelines which is a statutory requirement for which the corporation will stick on to the allocated budget.

The Deputy Commissioner and the Chairman of the EPH Committee enquired about whether any study on flow of silt from mining activity has been carried out and the area of pollution involved and for this how you are controlling run off in mine dumps and informed to explain along with the available data.

The Executive Director of the said corporation explained that there are 4 gulleys in the existing Donimalai mines which are flowing towards eastern and western sides. Out of this one goes to tailing dam and other three are going to check dams. During monsoon to avoid run off dump stabilization has been done by providing check dams so that there is no flow of silt into the valley.

Sri. Ashwathnarayana, Scientist, DEE enquired that the Fish survival rate is 10% in Narihalla tank and whether it is fully contaminated and also informed that analysis report regarding Narihalla tank that 10 % survival rate of fish which reflects that the lake is contaminated. In response to that the Executive Director of company informed that reservoir is receiving water from Bellary mining sector and nothing from Donimalai sector is going towards Narihalla tank. Further he also informed it is drinking water source for Donimalai town ship and the suspended solids level is within limits. The said scientist suggested to panel member to recommend for carrying out sustainability study of ecosystem for the entire area. The Deputy Conservator of Forest Sri. Mahesh Sirur, Bellary informed that Govt. of Karnataka has addressed an agency to carry out the afore said studies in Bellary region. Till such time the permission will be given to existing operating mines. For new leases it will be considered after completion of the said study.

Sri. Mahesh Sirur, Deputy Conservator of Forest has quoted that the number of plantations shown in plantation programme is 7.0 lakh seedlings in 200-300 hectares and as per norms the maximum number of seedlings that can be planted is maximum of 2500 seedlings/hectare and also pointed out with respect to dumps that plantation had been carried out on dumps and due to presence of ore-body below the dumps the ore was again extracted and to reclaim the area wherever the ore-body is exhausted by refilling and developing plantation in the reclaimed area.

The Executive Director of the said corporation informed that out of 608 hectares of ML area, 160 hectares is the active mining area and 115 hectares of ML area consists of active dumps.

The Deputy Commissioner and the Chairman of EPH Committee wanted clarifications regarding Donimalai iron ore mines to give the details regarding pre and post mining operations of the proposed Kumarawamy IOM out of which what is the active & inactive areas, and how much affected and what is the action plan for 2001-2002. The proponents agreed to submit the details.

Sri. MSR Rao, the panel member informed that the Executive Summary is confusing. It consists of both the mines and is not explicit with the following informations. 1) Land use plan 2) details presented before the panel has not been included in Executive Summary all the informations are incomplete. 3) What steps have been taken for existing mines and future plans are not given in summary for consideration of project proposals 4) Water utilization statistics is incomplete in some of the columns it is mentioned in litres per day and litres per hour which is a misleading information to the public. 5) It was also pointed out to clarify the provision of Fish pond after oxidation pond and application of treated trade effluent of quantity 1 cusec/day on 20 acres land which is very less compared to standard practice. 6) Tailing pond details regarding capacity, water utilization, re-use is not mentioned in Executive Summary 7) Specific details about ecology not available.

Sri. Chandra Rao, the panel member informed that the executive summary is not adequate and same is incomplete. Sri. S.D.P. Murthy, the consultant informed that the details will be submitted to the panel members.

After detailed presentation and discussions the Committee members expressed their dissatisfaction about the present performance of the mining activity and the lack of required information on environmental control measures in the Executive Summary. By considering the said fact the committee decided to visit the mining activities before taking final decision on the proposed project.

In continuation with the clarification sought by the Environment Public Hearing committee members during 26.8.2001 the project proponents have submitted the additional information about the project proposal and the same is enclosed as Annexure-VII. Further, the Environment Public Hearing committee members visited the existing project site of M/s National Mineral Development Corporation Ltd., at Denimalai and the proposed Kumarawamy Iron Ore Mines on 26.9.2001. The project proponents explained the various activities of the mining operations and environment protection measures implemented in the existing iron ore mines at Denimalai. The committee members viewed the various aspects of the mining operations, soil conservation and afforestation measures implemented by the said corporation over a period of time. Further, the check dams, retaining walls and tailing dam provided for the valleys were also observed by the committee members. The stage wise reclamation plan proposed by the project proponents was also reviewed by the committee members. Further, the committee visited the proposed Kumarawamy Iron Ore Mines site at 'C' block of Kumarawamy range. At the site the existing mining operations carried out in various head of 'D' block and the check dam, gullyland drains, retaining walls and afforestation programme implemented by the mining authority was observed by the committee.

After detailed observations, the committee members informed the project proponent to clarify the following issues.

1. The proposals does not reflect what it reads from the committee with respect to augmentation of 4 to 7 MTPA of iron ore production.
2. The existing activity of Denimalai iron ore mines and disposal of slurry waste.

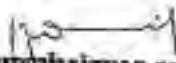
In response to the questions raised by the committee members Sri. Neelaji and Sri. Karyanapudi, Senior Executives of the said project explained that M/s NMDC propose to establish Kumarawamy Iron Ore Mines with a production capacity of 7 MTPA of ROM iron ore. Initially Kumarawamy Iron Ore Mines will produce 3 MTPA of iron ore and the balance quantity of 4 MTPA of iron ore shall continue to be produced from Denimalai mines till its ore reserves gets exhausted. Further, the existing infrastructure facilities of Denimalai like screening plant, loading plant shall be augmented to meet ultimate production capacity of 7 MTPA ROM from Denimalai/Kumarawamy complex. With respect to clarification regarding the existing activity of Denimalai iron ore mines the said executives informed that a detailed land use plan for an area of 600 hectares has already been prepared and the same was submitted to the committee as an additional information and the said clarification was reviewed by the committee members. Further the project proponents clarified that the total capacity of slurry waste produced from the township is 800 m³/day. This slurry after proper treatment conforming to the standards laid down by the Karnataka State Pollution Control Board which is being let out to the Bay of Bengal. The committee has also said that the committee members will advise the project proponent to submit the Environmental Clearance application as recommended by the committee.

After detailed deliberations, the committee members express their views to consider the project proposals subject to Forest Clearance along with the following conditions:

1. The project proponent should strictly implement soil conservation, dump stabilization measures and continuous afforestation measures to avoid run off and siltation in the valleys as per the commitment submitted in the Environment Management Plan.
2. The project proponent shall strictly adhere to the conditions and guide lines stipulated by the Forest Department, Ministry of Environment & Forest, New Delhi and Karnataka State Pollution Control Board.
3. The project proponent shall prepare treatment and reclamation plan on annual basis for another 5 years and the plan shall have to be submitted to the Forest Department for monitoring the implementations.
4. Further, the committee expressed that there is a proposal by the State Government i.e. Forest Department to raise compensatory afforestation over double the lease area in degraded forest land. The committee recommends that the vast degraded forest land which is available in Bellary district, hence the committee recommended the State Government to take the respective compensatory afforestation programme in Bellary district degraded forest area itself.

In the mean time the project proponent have submitted further clarifications sought by the committee members during the site visits and the same is enclosed as Annexure-VIII.

Date:
Place: Bellary


Deputy Commissioner and the Chairman,
Environment Public Hearing Committee,
Bellary District, Bellary.

ANSWER-1

1. Sri. Jayalal Akhilar (A.) Deputy Commissioner Bellary District, Bellary	Member
2. Sri. B.B. Gunterath Member Secretary KSTCO, Bangalore	Member Secretary
3. Sri. Datta, A. Jayashankar Executive Officer, Dept. of Forest, Ecology and Environment (Hq. Environment)	Member
4. Sri. Shank. Mohanach Tech. Assistant on behalf of C.E. Pollution Control Division Bangalore	Member
5. Sri. H. Hanuman Reddy Joint Director Department of Agriculture, Bellary	Member
6. Sri. K.V. Ramachandra Reddy Tech. Assistant on behalf of Chief Engineer, Minor Irrigation, Bellary	Member
7. Sri. Vasudev Marthy C.K. Section Officer, Department of Energy, Bangalore	Member
8. Sri. Kumar Managing Director Kannada Udyog Mitra, Bangalore	Member
9. Sri. Lakshappa Ex. President Tawa Panchayat, Kannurapur	Member
10. Sri. B. Gangadharan Joint Dist. Insp., Bellary	Member
11. Sri. M. R. Rao Joint Dist. Engineer, Bellary	Member
12. Sri. P. S. Subash Chandra Joint District Engineer, Bellary	Member
13. Sri. P. S. Subash Chandra Joint District Engineer, Bellary	Member

ANNEXURE-II
MEMBERS ABSENT

- | | |
|---|--------|
| 1. Deputy Commissioner
Excise Department
Bellary | Member |
| 2. Assistant Director
Department of Tourism
Hoapet | Member |
| 3. Executive Engineer
P.W.D. Bellary | Member |
| 4. Joint Director
Department of Industries & Commerce
Bellary | Member |
| 5. Tahsildar
Sandur Taluk | |

ANNEXURE-III
SPECIAL INVITIES

- | | |
|---|--------|
| 1. Sri. Mahesh Shiroor
Dy. Conservator of Forest (Territory)
Bellary | |
| 2. Tahsildar
Sandur Taluk, Sandur. | Absent |
| 3. Joint Director
District Industries Centre
Bellary | Absent |
| 4. Sri. Narayana Reddy
Joint Director
Agricultural Department
Bellary | |
| 5. Sri. K.V. Ramachandara Reddy
Executive Engineer
Minor Irrigation Department
Bellary | |
-

ANNEXURE – IV

REPRESENTATIVES OF THE PROJECTS (NMDC)

1. Sri. G.S. Parohel, Executive Director
2. Sri. P. Karyanipudi, DGM projects
3. Sri. C.E. Kundo, Senior Manager (Mining)
4. Sri. D.P. Selwan, Senior Manager (Geology)
5. Sri. S.G. Mallikarjun, Assistant Manager
6. Sri. Chandrakenthi, Junior Manager
7. Sri. M. Adivappa, Junior Manager
8. Sri. S. Krishna Murthy, Junior Manager
9. Sri. P.R. Sethi, Junior Manager (Envt.)
10. Sri. D. Rajasekhar, Dy. Manager (Envt.)
11. Sri. A. Md. Firoz, Manager
12. Sri. C.S. Naidu, DGM (Envt.)
13. Sri. T. Mallikarjun, Dy. Manager
14. Sri. S. Jeevappa,
15. Sri. Nazeer Sab
16. Sri. A. Marulasiddappa
17. Sri. K. Anjaneya
18. Sri. M. Shivaji
19. Sri. B.S. Chandramurthy, Consultant
20. Sri. Y.H.S. Murthy, Consultant
21. Sri. V.P. Naidu
22. Sri. S.S. Rao, DMD & CEO
23. Sri. K.T. Krishna Deshika, VPF & CS
24. Sri. K.J. Varkey, GM (Operation)
25. Sri. S. Mohan, Manager, HRD & A
26. Sri. M.M. Murthy, DM, Civil
27. Sri. D.D. Narvani, DM-Chem
28. Sri. M. Venugopal, Engineer
29. Sri. Thirumalai Selvan, Engineer
30. Sri. R.V. Bhat, Manager (Operation)
31. Sri. Sridhar, Asst. Eng. HRD
32. Sri. Hanumantha Rao
33. Sri. Anoop Naik
34. Sri. Gangadhar Shriv
35. Sri. R. Peddanna
36. Sri. S.D. Bhat
37. Sri. Feby Koshy

ANNEXURE-V
OFFICERS PRESENT

1. Dr. P. Niranjana
Deputy Environment Officer
Karnataka State Pollution Control Board
Bellary
 2. Sri. Diwakar
Assistant Environment Officer
Karnataka State Pollution Control Board
Bellary
 3. Sri. Ashok Kumar. S.R.
Assistant Environment Officer
Karnataka State Pollution Control Board
Bellary
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ANNEXURE-VI

NAME OF THE PUBLICS PARTICIPATED

1. Sri. Raghu, Bellary
2. Sri. Ravi, Bellary
3. Sri. Sidda, Bellary
4. Sri. Siddhu, Bellary
5. Sri. M.S. Alva, (EML), Manager
6. Sri. S. Sambasiva Rao, DGM, Mines
7. Sri. B. Nagaraj, Survey officer
8. Sri. B. Thimmappa, Narasimpura
9. Sri. K. Chowdappa, Narasimpura
10. Sri. D. Shanmukappa, Narasimpura
11. Sri. M. Mahalingaiah, Narasimpura
12. Sri. Lingappa, Murasimpura
13. Sri. Obanna, Murasimpura
14. Sri. Mukappa, Krishnanagar
15. Sri. J. Sadik, Krishnanagar
16. Sri. Phakusab, Krishnanagar
17. Sri. A. Qayum Sagri, Hospet
18. M. Ramalinga, Bellary
19. Sri. B. Basava, Hospet
20. Sri. Madivalappa, Ranjitpur
21. Sri. Nandisubbanna, Ranjitpur
22. Sri. B. Ramesh Kumar, Bellary
23. Sri. H.P. Maradi, Asst. Manager, JVSL
24. Sri. Kumargouda, Ranjitpur
25. Sri. A. Govinda, Ranjitpur
26. Sri. B.G. Yerriswami, Bhujangnagara
27. Sri. Y.D. Kumaraswamy, Deogiri
28. Sri. S. Maranna, Deogiri
29. Sri. O. Kumaraswamy, Deogiri
30. Sri. Ramachandra, Deogiri
31. Sri. Subhramani, Deogiri
32. Sri. Sankappa, Krishnanagar
33. Sri. N.K. Yusuf, Krishnanagar
34. Sri. Bajasaaba, Krishnanagar
35. Sri. Vijayakumar, Doulapura
36. Sri. Gopalakrishna, Bellary
37. Sri. M.S. KashiRao, Bellary
38. Sri. V. Raghavendra, Bellary
39. Sri. C.R. Narasimha, Sandur
40. Sri. B. Jeelabasha, Bellary
41. Sri. M. Venkatasubbasha, Sandur
42. Sri. Krishnakumar P.V., SMIORE, Deogiri
43. Sri. Yogendra Singh, Narasapur
44. Sri. H. Nagappa, Narasapur



एन एम डी सी लिमिटेड N M D C Limited

(भारत सरकार का उद्यम / A Govt. of India Enterprise)

दोणिमलै लौह अयस्क खान / Donimalai Iron Ore Mine

ISO 9001:2000
ISO 14001:2004

Donimalai Township – 583 118, Dist: Bellary, Karnataka.

Phones: 08395 – 274654 / 274618, Fax: 08395 – 274687 / 274654

DNM/KIOM/MoEF/82M/2019-20/2230

Date: 29.06.2020

To,
The Addl. Principal Chief Conservator of Forests (C),
Ministry of Environment & Forest, Climate Change,
4th Floor, E&F Wing,
Kendriya Sadan, Koramangala,
Bangalore-560 034.

Sub: Compliance report of Environment Clearance issued to Kumaraswamy Iron Ore Mine of NMDC Ltd, ML No.1111 for the period from October, 2019 to March, 2020-reg.

Ref: Environment Clearance letter No: J/-11015/20/2002-IA. II (M) dated 29.10.2004

Dear Sir,

Please find enclosed herewith the report on compliance to the conditions of above referred Environment Clearance awarded in respect of Kumaraswamy Iron Ore Mine, ML No: 1111, belonging to NMDC Ltd, Deogiri village, Sandur Taluk of Ballari District., along with the annexures for the period from **October, 2019 to March, 2020.**

Submitted against compliance of the EC conditions please.

Thanking You

Yours Sincerely,

Dy. General Manager (Min)

Encl: - As above.

हिन्दी में पत्र व्यवहार को हम प्राथमिकता देते हैं। हिन्दी में पत्र व्यवहार का स्वागत है।

पंजीकृत कार्यालय : 10-3-311/ए खनिज भवन, कैसल हिल्स मासाब टैंक, हैदराबाद 500 173
Regd. Office: 10-3-311/A, Khanij Bhavan, Castle Hills, Masab Tank, Hyderabad 500 173

Environmental Clearance Compliance Report for the period from Oct,19 to March-2020.



**M/s. NMDC Limited-
Kumaraswamy Iron Ore Mine,
Bellary Dist., Karnataka.**

**Guidelines for submission of condition wise Half yearly compliance report
for Kumaraswamy Iron Ore Mine (ML No.1111) (October,19 to March,2020)**

EC No. Letter no. J-11015/20/2002-IA.II (M) G.O.I- MoEF, Date: 29.10.2004.

Sl.No	Guidelines	Special aspects of the guidelines	NMDC action on compliance report.
01	Mode of Submission	Both Soft and Hard copy of the report to be submitted.	Agreed and Submitting in Soft & Hard copies.
02	Soft copy submission	Soft copy of the report has to be submitted to the following Email ID: rosz.bng-mef@nic.in	Agreed and sent through email.
03	Hard copy submission	Hard copy of the report has to be submitted to the following Address: <i>The Addl. Principal Chief Conservator of Forests (C), Ministry of Environment & Forest, Climate Change, 4th Floor, E&F Wing, Kendriya Sadan, Koramangala, Bangalore-560 034.</i>	Agreed and sending the report to desired officials along with soft copy in the form of CD.
04	Periods of submission for half yearly compliance reports.	April to September – 1 st Half. October to March- 2 nd Half.	Compliance report for 2 nd half (i.e Oct,2019 to March,2020) is being submitted to your office.
05	Submission of supporting data & annexures.	Project proponents should not send all the monitoring data but only should send a compilation of the data pertaining to Air, Water and Ground not exceeding 3-4 pages.	Agreed and submitting with the report as Annexure- 1, 2 & 3.
06	Submission of current status of the project.	The information should be an integral part of the report and the status with respect to function, construction, capacity attainment etc., should be given in not more than 50 words.	Agreed and status report enclosed as Annexure-4.
07	Submission of name & contact details of the responsible person with respect to the submitted report.	The contact details with emails, telephone numbers, mobile numbers fax numbers etc., of the responsible person of the project who is competent speak on behalf of the company and on environmental aspects should be given	Name: Dr. J.A.Kamalakar Designation: DGM (Env.) Tel No. 08395-232421. Tele fax No. 08395-274654. Mob No. +91 9490759646 E Mail: jakamalakar@nmdc.co.in ; envdiom@gmail.com
08	Updated contact details, address, telephone / mobile numbers of company / executives.	Updated address of the project with all contact information address of head office if any Emails, details of environment management cell and UPS locations of the specified area may be provided.	The detailed list enclosed as Annexure-5.
09	Email ID and website address of the company	Email address of the company, email address of any two responsible persons including the project head and website address should be provided.	The details are enclosed as Annexure-6.
10	Half Yearly Report mailing guidelines and submission in person.	The envelope containing the half yearly reports may be super scribed with "Name of the project" – EC No. and date – Half yearly report for the 1 st or 2 nd half as the case may be.	Agreed and sending the report as per the guidelines.
11	Contact details of MoEF&CC staff for further clarifications	Dr.S.K.Susarla, Scientist G – 08025635907 Dr.Sudhir Chintalpati, Scientist D–08025502577, John Thomas, Research Officer – 08025635906, Dr.DolaBhattacharjee, Research Asst.	Agreed.

**TERMS & CONDITIONS OF
ENVIRONMENTAL CLEARANCE OF KUMARASWAMY IRON ORE MINE
(ML No. 1111) GRANTED BY MoEF, NEW DELHI
Letter No.J-11015/20/2002-IA.II (M) G.O.I- MoEF, Date:29.10.2004.
PERIOD: OCTOBER,2019 TO MARCH, 2020.**

A. Specific Conditions:

Sl.No.	CONDITION	STATUS
i.	No mining should be carried out without the grant of forestry clearance for diversion of 492.33 ha. forest area by the Ministry of Environment and Forests.	The mining activity at Kumaraswamy Iron Ore Mine is being carried out as per the Forest Clearance (FC) issued by Forest authorities vide letter No: F.No.8-27/2005-FC dated 24 th July 2006. The Forest Clearance is for diversion of 341.2 ha, out of which 324.7 ha. is within Mine Lease area & 16.5 ha. is outside Mine Lease area.
ii	Approval from the Competent authority should be obtained for drawl of requisite quantity of water from Narihalla reservoir before starting work on the project	Executive Engineer, Irrigation Dept, GOK, Munirabad has approved the issue of 13.45Cu.sec water from Narihalla Reservoir vide letter No.WRE67 MTP 2013 dt.16.02.17. Annexure-7.
iii	The Environmental Clearance is subject to outcome of the Court cases pending in the Hon'ble High Court of Karnataka.	Noted and Agreed with.
iv.	Top soil should be stacked properly with adequate measures at earmarked sites and used for the development of green belt.	Top-soil in the area is very less and the same shall be stacked separately and utilized for afforestation purposes.
v.	The OB dumps should be stacked at the earmarked dump-sites only with proper terracing & overall slope of the dump should not exceed 28°. The OB dumps should be scientifically vegetated with suitable native species to prevent erosion and surface run-off. Monitoring & management of rehabilitated areas should continue until the vegetation becomes self-sustaining. Compliance status should be submitted to the MoEF & its Regional Office on yearly basis.	Waste generated during mining activity in the Revenue Land of Kumaraswamy Lease hold area is being stacked at an identified waste dump site and the same is being terraced and reclaimed biologically by planting native species. Check dams have been constructed to avoid rain washouts during the monsoon.
vi.	A greenbelt of adequate width should be raised by planting the native plant species all around the ML area, dumps, roads, tailing dam etc., In consultation with local DFO / Agriculture Department covering total area as proposed in the post-mining land-use plan. The density of the trees should be around 2500 trees per hectare. A Comprehensive progressive green belt development plan for the entire life of the mine along with year wise break up should be prepared and submitted to the Ministry within 3 months.	During the FY 2019-20, total 62,000 saplings of native species has been planted on dumps / afforestation at Kumaraswamy Iron Ore Mine under R&R plan implementation. Project is implementing measures given in the R&R plan duly approved by Monitoring Committee constituted by Hon'ble Supreme Court of India. In the R&R plan, various civil and bio-engineering works have been assigned to the project. R&R implementation and progress report is enclosed as Annexure-13 and Photographs of the same is enclosed as Annexure-13A.
vii	Check dams and siltation ponds of appropriate size should be constructed to arrest silt and sediment flows and soil and mineral dumps. The water so collected should be utilized for watering mine area, roads, green-belt development etc., the drains should be regularly de-silted and maintained properly. Garland drain (size, gradient and length) and sump capacity should be designed keeping	Check dam and girdle wall have been constructed below the active waste dump sites at Kumaraswamy Iron Ore Mine. The same is being de-silted regularly. Construction of check dams / girdle walls has been done as per approved R&R Plan.

Sl.No.	CONDITION	STATUS
	50% safety margin over and above peak sudden rainfall and maximum discharge in the area adjoining the mine site. Sump capacity should also provide adequate retention period to allow proper settling of silt material.	
viii	Regular monitoring of ground water level and quality should be carried out by establishing a network of existing wells and constructing new piezometers at suitable locations by the project proponent in and around project area in consultation with Regional Director, CGWB.	M/s. Space Geo-Tech, Bangalore is monitoring ground water levels and its quality in and around of Donimalai Iron Ore Mine and Kumaraswamy Iron Ore Mine. The frequency of monitoring is four times a year i.e. in pre-monsoon (April/May), monsoon (August), post-monsoon (November), and Winter (January). The Ground water levels and quality reports are regularly being sent to CGWB Southern region and MoEF. The monitored data for Winter Season is enclosed at Annexure-3 .
ix	Suitable conservation measures to augment ground water resources in the area shall be planned and implemented in consultation with Regional Director, CGWB.	The ground water table at Kumaraswamy Iron Ore Mine is much below the mining activity. However, efforts are being made in consultations with the CGWB to augment the ground water resources in the lease hold area. Ground water monitoring studies are completed and results are enclosed as Annexure-3 .
x	Drills should be operated with dust extractors or should be equipped with water injecting system.	All the drill machines have been provided with water injecting system and wet drilling is being followed.
xi	A detailed mine de-commissioning plan should be submitted to the Ministry of Environment and Forests Five years in advance for approval.	Noted.
xii	Vehicular emission should be kept under control and regularly monitored.	The Ore from Kumaraswamy Iron Ore Mine (Crushing Plant) shall be transported through downhill conveyor belt to the Screening Plant at DIOM. However, other light vehicles plying in the Kumaraswamy Iron Ore Mine area are being monitored for vehicular emissions.
xiii	Blasting operation should be carried out only during the day time. Controlled blasting should be practiced. The mitigative measures for control of ground vibrations and to arrest fly rocks and boulders should be implemented.	Blasting operation is confined only during day time. Controlled Blasting technique involving use of ray-dets and relays with optimum explosive charges per hole is adopted for mitigating the ground vibrations & fly-rocks/boulders.
xiv	Digital processing of the entire lease area using remote sensing technique should be done regularly once in three years for monitoring land use pattern and report submitted to MOEF&its regional office.	Complied. Project has carried-out studies on digital processing of entire lease area including core and buffer zone through M/s.Techdatum, Hyderabad during December-2015. Details of land use and maps are enclosed as Annexure-8 .
xv	The project proponent should take all pre-cautionary measures during mining operation for conservation and protection of endangered fauna such as bear, antelope etc., spotted in the study area in consultation with the concerned forest officials. Action plan for conservation of endangered fauna should be prepared and submitted to the Ministry and its Regional Office within 3 months.	Indian Institute of Bio-Social Research and Development, (IIBRD), Kolkata, had been engaged for the detailed study of Flora and Fauna present in the area and development of comprehensive biodiversity Management plan. The report was submitted to MoEF. The submitted Biodiversity Conservation Management Plan is under close implementation. According to the BMP, there is no presence of Rare Endemic or Endangered or Threatened

Sl.No.	CONDITION	STATUS
		(REET) species in the existing flora and fauna within the core area of Kumaraswamy Iron Ore Mine. The BMP has been prepared and submitted to CWLW, Bangalore for approval. The copy of covering and latest reminder letter is enclosed as Annexure-9.
xvi	A Final Mine Closure Plan along with details of Corpus Fund should be submitted to the Ministry of Environment and Forests 5 years in advance of final mine closure for approval.	The same is being submitted before the scheduled time.

B. General Conditions

Sl.No.	CONDITION	STATUS
i	No change in mining technology and scope of working should be made without prior approval of the Ministry of Environment and Forests.	Agreed.
ii	No change in the calendar plan including excavation, quantum of Iron Ore and waste should be made.	Agreed.
iii	Conservation measures for protection of flora and fauna in the core and buffer zone should be drawn up in consultation with the local forest department and experts.	Indian Institute of Bio-Social Research and Development (IIBRD), Kolkata, had been engaged for the detailed study of Flora and Fauna present in the area and development of comprehensive biodiversity Management plan. The submitted Biodiversity Conservation Management Plan is under close implementation. According to the BMP, there is no presence of Rare Endemic or Endangered or Threatened (REET) species in the existing flora and fauna within the core area of Kumaraswamy Iron Ore Mine. The BMP has been prepared and submitted to CWLW, Bangalore for approval. The copy of covering and latest reminder letter is enclosed as Annexure-9.
iv	At least four ambient air quality-monitoring stations should be established in the core zone as well as the buffer zone for RPM, SPM, SO ₂ and NO _x monitoring. Location of the stations should be decided, based on the meteorological data, topographical features, and environmentally and ecologically sensitive targets in consultation with the State Pollution Control Board. Data on Ambient Air Quality should be regularly submitted to the Ministry including its Regional Office at Bangalore and the State Pollution Control Board/CPCB once in 6 months.	Ambient air quality monitoring parameters such as PM ₁₀ , PM _{2.5} , SO ₂ , NO _x are being monitored at 6 locations regularly and the reports are being submitted regularly to Karnataka State Pollution Control Board. The sampling locations are as: 1) Mine Office Kumaraswamy Mine. 2) C Block near Mallamma Temple. 3) Kumaraswamy Mine B Block. 4) Screening Plant at DIOM. 5) Subbarayanahalli. 6) Near Crusher Area. 7) Donimalai Township (Near Hospital). 8) Ranjithpura Loading Yard. 9) Muthukulakunta Village. 10) Pellet Plant. 11) Near NMDC Administrative Building. 12) Near CISF gate. 13) Deogiri Village. 14) Kamaderuvu Village. The reports on the Ambient Air Quality Monitored

Sl.No.	CONDITION	STATUS
		during Winter Season 2019 by M/s.Pragathi labs, Hyderabad has been enclosed as Annexure-1 .
v	Fugitive dust emissions from all the sources should be controlled, regularly monitored and data recorded properly. Water spraying arrangement on haul roads, wagon loading, dump, trucks (loading and unloading) should be provided and properly maintained.	Monitoring work is being carried out by deploying MoEF approved laboratories. Water spraying arrangements are being made to control fugitive dust at the source. Fugitive dust generation is being controlled by practicing by following methods: 1. Wet drilling of blast holes. 2. Regular water sprinkling on haul roads where HEMM is playing. 3. High pressure mist sprayer at Main Crusher 4. Avoiding blasting during high speed winds Fugitive Dust emissions are being monitored on regular basis by M/s Pragathi Labs, Hyderabad which is MoEF recognized Labs. Results for Winter Season,2019 are enclosed as Annex-10 .
vi	Adequate measures should be taken for control of noise levels within prescribed standards. Workers engaged in blasting and drilling operations, HEMM operations etc... should be provided with ear plugs / muffs.	Personal Protective Equipments (PPE) like Safety Shoes, Helmets, Ear Plugs/Muffs are provided to workers who are engaged in blasting and drilling operations, HEMM operations etc. Employees are regularly being motivated and encouraged for compulsory use of Personal Protective Equipments (PPE's) on duty. Employee details, particulars of safety equipment, undergone training details are enclosed as Annexure-11 .
vii	Industrial waste water (workshop and waste water from the mine) should be properly collected, treated; so as to conform to the standards prescribed under GSR 422 (E) dated 19-05-1993 and 31-12-1993; or as amended from time to time. Oil & grease trap should be installed before discharge of workshop effluents.	It has been proposed to construct an effluent treatment plant at Kumaraswamy Iron Ore Mine after commencement of full-fledge mining operation.
viii	Environmental laboratory should be established with adequate number and type of pollution monitoring and analysis equipment in consultation with the State Pollution Control Board.	Donimalai Complex has a well-established Chemical Lab with sophisticated instruments viz., ICP and AAS for analysis of samples. Routine monitoring is being done by MOEF approved laboratories.
ix	Personnel working in dusty areas should wear protective respiratory devices and they should be also be provided with adequate training and information on safety and health aspects.	Personnel working in mining area are provided with Personal Protective Equipments and are trained as per DGMS applicable rules/regulations.
x	Occupational health surveillance programme of the workers should be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed.	Donimalai Complex has a well-established Occupational Health Centre and a Specialist Doctor on Occupational Health services for periodical Health Surveillance of the workers who are working in the mines. Details of Medical examinations carried out between October,2019 to March,2020 is enclosed as Annexure-12 .
xi	A separate environmental management cell with suitable qualified personnel should be set-up under the control of a Senior Executive, who will report directly to the Head of the Organization.	A separate Environment Department has been established in the project with a qualified Environmental Professionals (3nos) under the control of Mines Manager who reports to Head of the Project (General Manager). Additional support

Sl.No.	CONDITION	STATUS
		for Environment Department is available on regular basis through full-fledged Environment department, existing at the Head Office at Hyderabad.
xii	The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year wise expenditure should be reported to the Ministry.	Funds have been ear-marked for the Environmental protection measures in respect of KIOM is being utilized only for the purpose of Environmental Improvement. Expenditure incurred on Environment Management during FY 2019-20 is 374.52 Lakhs. The environmental statement in respect of Kumaraswamy Iron Ore Mine is being submitted regularly to KSPCB, Bangalore.
xiii	The Regional Office of this Ministry located at Bangalore shall monitor compliance of the stipulated conditions. The project authorities should provide a set of filled-in questionnaire and EIA/EMP report to them and extend full co-operation to the Officer(s) of the Regional Office by furnishing the requisite data / information / monitoring reports.	The information as desired by the Regional Office is being furnished regularly.
xiv	The project authorities should inform to the Regional Office located at Bangalore as well to the Ministry of Environment and Forests regarding date of financial closures and final approval of the project by the concerned authorities and the date of start of land development work.	Agreed, the same shall be intimated five years prior to the closing activities.
xv	A copy of the clearance letter will be marked to the concerned Panchayat / local NGO, if any, from whom any suggestions / representation has been received while processing the proposal.	The same is complied.
xvi	The State Pollution Control Board should display a copy of the clearance letter at the Regional Office, District Industry Centre and Collector's Office / Tahsildar's Office for 30 days.	A copy of the Environmental Clearance has been sent to the Regional State Pollution Control Board, Bellary; and the Member Secretary, Karnataka State Pollution Control Board for display of the same during Nov' 2004.
xvii	The project authorities should advertise at least in two local newspapers widely circulated around the project, one of which shall be in the vernacular language of the locality concerned within 7 days of the issue of the clearance letter informing that the project has been according environmental clearance and a copy of the clearance letter is available with the State Pollution Control Board and may also be seen at web site of the Ministry of Environment and Forests at http://envfor.nic.in	M/s.NMDC Limited, has published the Environmental clearance of Kumaraswamy Iron Ore Mine, accorded by the MoEF, New Delhi; both in Local and English and the same is available with the State Pollution Control Board and may also be seen at web site of the Ministry of Environment and Forests at http://envfor.nic.in

Ambient Air Quality Status

Table No.18

Season: Winter Season 2019-2020

Pollutant ($\mu\text{g}/\text{m}^3$)	Codes	Min.	Max.	AM	Percentile			SD	Values exceeding Standards
					30	50	98		
PM 10	AK-1	65.0	79.0	71.5	69.0	71.5	78.5	4.5	0
	AK-2	69.0	84.0	75.2	71.0	74.5	83.5	5.3	0
	AK-3	61.0	86.0	74.5	71.5	75.5	85.5	8.2	0
	AK-4	81.0	92.0	86.0	83.0	86.0	91.7	4.0	0
	AK-5	51.0	58.0	53.5	51.5	52.0	57.9	2.9	0
	AK-6	54.0	64.0	57.5	54.5	57.0	63.5	3.6	0
	AK-7	50.0	60.0	54.2	51.0	53.5	59.8	3.8	0
	AK-8	47.0	59.0	53.0	50.0	52.0	58.9	4.4	0
	AK-9	55.0	66.0	60.0	58.0	59.5	65.6	3.5	0
	AK-10	52.0	69.0	61.2	59.0	61.0	68.7	5.5	0
	AK-11	67.0	80.0	73.2	70.0	72.5	79.8	4.7	0
	AK-12	64.0	76.0	69.2	67.0	68.5	75.6	3.9	0
	AK-13	49.0	56.0	51.0	49.0	50.0	55.6	2.5	0
	AK-14	53.0	67.0	61.2	58.5	62.0	66.9	5.0	0
PM 2.5	AK-1	31.0	38.0	33.7	31.5	33.0	37.8	2.6	0
	AK-2	33.0	41.0	37.2	35.5	37.0	40.9	2.8	0
	AK-3	29.0	42.0	35.8	34.0	36.0	41.7	4.2	0
	AK-4	20.0	45.0	42.3	40.5	42.5	44.9	2.1	0
	AK-5	22.0	29.0	25.8	25.0	25.5	28.9	2.3	0
	AK-6	25.0	30.0	27.5	26.5	27.5	29.9	1.7	0
	AK-7	20.0	28.0	25.0	24.5	25.0	28.0	2.7	0
	AK-8	17.0	29.0	24.2	22.5	25.0	28.9	4.1	0
	AK-9	26.0	32.0	29.0	27.5	29.5	31.9	2.3	0
	AK-10	24.0	34.0	30.5	29.5	31.0	34.0	3.5	0
	AK-11	31.0	38.0	35.0	34.0	35.5	37.9	2.4	0
	AK-12	29.0	35.0	32.5	32.0	33.0	34.9	2.0	0
	AK-13	18.0	27.0	22.3	21.0	22.5	26.7	2.9	0
	AK-14	23.0	32.0	27.2	26.0	27.0	31.7	2.9	0
SO ₂	AK-1	8.2	10.6	9.4	9.2	9.6	10.5	0.8	0
	AK-2	9.2	10.6	9.9	9.8	10.0	10.6	0.4	0
	AK-3	9.0	10.3	9.7	9.5	9.7	10.3	0.4	0
	AK-4	10.1	11.2	10.5	10.3	10.5	11.1	0.4	0
	AK-5	7.9	9.6	8.7	8.3	8.7	9.6	0.6	0
	AK-6	7.3	9.8	8.5	7.9	8.4	9.8	0.9	0
	AK-7	8.6	10.2	9.4	9.1	9.4	10.1	0.5	0
	AK-8	9.2	9.9	9.7	9.7	9.9	9.9	0.3	0
	AK-9	8.0	9.3	8.7	8.6	8.7	9.3	0.4	0
	AK-10	8.7	10.6	9.6	9.3	9.5	10.6	0.6	0

	AK-11	9.2	10.4	9.9	9.9	10.0	10.4	0.4	0
	AK-12	9.3	10.5	9.9	9.7	9.9	10.5	0.4	0
	AK-13	9.0	10.4	9.7	9.6	9.8	10.4	0.5	0
	AK-14	9.6	11.0	10.3	10.2	10.3	11.0	0.4	0
NO _x	AK-1	9.7	13.4	11.6	11.0	11.7	13.3	1.3	0
	AK-2	11.8	13.1	12.4	12.1	12.4	13.1	0.4	0
	AK-3	11.3	13.6	12.6	12.3	12.6	13.6	0.7	0
	AK-4	12.8	14.2	13.5	13.3	13.6	14.2	0.5	0
	AK-5	9.2	11.9	10.9	10.6	11.3	11.9	1.0	0
	AK-6	8.9	11.9	10.6	10.0	10.9	11.9	1.1	0
	AK-7	10.0	13.4	11.7	11.0	11.8	13.3	1.1	0
	AK-8	11.6	12.8	12.1	11.9	12.1	12.7	0.4	0
	AK-9	10.4	12.4	11.4	11.0	11.5	12.3	0.7	0
	AK-10	11.9	12.9	12.4	12.3	12.4	12.9	0.3	0
	AK-11	13.1	14.0	13.5	13.2	13.5	14.0	0.4	0
	AK-12	11.4	12.8	12.1	11.9	12.1	12.8	0.5	0
	AK-13	11.2	13.9	12.6	12.1	12.8	13.9	1.0	0
	AK-14	12.5	14.7	13.4	13.0	13.3	14.6	0.7	0

Codes	Location Name
AK-1	Mine Office Kumaraswamy Mine
AK-2	Kumaraswamy Mine C Block near Mallamma Temple
AK-3	Kumaraswamy Mine B Block
AK-4	Crusher Area
AK-5	Muthukulakunta Village
AK-6	Kammadevvu Village
AK-7	Subbarayanahalli
AK-8	Deogiri
AK-9	Near Administrative Building
AK-10	Near CISF Gate
AK-11	100m away from Screening Plant in downwind direction
AK-12	100m away from Ranjitpura Loading Yard in downwind direction
AK-13	Donimalai Township in the Arogyavardini Premises
AK-14	Pellet Plant Main Gate

SUMMARIZED WATER QUALITY DATA**Table No. 27**

Location: Kattar Singh kolla (Spring Water) (KWQ-1)

No.	Parameter	Unit	December 27.12.2019	January 25.01.2020	February 22.02.2020	IS: 2296-1982 Class C Norms
1.	pH	-	6.8	6.7	6.6	6.5-8.5
2.	Conductivity	µmhos/cm	242	242	269	NS
3.	Colour	Hazen Units	1	1.0	1.0	300
4.	Dissolved Oxygen	mg/L	5.5	6.0	5.8	4.0
5.	BOD - 3 days 27°C	mg/L	Nil	Nil	Nil	3.0
6.	Total Dissolved Solids	mg/L	152	162	170	1500
7.	Chlorides (as Cl)	mg/L	68	52	58	600
8.	Sulphates (as SO ₄)	mg/L	42	19	23	400
9.	Nitrates (as NO ₃)	mg/L	4.3	4.7	—	50
10.	Free Ammonia (as N)	mg/L	Nil	Nil	Nil	NS
11.	Sodium absorption ratio	-	0.3	0.3	0.35	NS
12.	Boron (as B)	mg/L	Nil	Nil	Nil	NS
13.	Arsenic (as As)	mg/L	<0.1	<0.1	<0.1	0.2
14.	Iron (as Fe ⁺²)	mg/L	7.5	7.2	6.0	50
15.	Fluorides (as F)	mg/L	1.1	1.1	1.2	1.5
16.	Lead (as Pb)	mg/L	<0.1	<0.1	<0.1	0.1
17.	Copper (as Cu)	mg/L	<0.1	1.3	1.2	1.5
18.	Zinc (as Zn)	mg/L	5.2	5.9	6.5	15
19.	Total Coliforms	MPN/100 ml	350	240	280	5000

Table No. 28

Location: Tap water, Kamattur village (KWQ -2)

No	Parameter	Unit	December 28.12.2019	January 25.01.2020	February 22.02.2020	IS: 10500-2012 Norms	
						Desirable Limit	Permissible Limit
1.	Colour	Hazen Units	1	1.0	1.0	5	15
2.	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
3.	Taste	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
4.	Turbidity	NTU	<1	<1.0	<1.0	5	10
5.	pH	-	7.3	7.4	7.2	6.5-8.5	6.5-8.5
6.	Total Hardness as CaCO ₃	mg/L	150	168	174	200	600
7.	Calcium as Ca	mg/L	40	48	51	75	200
8.	Magnesium as Mg	mg/L	12	11	12	30	100
9.	Copper as Cu	mg/L	<0.01	0.03	<0.05	0.05	1.5
10.	Iron as Fe ⁺²	mg/L	0.21	0.24	0.21	0.3	0.3
11.	Manganese as Mn	mg/L	<0.1	0.18	0.2	0.1	0.3
12.	Chlorides as Cl	mg/L	72	66	70	250	1000
13.	Sulphates as SO ₄	mg/L	38	37	34	200	400
14.	Nitrates as NO ₃	mg/L	4.4	4.2	-	45	45
15.	Fluorides as F	mg/L	1.2	1.1	1.0	1.0	1.5
16.	Phenols as C ₆ H ₅ OH	mg/L	<0.001	<0.001	<0.001	0.001	0.002
17.	Mercury as Hg	mg/L	<0.001	<0.001	<0.001	0.001	0.001
18.	Cadmium as Cd	mg/L	<0.001	<0.002	<0.001	0.003	0.003
19.	Selenium as Se	mg/L	<0.01	<0.01	<0.01	0.01	0.01
20.	Arsenic as As	mg/L	<0.01	<0.01	<0.01	0.01	0.05
21.	Cyanides as CN	mg/L	Nil	Nil	Nil	0.05	0.05
22.	Lead as Pb	mg/L	<0.01	<0.01	<0.01	0.01	0.01
23.	Zinc as Zn	mg/L	5.4	5.3	5.6	5	15
24.	Hexavalent Chromium as Cr ⁶⁺	mg/L	<0.01	0.02	<0.05	0.05	0.05
25.	Mineral Oil	mg/L	Nil	Nil	Nil	0.5	0.5
26.	Residual Free chlorine	mg/L	Nil	Nil	Nil	0.2	1.0
27.	Total Coliforms	CFU/100ml	Absent	Absent	Absent	Absent	Absent
28.	E-Coli	CFU/100ml	Absent	Absent	Absent	Absent	Absent

Table No. 29

Location: Bore well, Muthukulapenta village (KWQ -3)

No	Parameter	Unit	December 28.12.2019	January 25.01.2020	February 22.02.2020	IS: 10500-2012 Norms	
						Desirable Limit	Permissible Limit
1.	Colour	Hazen Units	1.0	1.0	1.0	5	15
2.	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
3.	Taste	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
4.	Turbidity	NTU	<1	<1.0	<1.0	5	10
5.	pH	-	6.8	6.8	7.0	6.5-8.5	6.5-8.5
6.	Total Hardness as CaCO ₃	mg/L	194	190	204	200	600
7.	Calcium as Ca	mg/L	62	65	64	75	200
8.	Magnesium as Mg	mg/L	9	8	11	30	100
9.	Copper as Cu	mg/L	<0.01	0.07	<0.05	0.05	1.5
10.	Iron as Fe ⁺²	mg/L	0.21	0.25	0.23	0.3	0.3
11.	Manganese as Mn	mg/L	<0.1	0.14	0.18	0.1	0.3
12.	Chlorides as Cl	mg/L	84	78	86	250	1000
13.	Sulphates as SO ₄	mg/L	52	50	47	200	400
14.	Nitrates as NO ₃	mg/L	4.9	4.8	—	45	45
15.	Fluorides as F	mg/L	1.1	1.2	1.0	1.0	1.5
16.	Phenols as C ₆ H ₅ OH	mg/L	<0.001	<0.001	<0.001	0.001	0.002
17.	Mercury as Hg	mg/L	<0.001	<0.001	<0.001	0.001	0.001
18.	Cadmium as Cd	mg/L	<0.001	0.002	<0.001	0.003	0.003
19.	Selenium as Se	mg/L	<0.01	<0.01	<0.01	0.01	0.01
20.	Arsenic as As	mg/L	<0.01	<0.01	<0.01	0.01	0.05
21.	Cyanides as CN	mg/L	Nil	Nil	Nil	0.05	0.05
22.	Lead as Pb	mg/L	<0.01	<0.01	<0.01	0.01	0.01
23.	Zinc as Zn	mg/L	5.1	6.2	6.4	5	15
24.	Hexavalent Chromium as Cr ⁶⁺	mg/L	<0.01	0.02	<0.05	0.05	0.05
25.	Mineral Oil	mg/L	Nil	Nil	Nil	0.5	0.5
26.	Residual Free chlorine	mg/L	Nil	Nil	Nil	0.2	1.0
27.	Total Coliforms	CFU/100ml	Absent	Absent	Absent	Absent	Absent
28.	E-Coli	CFU/100ml	Absent	Absent	Absent	Absent	Absent

Table No. 30

Location: Tap water, Devagiri Township at Hilltop, Canteen (KWQ-4)

No	Parameter	Unit	December 28.12.2019	January 25.01.2020	February 22.02.2020	IS: 10500-2012 Norms	
						Desirable Limit	Permissible Limit
1.	Colour	Hazen Units	<1	1.0	1.0	5	15
2.	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
3.	Taste	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
4.	Turbidity	NTU	<1	<1.0	<1.0	5	10
5.	pH	-	7.3	7.2	7.5	6.5-8.5	6.5-8.5
6.	Total Hardness as CaCO ₃	mg/L	126	130	142	200	800
7.	Calcium as Ca	mg/L	37	38	47	75	200
8.	Magnesium as Mg	mg/L	8	8	6.0	30	100
9.	Copper as Cu	mg/L	<0.01	0.04	<0.05	0.05	1.5
10.	Iron as Fe ⁺²	mg/L	0.25	0.22	0.19	0.3	0.3
11.	Manganese as Mn	mg/L	<0.1	0.11	0.15	0.1	0.3
12.	Chlorides as Cl	mg/L	62	68	72	250	1000
13.	Sulphates as SO ₄	mg/L	30	24	28	200	400
14.	Nitrates as NO ₃	mg/L	4.7	4.5	-	45	45
15.	Fluorides as F	mg/L	1.0	1.0	1.0	1.0	1.5
16.	Phenols as C ₆ H ₅ OH	mg/L	<0.001	<0.001	<0.001	0.001	0.002
17.	Mercury as Hg	mg/L	<0.001	<0.001	<0.001	0.001	0.001
18.	Cadmium as Cd	mg/L	<0.001	0.002	<0.001	0.003	0.003
19.	Selenium as Se	mg/L	<0.01	<0.01	<0.01	0.01	0.01
20.	Arsenic as As	mg/L	<0.01	<0.01	<0.01	0.01	0.05
21.	Cyanides as CN	mg/L	Nil	Nil	Nil	0.05	0.05
22.	Lead as Pb	mg/L	<0.01	<0.01	<0.01	0.01	0.01
23.	Zinc as Zn	mg/L	5.1	5.2	5.9	5	15
24.	Hexavalent Chromium as Cr ⁶⁺	mg/L	<0.01	0.04	<0.05	0.05	0.05
25.	Mineral Oil	mg/L	Nil	Nil	Nil	0.5	0.5
26.	Residual Free chlorine	mg/L	Nil	Nil	Nil	0.2	1.0
27.	Total Coliforms	CFU/100ml	Absent	Absent	Absent	Absent	Absent
28.	E-Coli	CFU/100ml	Absent	Absent	Absent	Absent	Absent

Table No. 31

Location: Borewell, Narsapur village (KWQ-5)

No	Parameter	Unit	December 28.12.2019	January 25.01.2020	February 22.02.2020	IS: 10500-2012 Norms	
						Desirable Limit	Permissible Limit
1.	Colour	Hazen Units	1	1.0	1.0	5	15
2.	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
3.	Taste	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
4.	Turbidity	NTU	<1	<1.0	<1.0	5	10
5.	pH	-	7.1	6.9	6.7	6.5-8.5	6.5-8.5
6.	Total Hardness as CaCO ₃	mg/L	170	166	178	200	600
7.	Calcium as Ca	mg/L	50	48	54	75	200
8.	Magnesium as Mg	mg/L	10	11	10	30	100
9.	Copper as Cu	mg/L	<0.01	0.03	<0.05	0.05	1.5
10.	Iron as Fe ⁺²	mg/L	0.25	0.26	0.28	0.3	0.3
11.	Manganese as Mn	mg/L	<0.1	0.15	0.19	0.1	0.3
12.	Chlorides as Cl	mg/L	76	74	80	250	1000
13.	Sulphates as SO ₄	mg/L	40	42	45	200	400
14.	Nitrates as NO ₃	mg/L	5.3	5.1	-	45	45
15.	Fluorides as F	mg/L	1.2	1.2	1.1	1.0	1.5
16.	Phenols as C ₆ H ₅ OH	mg/L	<0.001	<0.001	<0.001	0.001	0.002
17.	Mercury as Hg	mg/L	<0.001	<0.001	<0.001	0.001	0.001
18.	Cadmium as Cd	mg/L	<0.001	<0.002	<0.001	0.003	0.003
19.	Selenium as Se	mg/L	<0.01	<0.01	<0.01	0.01	0.01
20.	Arsenic as As	mg/L	<0.01	<0.01	<0.01	0.01	0.05
21.	Cyanides as CN	mg/L	Nil	Nil	Nil	0.05	0.05
22.	Lead as Pb	mg/L	<0.01	<0.01	<0.01	0.01	0.01
23.	Zinc as Zn	mg/L	5.6	5.5	5.9	5	15
24.	Hexavalent Chromium as Cr ⁶⁺	mg/L	<0.01	0.01	<0.05	0.05	0.05
25.	Mineral Oil	mg/L	Nil	Nil	Nil	0.5	0.5
26.	Residual Free chlorine	mg/L	Nil	Nil	Nil	0.2	1.0
27.	Total Coliforms	CFU/100ml	Absent	Absent	Absent	Absent	Absent
28.	E-Coli	CFU/100ml	Absent	Absent	Absent	Absent	Absent

Table No. 32

Location: Nalla downstream of check dam-6 constructed below the Screening Plant and fine Ore dump (KWQ-7)

No	Parameter	Unit	December 27.12.2019	January 24.01.2020	February 24.02.2020	IS: 2296-1982 Class C Norms
1.	pH	Hazen Units	7.2	7.1	7.3	6.5-8.5
2.	Conductivity	-	442	442	467	-
3.	Colour	-	15	15	1	300
4.	Dissolved Oxygen	NTU	3.3	5.7	5.1	4.0
5.	BOD - 3 days 27°C	-	2.5	6	12	3
6.	Total Dissolved Solids	mg/L	278	274	298	1500
7.	Chlorides (as Cl)	mg/L	166	150	162	600
8.	Sulphates (as SO ₄)	mg/L	94	86	77	400
9.	Nitrates (as NO ₃)	mg/L	6.7	5.5	-	50
10.	Free Ammonia (as N)	mg/L	Nil	Nil	Nil	-
11.	Sodium Absorption Ratio	mg/L	1.8	1.5	1.9	-
12.	Boron (as B)	mg/L	Nil	Nil	Nil	-
13.	Arsenic (as As)	mg/L	0.18	0.18	0.11	0.2
14.	Iron (as Fe)	mg/L	2.9	2.6	2.9	50
15.	Fluorides (as F)	mg/L	1.2	1.2	1.2	1.5
16.	Lead (as Pb)	mg/L	<0.1	<0.1	<0.1	0.1
17.	Copper (as Cu)	mg/L	<0.1	1.3	1.0	1.5
18.	Zinc (as Zn)	mg/L	6.7	6.4	6.9	15
19.	Total Coliforms	MPN/100ml	220	220	240	5000

Table No. 33

Location: Raw water intake at Nanhalla dam near NMDC Pump house, Taranagar (KWQ-8)

No	Parameter	Unit	December 27.12.2019	January 24.01.2020	February 24.02.2020	IS: 10500-2012 Norms	
						Desirable Limit	Permissible Limit
1.	Colour	Hazen Units	5	5	1	5	15
2.	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
3.	Taste	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
4.	Turbidity	NTU	1	5	1	5	10
5.	pH	-	7.3	7.3	7.6	6.5-8.5	6.5-8.5
6.	Total Hardness as CaCO ₃	mg/L	284	276	292	200	600
7.	Calcium as Ca	mg/L	78	79	85	75	200
8.	Magnesium as Mg	mg/L	21	18	19	30	100
9.	Copper as Cu	mg/L	0.08	0.07	<0.05	0.05	1.5
10.	Iron as Fe ⁺²	mg/L	0.22	0.23	0.18	0.3	0.3
11.	Manganese as Mn	mg/L	0.12	0.11	0.12	0.1	0.3
12.	Chlorides as Cl	mg/L	96	92	98	250	1000
13.	Sulphates as SO ₄	mg/L	68	64	71	200	400
14.	Nitrates as NO ₃	mg/L	5.3	5.13	-	45	45
15.	Fluorides as F	mg/L	1.1	1.1	1.1	1.0	1.5
16.	Phenols as C ₆ H ₅ OH	mg/L	<0.001	<0.001	<0.001	0.001	0.002
17.	Mercury as Hg	mg/L	0.001	0.001	<0.001	0.001	0.001
18.	Cadmium as Cd	mg/L	0.001	0.002	<0.001	0.003	0.003
19.	Selenium as Se	mg/L	<0.01	<0.01	<0.01	0.01	0.01
20.	Arsenic as As	mg/L	0.03	0.01	<0.01	0.01	0.05
21.	Cyanides as CN	mg/L	Nil	Nil	Nil	0.05	0.05
22.	Lead as Pb	mg/L	<0.01	<0.01	<0.01	0.01	0.01
23.	Zinc as Zn	mg/L	5.5	7.2	6.6	5	15
24.	Hexavalent Chromium as Cr ⁶⁺	mg/L	<0.01	0.02	<0.05	0.05	0.05
25.	Mineral Oil	mg/L	Nil	Nil	Nil	0.5	0.5
26.	Residual Free chlorine	mg/L	Nil	Nil	Nil	0.2	1.0
27.	Total Coliforms	CFU/100ml	Absent	Absent	Absent	Absent	Absent
28.	E-Coli	CFU/100ml	Absent	Absent	Absent	Absent	Absent

Table No. 34

Location: Treated water at the water Treatment plant immediately after Disinfection (KWQ-8)

No	Parameter	Unit	December 27.12.2019	January 24.01.2020	February 24.02.2020	IS: 10500-2012 Norms	
						Desirable Limit	Permissible Limit
1.	Colour	Hazen Units	1	1.0	1	5	15
2.	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
3.	Taste	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
4.	Turbidity	NTU	1	1.0	1	5	10
5.	pH	-	7.1	7.2	7.0	6.5-8.5	6.5-8.5
6.	Total Hardness as CaCO ₃	mg/L	144	156	168	200	600
7.	Calcium as Ca	mg/L	39	41	47	75	200
8.	Magnesium as Mg	mg/L	11	12	13	30	100
9.	Copper as Cu	mg/L	0.03	0.04	<0.05	0.05	1.5
10.	Iron as Fe +2	mg/L	0.25	0.22	0.20	0.3	0.3
11.	Manganese as Mn	mg/L	<0.1	0.07	0.14	0.1	0.3
12.	Chlorides as Cl	mg/L	52	56	64	250	1000
13.	Sulphates as SO ₄	mg/L	30	28	35	200	400
14.	Nitrates as NO ₃	mg/L	2.8	2.6	-	45	45
15.	Fluorides as F	mg/L	1.0	1.0	1.1	1.0	1.5
16.	Phenols as C ₆ H ₅ OH	mg/L	<0.001	<0.001	<0.001	0.001	0.002
17.	Mercury as Hg	mg/L	<0.001	<0.001	<0.001	0.001	0.001
18.	Cadmium as Cd	mg/L	<0.003	<0.002	<0.001	0.003	0.003
19.	Selenium as Se	mg/L	<0.01	<0.01	<0.01	0.01	0.01
20.	Arsenic as As	mg/L	<0.01	<0.01	<0.01	0.01	0.05
21.	Cyanides as CN	mg/L	Nil	Nil	Nil	0.05	0.05
22.	Lead as Pb	mg/L	<0.01	<0.01	<0.01	0.01	0.01
23.	Zinc as Zn	mg/L	5.0	5.9	6.0	5	15
24.	Hexavalent Chromium as Cr ⁶⁺	mg/L	<0.01	<0.01	<0.01	0.05	0.05
25.	Mineral Oil	mg/L	Nil	Nil	Nil	0.5	0.5
26.	Residual Free chlorine	mg/L	Nil	Nil	Nil	0.2	1.0
27.	Total Coliforms	CFU/100ml	Absent	Absent	Absent	Absent	Absent
28.	E-Coli	CFU/100ml	Absent	Absent	Absent	Absent	Absent

Table No. 35

Location: Potable water in Residential Quarter in the South Block of Donimalai Township (KWQ-10).

No	Parameter	Unit	December 27.12.2019	January 24.01.2020	February 25.02.2020	IS: 10500-2012 Norms	
						Desirable Limit	Permissible Limit
1.	Colour	Hazen Units	<1	1.0	1	5	15
2.	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
3.	Taste	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
4.	Turbidity	NTU	1	1.0	1	5	10
5.	pH	-	6.9	6.7	6.9	6.5-8.5	6.5-8.5
6.	Total Hardness as CaCO ₃	mg/L	186	196	214	200	600
7.	Calcium as Ca	mg/L	51	49	50	75	200
8.	Magnesium as Mg	mg/L	14	17	22	30	100
9.	Copper as Cu	mg/L	0.03	0.03	<0.05	0.05	1.5
10.	Iron as Fe ⁺²	mg/L	0.22	0.24	0.22	0.3	0.3
11.	Manganese as Mn	mg/L	<0.1	0.06	0.10	0.1	0.3
12.	Chlorides as Cl	mg/L	76	78	88	250	1000
13.	Sulphates as SO ₄	mg/L	38	35	42	200	400
14.	Nitrates as NO ₃	mg/L	2.9	2.7	-	45	45
15.	Fluorides as F	mg/L	1.0	1.1	1.1	1.0	1.5
16.	Phenols as C ₆ H ₅ OH	mg/L	<0.001	<0.001	<0.001	0.001	0.002
17.	Mercury as Hg	mg/L	<0.001	<0.001	<0.001	0.001	0.001
18.	Cadmium as Cd	mg/L	<0.003	<0.002	<0.001	0.003	0.003
19.	Selenium as Se	mg/L	0.01	<0.01	<0.01	0.01	0.01
20.	Arsenic as As	mg/L	<0.01	<0.01	<0.01	0.01	0.05
21.	Cyanides as CN	mg/L	Nil	Nil	Nil	0.05	0.05
22.	Lead as Pb	mg/L	<0.01	<0.01	<0.01	0.01	0.01
23.	Zinc as Zn	mg/L	5.8	5.6	5.9	5	15
24.	Hexavalent Chromium as Cr ⁶⁺	mg/L	<0.01	0.04	<0.05	0.05	0.05
25.	Mineral Oil	mg/L	Nil	Nil	Nil	0.5	0.5
26.	Residual Free chlorine	mg/L	Nil	Nil	Nil	0.2	1.0
27.	Total Coliforms	CFU/100ml	Absent	Absent	Absent	Absent	Absent
28.	E-Coli	CFU/100ml	Absent	Absent	Absent	Absent	Absent

Table No. 36

Location: Potable water in Residential Quarter in the North Block of Donimalai Township (KWQ-11)

No	Parameter	Unit	December 27.12.2019	January 24.01.2020	February 25.02.2020	IS: 10500-2012 Norms	
						Desirable Limit	Permissible Limit
1.	Colour	Hazen Units	1	1.0	1	5	15
2.	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
3.	Taste	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
4.	Turbidity	NTU	1	1.0	1.0	5	10
5.	pH	-	7.3	7.3	7.6	6.5-8.5	6.5-8.5
6.	Total Hardness as CaCO ₃	mg/L	164	166	180	200	600
7.	Calcium as Ca	mg/L	44	43	48	75	200
8.	Magnesium as Mg	mg/L	12	14	15	30	100
9.	Copper as Cu	mg/L	0.02	0.02	<0.05	0.05	1.5
10.	Iron as Fe ⁺²	mg/L	0.19	0.21	0.24	0.3	0.3
11.	Manganese as Mn	mg/L	<0.1	0.08	0.16	0.1	0.3
12.	Chlorides as Cl	mg/L	60	58	66	250	1000
13.	Sulphates as SO ₄	mg/L	34	30	42	200	400
14.	Nitrates as NO ₃	mg/L	3.8	3.5	-	45	45
15.	Fluorides as F	mg/L	1.0	1.1	1.0	1.0	1.5
16.	Phenols as C ₆ H ₅ OH	mg/L	<0.001	<0.001	<0.001	0.001	0.002
17.	Mercury as Hg	mg/L	<0.001	<0.001	<0.001	0.001	0.001
18.	Cadmium as Cd	mg/L	0.001	0.002	<0.001	0.003	0.003
19.	Selenium as Se	mg/L	<0.01	<0.01	<0.01	0.01	0.01
20.	Arsenic as As	mg/L	<0.01	<0.01	<0.01	0.01	0.05
21.	Cyanides as CN	mg/L	Nil	Nil	Nil	0.05	0.05
22.	Lead as Pb	mg/L	<0.01	<0.01	<0.01	0.01	0.01
23.	Zinc as Zn	mg/L	5.7	5.4	5.9	5	15
24.	Hexavalent Chromium as Cr ⁶⁺	mg/L	<0.01	0.02	<0.05	0.05	0.05
25.	Mineral Oil	mg/L	Nil	Nil	Nil	0.5	0.5
26.	Residual Free chlorine	mg/L	Nil	Nil	Nil	0.2	1.0
27.	Total Coliforms	CFU/100ml	Absent	Absent	Absent	Absent	Absent
28.	E-Coli	CFU/100ml	Absent	Absent	Absent	Absent	Absent

Table No. 37

Location: Potable water at Administrative office Canteen, Donimalai (KWQ-12)

No	Parameter	Unit	December 27.12.2019	January 24.01.2020	February 24.02.2020	IS: 10500-2012 Norms	
						Desirable Limit	Permissible Limit
1.	Colour	Hazen Units	1	1.0	1.0	5	15
2.	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
3.	Taste	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
4.	Turbidity	NTU	<1.0	<1.0	1.0	5	10
5.	pH	-	7.2	6.9	7.1	6.5-8.5	6.5-8.5
6.	Total Hardness as CaCO ₃	mg/L	186	180	210	200	600
7.	Calcium as Ca	mg/L	53	50	54	75	200
8.	Magnesium as Mg	mg/L	15	15	19	30	100
9.	Copper as Cu	mg/L	0.04	0.03	<0.05	0.05	1.5
10.	Iron as Fe ⁺²	mg/L	0.25	0.26	0.22	0.3	0.3
11.	Manganese as Mn	mg/L	<0.1	0.09	0.19	0.1	0.3
12.	Chlorides as Cl	mg/L	86	82	90	250	1000
13.	Sulphates as SO ₄	mg/L	44	40	48	200	400
14.	Nitrates as NO ₃	mg/L	3.3	3.1	—	45	45
15.	Fluorides as F	mg/L	1.1	1.0	1.1	1.0	1.5
16.	Phenols as C ₆ H ₅ OH	mg/L	<0.001	<0.001	<0.001	0.001	0.002
17.	Mercury as Hg	mg/L	<0.001	<0.001	<0.001	0.001	0.001
18.	Cadmium as Cd	mg/L	<0.003	0.002	<0.001	0.003	0.003
19.	Selenium as Se	mg/L	<0.01	<0.01	<0.01	0.01	0.01
20.	Arsenic as As	mg/L	0.01	<0.01	<0.01	0.01	0.05
21.	Cyanides as CN	mg/L	Nil	Nil	Nil	0.05	0.05
22.	Lead as Pb	mg/L	<0.01	<0.01	<0.01	0.01	0.01
23.	Zinc as Zn	mg/L	5.7	5.5	5.6	5	15
24.	Hexavalent Chromium as Cr ⁶⁺	mg/L	<0.01	0.03	<0.05	0.05	0.05
25.	Mineral Oil	mg/L	Nil	Nil	Nil	0.5	0.6
26.	Residual Free chlorine	mg/L	Nil	Nil	Nil	0.2	1.0
27.	Total Coliforms	CFU/100ml	Absent	Absent	Absent	Absent	Absent
28.	E-Coli	CFU/100ml	Absent	Absent	Absent	Absent	Absent

TABLE - I INFORMATION REGARDING THE GROUND WATER LEVEL AND ITS INFLUENCING WATERSHED, (WINTER 2020)

Sl. No.	Village	Borewell Number	Latitude	Longitude	Ground level in (m) above MSL	Winter water level in (m) BGL (January 2020)	Influencing watershed
1	PM Residence, NMDC	EBW 1	15°5'26.70"N	76°35'34.55"E	627.00	12.12	Donimalai / Narasapurahalla
2	Nandihalli	EBW 2	15°2'13.33"N	76°34'17.32"E	640.00	31.40	Narihalla middle
3	Ranjapur	EBW 3	15°2'53.60"N	76°36'31.49"E	643.00	11.12	Donimalai / Narasapurahalla
4	Ankannanahalli	EBW 4	14°59'48.75"N	76°30'36.45"E	639.00	38.44	Narihalla free Catchment (1)
5	Swamihalli	EBW 5	14°58'15.09"N	76°36'41.28"E	765.00	11.18	Doddahalla Upper
6	Totesigeri	EBW 6	14°59'1.75"N	76°38'9.88"E	692.00	20.42	Doddahalla middle
7	Erradaammanahalli	EBW 7	14°58'20.22"N	76°36'51.04"E	758.00	15.43	Doddahalla free Catchment
8	Gollainganmanahalli	EBW 8	14°57'31.47"N	76°41'16.50"E	630.00	12.23	Doddahalla middle
9	Kannatur	EBW 9	15°0'48.25"N	76°37'1.24"E	1010.00	59.18	Narihalla middle
10	Harisbankar spring	EBW 10	15°1'28.95"N	76°33'38.70"E	780.00	0.00	Narihalla middle
11	Kumaraswami gudi	EBW 11	15°0'42.56"N	76°33'50.60"E	907.00	29.05	Narihalla middle
12	Katter singh kolla	EBW 12	15°1'53.54"N	76°36'21.64"E	913.00	0.00	Narihalla middle
13	Vitalnagar (Nauluti)	EBW 13	15°1'30.84"N	76°37'58.37"E	700.00	17.18	Donimalai / Narasapurahalla
14	Ubbalagandi	EBW 14	15°2'42.06"N	76°39'39.95"E	667.00	11.24	Hirehalla (2)
15	Rajapur	EBW 15	15°1'49.95"N	76°41'22.51"E	622.00	16.15	Hirehalla (2)
16	Errayanahalli	EBW 16	14°57'7.34"N	76°34'36.99"E	723.00	20.71	Narihalla upper
17	NMDC Entrance	EBW 17	15°46'6.7"N	76°35'21.49"E	602.00	23.10	Donimalai / Narasapurahalla
18	Administration block	EBW 18	15°3'44.06"N	76°35'49.32"E	612.00	7.28	Donimalai / Narasapurahalla
19	Lakshmiapur	EBW 19	15°3'46.95"N	76°33'41.83"E	611.00	40.21	Narihalla middle
20	Nandihalli (cross) University gate	EBW 20	15°1'55.01"N	76°34'21.47"E	650.00	22.14	Narihalla middle
21	South Block of DIOM (Narsapur railway gate)	EBW 21	15°3'2.72"N	76°36'7.36"E	624.00	4.14	Donimalai / Narasapurahalla
22	North Block of DIOM (Narihalla Pipe line Maintenance)	EBW 22	15°3'11.27"N	76°35'58.95"E	570.00	15.62	Hirehalla middle

TABLE - 2 GROUND WATER QUALITY ANALYSIS OF KIOM AND DIOM COMPLEX, DURING WINTER (JANUARY 2020)

Sl. No.	Village	Latitude	Longitude	Ground level in (m) above MSL	Winter Water Level in (m) BGL	Parameters						
						pH	TDS (mg/l)	EC μ mhos/cm	TH (mg/l)	Ca (mg/l)	Mg (mg/l)	Alkalinity (mg/l)
1	PM Residence, NMDC	15°3'26.70"N	76°35'34.55"E	627.00	12.12	7.2	875.00	1367.19	476.53	93.20	59.30	468.00
2	Nandihalli	15°2'13.33"N	76°34'17.32"E	640.00	31.40	7.1	740.00	1156.25	393.71	81.60	46.20	314.00
3	Ranjapur	15°2'52.60"N	76°36'31.49"E	643.00	11.12	7.1	648.00	1012.50	86.77	9.40	10.53	310.00
4	Ankamanahalu	14°59'48.75"N	76°30'56.43"E	639.00	38.44	7.2	1060.00	1656.25	503.46	83.40	71.80	256.00
5	Swamihalli	14°58'13.09"N	76°30'41.28"E	765.00	11.18	7.2	1450.00	2265.63	710.40	150.60	81.32	438.00
6	Tenasigeri	14°59'1.75"N	76°38'9.88"E	692.00	20.42	7.1	327.00	510.94	237.53	39.80	33.60	210.00
7	Erraammanahalli	14°58'20.22"N	76°36'51.04"E	758.00	15.43	7.2	1070.00	1671.88	382.89	66.40	52.80	490.00
8	Gollanigammanahalli	14°57'31.47"N	76°41'16.50"E	630.00	12.23	7.2	1078.00	1684.38	25.01	3.10	4.20	156.00
9	Kamatur	15°0'48.25"N	76°37'1.24"E	1010.00	59.18	7.1	66.00	103.13	29.84	5.20	4.10	18.00
10	Harishankar spring	15°1'28.95"N	76°33'38.70"E	780.00	0.00	7.1	33.00	85.94	52.62	16.30	2.90	17.00
11	Kumaraswami gudi	15°0'42.56"N	76°33'50.60"E	907.00	29.05	7.1	150.00	234.38	101.37	29.40	6.80	76.00
12	Kattar singh kolla	15°1'3.54"N	76°36'21.64"E	913.00	0.00	7.1	89.00	139.06	242.67	76.80	12.38	36.00
13	Vitalnagar (Naulu)	15°1'30.84"N	76°37'58.37"E	700.00	17.18	7.2	859.00	1342.19	354.55	70.20	43.60	270.00
14	Ubbalagandi	15°2'42.06"N	76°39'39.95"E	667.00	11.24	7.1	560.00	875.00	423.79	65.80	63.60	313.00
15	Rajapur	15°1'49.95"N	76°41'22.51"E	622.00	16.15	7.2	980.00	1531.25	370.15	61.30	52.80	146.00
16	Errayanahalli	14°57'7.34"N	76°34'36.99"E	723.00	20.71	7.1	620.00	968.75	501.27	141.80	35.80	215.00
17	NMDC Entrance	15°4'6.67"N	76°35'21.49"E	602.00	23.10	7.2	1057.00	1651.56	329.35	63.40	41.60	250.00
18	Administration block	15°3'44.06"N	76°35'49.32"E	612.00	7.28	7.1	796.00	1243.75	340.03	71.30	39.40	318.00
19	Lakshminpur	15°3'46.95"N	76°33'41.83"E	611.00	49.21	7.2	756.00	1181.25	538.37	79.60	82.60	336.00
20	Nandihalli (cross) University gate	15°1'53.01"N	76°34'21.47"E	650.00	22.14	7.1	760.00	1187.50	489.71	80.20	70.40	429.00
21	South Block of DIOM (Narsapur railway gate)	15°32'72"N	76°36'7.36"E	624.00	4.14	7.2	982.00	1534.38	98.33	21.40	10.92	320.00
22	North Block of DIOM (Narhalla Pipe line Maintenance)	15°5'11.27"N	76°33'58.95"E	570.00	15.62	7.2	1152.00	1800.00	554.90	109.60	68.40	258.00

TABLE - 2 GROUND WATER QUALITY ANALYSIS OF KIOM AND DIOM COMPLEX, DURING WINTER (JANUARY 2020)

Sl. No.	Village	Latitude	Longitude	Ground level in (m) above MSL	Winter Water Level in (m) BGL	Parameters						
						Na (mg/l)	K (mg/l)	CO ₃ (mg/l)	HCO ₃ (mg/l)	SO ₄ (mg/l)	NO ₃ (mg/l)	Cl (mg/l)
1	PM Residence, NMDC	15°32'6.70"N	76°35'34.55"E	627.00	12.12	172.60	1.10	0.00	376.80	42.40	2.40	179.60
2	Nandhalli	15°2'13.33"N	76°34'17.32"E	640.00	31.40	108.60	1.20	0.00	314.40	80.30	3.10	156.80
3	Ranjitpur	15°2'52.60"N	76°36'31.49"E	643.00	11.12	179.60	3.00	0.00	286.20	104.60	6.10	191.30
4	Ankamanaholu	14°59'48.73"N	76°30'36.45"E	639.00	38.44	140.40	0.12	0.00	252.60	50.80	2.00	19.40
5	Swamihalli	14°58'15.09"N	76°36'41.28"E	765.00	11.18	148.30	6.13	0.00	349.80	102.40	10.23	197.40
6	Tomasigeri	14°59'1.72"N	76°38'9.88"E	692.00	20.42	112.90	0.04	0.00	120.40	6.80	2.14	75.60
7	Erradammannahalli	14°58'20.22"N	76°36'51.04"E	758.00	15.43	51.60	0.96	0.00	390.60	43.80	4.16	51.30
8	Gollingammanahalli	14°57'31.47"N	76°41'16.50"E	630.00	12.23	123.80	1.21	0.00	144.60	41.90	6.12	64.80
9	Kanatur	15°0'48.25"N	76°23'71.24"E	1010.00	59.18	3.40	2.34	0.00	9.30	2.00	1.00	6.12
10	Harishankar spring	15°1'28.95"N	76°33'38.70"E	780.00	0.00	10.00	0.43	0.00	14.80	2.18	1.00	20.20
11	Kumaraswami gudi	15°0'42.56"N	76°33'50.60"E	907.00	29.05	56.80	7.93	0.00	59.60	5.96	7.20	22.50
12	Kanter singh kolla	15°1'3.54"N	76°36'21.64"E	913.00	0.00	20.32	1.20	0.00	30.40	2.10	2.10	39.40
13	Vitalnagar (Naulali)	15°1'50.84"N	76°37'58.37"E	700.00	17.18	138.90	0.62	0.00	249.80	30.12	1.50	6.10
14	Ubbalagandi	15°2'42.06"N	76°39'39.95"E	667.00	11.24	104.60	0.70	0.00	276.40	60.18	3.00	150.60
15	Rajapur	15°1'49.95"N	76°41'22.51"E	622.00	16.15	143.40	16.80	0.00	131.80	80.32	4.60	83.40
16	Errayanahalli	14°57'7.34"N	76°34'36.99"E	723.00	20.71	176.90	17.30	0.00	179.60	12.60	7.10	65.80
17	NMDC Entrance	15°4'6.67"N	76°35'21.49"E	602.00	23.10	66.80	1.56	0.00	239.40	51.90	0.80	130.82
18	Administration block	15°3'44.06"N	76°35'49.32"E	612.00	7.28	85.90	0.09	0.00	220.60	46.40	5.10	80.90
19	Lakshminpur	15°3'46.95"N	76°33'41.83"E	611.00	49.21	100.30	1.41	0.00	230.90	53.80	8.20	171.60
20	Nandhalli (cross) University gate	15°1'55.01"N	76°34'21.47"E	650.00	22.14	46.90	0.23	0.00	350.80	2.00	0.40	180.20
21	South Block of DIOM (Narsapur railway gate)	15°3'2.72"N	76°36'7.36"E	624.00	4.14	22.80	0.03	0.00	312.20	106.40	36.80	220.60
22	North Block of DIOM (Nandhalli Pipe line Maintenance)	15°5'11.27"N	76°33'58.95"E	570.00	15.62	134.90	5.29	0.00	204.80	19.80	5.10	159.30

TABLE - 2 GROUND WATER QUALITY ANALYSIS OF KIOM AND DIOM COMPLEX, DURING WINTER (JANUARY 2020)

Sl. No.	Village	Latitude	Longitude	Ground level in (m) above MSL	Winter Water Level in (m) BGL	Parameters						
						SiO ₂ (mg/l)	Fe (mg/l)	F (mg/l)	Mn (mg/l)	CN (mg/l)	Arsenic (mg/l)	Hexavalent Chromium (mg/l)
1	PM Residence,NMDC	15°32'26.70"N	76°33'34.33"E	627.00	12.12	172.60	0.22	0.57	<0.1	<0.1	<0.1	<0.1
2	Nandihalli	15°2'13.33"N	76°34'17.32"E	640.00	31.40	12.40	0.12	0.53	<0.1	<0.1	<0.1	<0.1
3	Ranjapur	15°2'52.80"N	76°36'31.49"E	643.00	11.12	11.60	0.16	0.72	<0.1	<0.1	<0.1	<0.1
4	Arkamanahalu	14°59'48.75"N	76°30'36.43"E	639.00	38.44	6.10	0.21	0.23	<0.1	<0.1	<0.1	<0.1
5	Swamihalli	14°58'15.09"N	76°36'41.28"E	765.00	11.18	2.90	0.20	0.36	<0.1	<0.1	<0.1	<0.1
6	Tonasilgeri	14°59'1.75"N	76°38'9.88"E	692.00	20.42	1.20	0.07	0.51	<0.1	<0.1	<0.1	<0.1
7	Erradaammanahalli	14°58'20.22"N	76°36'51.04"E	758.00	15.43	10.50	0.04	0.50	<0.1	<0.1	<0.1	<0.1
8	Gollaingammanahalli	14°57'31.47"N	76°41'16.50"E	630.00	12.23	1.10	0.04	0.61	<0.1	<0.1	<0.1	<0.1
9	Kannatur	15°0'48.25"N	76°37'1.24"E	1010.00	59.18	2.00	0.14	0.07	<0.1	<0.1	<0.1	<0.1
10	Harishankar spring	15°1'28.95"N	76°33'38.70"E	780.00	0.00	4.12	0.31	0.04	<0.1	<0.1	<0.1	<0.1
11	Kannaraswami gudi	15°0'42.56"N	76°33'50.60"E	907.00	29.03	19.96	0.32	0.09	<0.1	<0.1	<0.1	<0.1
12	Kaater singh kolla	15°1'3.54"N	76°36'21.64"E	913.00	0.00	4.00	0.30	0.02	<0.1	<0.1	<0.1	<0.1
13	Vitalnagar (Nauluri)	15°1'30.84"N	76°37'58.37"E	700.00	17.18	4.20	0.04	0.30	<0.1	<0.1	<0.1	<0.1
14	Ubbalagarudi	15°2'42.06"N	76°39'39.95"E	667.00	11.24	11.30	0.07	0.22	<0.1	<0.1	<0.1	<0.1
15	Rajapur	15°1'49.95"N	76°41'22.51"E	622.00	16.15	3.10	0.12	0.69	<0.1	<0.1	<0.1	<0.1
16	Errayunahalli	14°57'7.34"N	76°34'36.99"E	723.00	20.71	5.10	0.11	0.52	<0.1	<0.1	<0.1	<0.1
17	NMDC Entrance	15°4'6.67"N	76°39'21.49"E	602.00	23.10	2.20	0.02	0.18	<0.1	<0.1	<0.1	<0.1
18	Administration block	15°3'44.06"N	76°35'49.32"E	612.00	7.28	7.90	0.15	0.35	<0.1	<0.1	<0.1	<0.1
19	Lakshinipur	15°3'46.95"N	76°33'41.83"E	611.00	49.21	7.50	0.21	0.37	<0.1	<0.1	<0.1	<0.1
20	Nandihalli (cross) University gate	15°1'55.01"N	76°34'21.47"E	650.00	22.14	10.20	0.14	0.20	<0.1	<0.1	<0.1	<0.1
21	South Block of DIOM (Narsapur railway gate)	15°3'2.72"N	76°36'7.36"E	624.00	4.14	1.50	0.22	0.08	<0.1	<0.1	<0.1	<0.1
22	North Block of DIOM (Nandihalli Pipe line Maintenance)	15°5'11.27"N	76°33'58.95"E	570.00	15.62	13.60	0.14	0.03	<0.1	<0.1	<0.1	<0.1

CURRENT STATUS REPORT

Brief Description about the project (Kumaraswamy Iron Ore Mine, ML No.1111):

Kumaraswamy Iron Ore Mine lease was granted to NMDC in the year 1972 having a total leasehold area of 639.80 Ha. 159.01 Ha is Revenue area and 480.79 Ha is Forest area as per CEC sketch. (FC area 324.70 Ha) Location: Village Kamatharuvu, PO Deogiri, Taluk Sandur, Distt Bellary, Karnataka.

Latitude and Longitude(GPS Readings) of three permanent ground control stations located outside the lease area and linked with the boundary pillars is given below:-

1. S-1, 15° 01' 08.40"(N), 76° 36' 18.90"(E), (Rock mark). Distance is 17.162 mtrs from CEC Pillar-1, RL-892.0 mtrs.
2. Hanuman temple, 15° 00' 59.9"(N), 76° 36' 56.2"(E)
Distance is 338.434 mtrs from CEC Pillar-38, RL-1013.0 mtrs.
3. Kumaraswamy temple, 15° 00' 40.9"(N), 76° 33' 52.1"(E)
Distance is 639.670 mtrs from CEC Pillar-81, RL-905.0 mtrs.
4. S-26, 15° 00' 32.2"(N), 76° 35' 00.4"(E), (Rock mark)
Distance is 55.807 mtrs from CEC Pillar-26, RL-1063.0 mtrs.

Method of Mining:

The method of mining is opencast method which consists of drilling of blast holes, blasting, excavating the ore / waste from the phase by excavator & loading the same to the tipper / dumper, transporting of the ore (ROM) to crusher and waste to waste mining yard etc., after crushing the ROM in the crushing plant, two saleable products viz., Lump (CLO) and Fines are generated and both the products are stacked at their respective stock-piles. From the stock-piles, the product is sold to different customers.

ANNUAL PRODUCTION:

1. 2013-14 : 3.91 Million Tons
2. 2014-15 : 5.03 Million Tons.
3. 2015-16 : 5.66 Million Tons.
4. 2016-17 : 5.99 Million Tons.
5. 2017-18 - 6.00 Million Tons.
6. 2018-19 - 7.00 Million Tons.
7. 2019-20 - 7.00 Million Tons.

Contact Details of the responsible persons in Environment Department:

1	Shri. J.A Kamalakar, DGM (Env.) NMDC Ltd., Donimalai Iron Ore Mine, Donimalai Township, Sandur (Tq.), Ballari Dist. 583118. Office: 08395 – 232421 Fax No.08395 – 274653 E-mail: jakamalakar@nmdc.co.in
2	Shri. U.Praveen, Manager (Env.) NMDC Ltd., Donimalai Iron Ore Mine, Donimalai Township, Sandur (Tq.), Ballari Dist. 583118. Office: 08395 – 232804 Fax No.08395 – 274653 E-mail: praveenu@nmdc.co.in
3	Shri. Bharghuvar Jangid, Dy. Manager (Env.) NMDC Ltd., Donimalai Iron Ore Mine, Donimalai Township, Sandur (Tq.), Ballari Dist. 583118. Office: 08395 – 232804 Fax No.08395 – 274653

Address and contact Details of the project proponent and responsible persons:**Project Address:**

NMDC Ltd., Donimalai Iron Ore Mine,
Donimalai Township, Sandur (Tq.), Ballari Dist. 583118.
Office: 08395 – 274624
Fax No.08395 – 274649
Web site: www.nmdc.co.in

1	Shri. D. Sunil Kumar, General Manager NMDC Ltd., Donimalai Complex, Donimalai Township, Sandur (Tq.), Ballari Dist. 583118. Office: 08395 – 274624 Fax No.08395 – 274644 E-mail: dsunil@nmdc.co.in
2	Shri. P Ramaiyan, Jt.GM (Mining) NMDC Ltd., Donimalai Iron Ore Mine, Donimalai Township, Sandur (Tq.), Ballari Dist. 583 118. Office: 08395 – 274654 Fax No.08395 – 274654 E-mail: pramaiyan@nmdc.co.in
3	Shri. Dhiren Bhusahan, Mines Manager NMDC Ltd., Kumaraswamy Iron Ore Mine, Donimalai Township, Sandur (Tq.), Ballari Dist. 583118. Office: 08395 – 232469 Fax No.08395 – 274654 E-mail: dhirenbhusahan@nmdc.co.in
4	Shri. M.Jayapal Reddy, GM (Env.) NMDC Ltd., Khanij Bhavan, Castle Hills, Masab Tank, Hyderabad - 500 028 Office: 040-23536760 E-mail: jayapalreddy@nmdc.co.in

Government of Karnataka

No. WRE 67 MTP 2013

Government of Karnataka Secretariat

Vikassoudha

Bengaluru, dated 16.02.2017

From
Secretary to Government
Water Resource Department

To
Executive Director
M/s. NMDC Limited
Donimalai Township – 583 118
Ballari Dist, Karnataka

Sir,

Sub: Issue of consolidated water allotment of 13.45 cusecs to M/s. NMDC Limited from Narihalla reg.

Ref: 1. your letter no. CE/W/12(132)/98-2015/1204 dated 19/25.03.2015
2. Government Order no. PWD/103 GIP 69 dated 12.05.1972
3. Government letter no. WRE 113 MTP 2006 dated 23.04.2007
4. Government Order no. UDD 02 UWS 2007 dated 05.05.2007

With reference to above subject, I am directed to communicate the consolidated approval of water allotment of 13.45 cusecs allotted through various Government orders to M/s. NMDC Limited, Donimalai, Ballari Dist from Narihalla reservoir subject to following conditions.

1. Water should be used for the purpose only for which water is permitted to use.
2. It should not affect the drinking schemes and any other projects on the upper part and lower part of the project. It should not affect the irrigation to the lands coming under lower part of the project.
3. If factory is stopped due to shortage of water in narihalla due to any reason at any time, Government will not pay any compensation and if Government undertakes any irrigation projects or any other projects in future days and if said company is

submerged in water, company should not ask any form of compensation to the Government.

4. Government may increase the royalty for usage of water without any prior information to the Company.
5. Keeping in view of the necessity of irrigation or drinking water schemes, If Government or its designated officers stops the supply of water to the project, Government is not liable for any loss or unfavorable conditions and adverse effects occurred due to stoppage of water. At this point in time company should not submit any complaints and if submits it will not be considered.
6. Company should take proper measures in order to protect the damage or loss to the property of Water Resource Department and private property while undertaking the project.
7. In future Government may undertake water storage, usage and any other works without prior permission of the company. If do so, if company faces any difficulties in production of the company, Government is not responsible.
8. If Company project or company property is submerged in the water or any other problems occurs, Government is not responsible or Government will not pay compensation. Government may undertake such projects in upper part or lower part of the project.
9. If any problems occurred to the irrigation and drinking water by collapse of any buildings (Mechanical, Civil and Electrical) constructed by the Company, such physical and economic losses should bear by the company. The estimation of loss will be determined without any information to the company.
10. While undertaking projects no harm should happen to men, public property, forest or wild animals. If any damage or harm happened company will be solely responsible. For such damages company should pay compensation as decided by the Government in any form including money as decided by the Government without raising any disputes. If such damage is unable to compensate by paying any form of compensation, in such cases works will be stopped irrespective of construction stage without giving any compensation to the company and the permission will be withdrawn without any prior intimation.



ಕರ್ನಾಟಕ ಸರ್ಕಾರ

ಸಂಖ್ಯೆ: ಜಸಂಇ 67 ಎಂಟಿಪಿ 2013

ಕರ್ನಾಟಕ ಸರ್ಕಾರದ ಸಚಿವಾಲಯ,
ವಿಕಾಸಸೌಧ,
ಬೆಂಗಳೂರು, ದಿನಾಂಕ:16.02.2017.

ಇಂದ:

ಸರ್ಕಾರದ ಕಾರ್ಯದರ್ಶಿ,
ಜಲಸಂಪನ್ಮೂಲ ಇಲಾಖೆ,

ಇವರಿಗೆ:

ಪ್ರಾಧಿಕಾರ ನಿರ್ದೇಶಕರು,
ಮೆ:ಎನ್.ಎಂ.ಡಿ.ಸಿ ಲಿ.,
ದೋಣಿಮಲ್ಟಿ ಟೌನ್‌ಶಿಪ್ - 583118
ಬಳ್ಳಾರಿ ಜಿಲ್ಲೆ, ಕರ್ನಾಟಕ.

ಮಾನ್ಯರೇ,

ವಿಷಯ:- ಮೆ: ಎನ್.ಎಂ.ಡಿ.ಸಿ ಲಿಮಿಟೆಡ್ ಕಂಪನಿಗೆ ಒಟ್ಟಾರೆ 13.45 ಕ್ಯೂಸೆಕ್ಸ್ ನೀರನ್ನು ನಾರೀಹಳ್ಳದಿಂದ ಹಂಚಿಕೆ ಮಾಡಿರುವುದಕ್ಕೆ ಕ್ರೋಢೀಕೃತ ಆದೇಶ ಹೊರಡಿಸುವ ಬಗ್ಗೆ.

- ಉಲ್ಲೇಖ:-
1. ತಮ್ಮ ಪತ್ರ ಸಂಖ್ಯೆ:ಇ/ಡಬ್ಲ್ಯೂ/12(132)/98-2015/1204
ದಿನಾಂಕ:19/25.03.2015.
 2. ಸರ್ಕಾರದ ಆದೇಶ ಸಂ:ಪಿಡಬ್ಲ್ಯೂಡಿ/103 ಜಿಐಪಿ 69
ದಿನಾಂಕ:12.05.1972
 3. ಸರ್ಕಾರದ ಪತ್ರ ಸಂ:ಜಸಂಇ 113 ಎಂಟಿಪಿ 2006
ದಿನಾಂಕ:23.04.2007.
 4. ಸರ್ಕಾರದ ಆದೇಶ ಸಂ:ಯುಡಿಡಿ 02 ಯುಡಬ್ಲ್ಯೂಎಸ್ 2007
ದಿನಾಂಕ:05.05.2007.

ಮೇಲ್ಕಂಡ ವಿಷಯಕ್ಕೆ ಸಂಬಂಧಿಸಿದಂತೆ, ಮೆ: ಎನ್.ಎಂ.ಡಿ.ಸಿ ಲಿಮಿಟೆಡ್, ದೋಣಿಮಲ್ಟಿ, ಬಳ್ಳಾರಿ ಜಿಲ್ಲೆ ಇವರಿಗೆ ಸರ್ಕಾರದ ವಿವಿಧ ಆದೇಶಗಳ ಮೂಲಕ ನಾರೀಹಳ್ಳ ಜಲಾಶಯದಿಂದ ಒಟ್ಟಾರೆ 13.45 ಕ್ಯೂಸೆಕ್ಸ್ ನೀರು ಹಂಚಿಕೆ ಮಾಡಿರುವುದಕ್ಕೆ ಈ ಕೆಳಕಂಡ ಷರತ್ತುಗಳಿಗೆ ಒಳಪಟ್ಟು ಕ್ರೋಢೀಕೃತ ಅನುಮೋದನೆಯನ್ನು ನೀಡಲಾಗಿದೆ ಎಂದು ತಿಳಿಸಲು ನಿರ್ದೇಶಿತನಾಗಿದ್ದೇನೆ.

1. ನೀರನ್ನು ಯಾವುದಕ್ಕೆ ಉಪಯೋಗಿಸಲು ಅನುಮತಿ ನೀಡಲಾಗಿದೆಯೋ, ಅದಕ್ಕೆ ಉಪಯೋಗಿಸತಕ್ಕದ್ದು.
2. ಈ ಯೋಜನೆಯ ಮೇಲ್ಭಾಗದಲ್ಲಿ ಮತ್ತು ಕೆಳಭಾಗದಲ್ಲಿರುವ ಕುಡಿಯುವ ನೀರಿನ ಸ್ಥಿಮಾನಗಳಿಗೆ ಅಥವಾ ಇಲ್ಲಾವುದೇ ಯೋಜನೆಗಳಿಗೆ ಯಾವುದೇ ರೀತಿಯ ತೊಂದರೆಯಾಗದಂತೆ ಎಚ್ಚರ ವಹಿಸತಕ್ಕದ್ದು. ಯೋಜನೆಯ ಕೆಳಭಾಗದಲ್ಲಿ ಬರುವ ಜಮೀನುಗಳ ನೀರಾವರಿಗೆ ಯಾವುದೇ ತೊಂದರೆಯಾಗದಂತೆ ಎಚ್ಚರವಹಿಸತಕ್ಕದ್ದು.
3. ಯಾವುದೇ ಕಾರಣದಿಂದ ಯಾವುದೇ ಸಮಯದಲ್ಲಿ ನಾರೀಹಳ್ಳದಲ್ಲಿ ನೀರು ಕಡಿಮೆಯಾಗಿ ಕಾರ್ಖಾನೆ ಸ್ಥಳೀಕರಣದಲ್ಲಿ ಉಂಟಾಗಬಹುದಾದ ಸನ್ನಿವೇಶಗಳಲ್ಲಿ ಸರ್ಕಾರದಿಂದ ಯಾವುದೇ ಪರಿಹಾರ ನೀಡಲಾಗದು ಮತ್ತು ಮುಂದಿನ ದಿನಗಳಲ್ಲಿ ಸರ್ಕಾರವು ಆ ಪ್ರದೇಶದಲ್ಲಿ ಯಾವುದೇ ನೀರಾವರಿ ಯೋಜನೆ ಅಥವಾ ಇಲ್ಲಾವುದೇ ಯೋಜನೆಗಳನ್ನು ಕೈಗೆತ್ತಿಕೊಂಡು ಸದರಿ ಕಂಪನಿ ಮುಳುಗಡೆಯಾದಲ್ಲಿ ಕಂಪನಿಯು ಸರ್ಕಾರದಿಂದ ಯಾವುದೇ ರೀತಿಯ ಪರಿಹಾರ ದನವನ್ನು ಕೇಳಕೂಡದು.

4. ನೀರಿನ ಬಳಕೆಯ royalty ಯನ್ನು ಸರ್ಕಾರವು ಕಂಪನಿಗೆ ಮುನ್ನೂಚನೆ ಇಲ್ಲದೆ ಹೆಚ್ಚಿಸಬಹುದು.
5. ನೀರಾವರಿ ಅಥವಾ ಕುಡಿಯುವ ನೀರಿನ ಯೋಜನೆಗಳ ಅವಶ್ಯಕತೆಗಳನ್ನು ವ್ಯಕ್ತಿಯಲ್ಲಿಟ್ಟುಕೊಂಡು ಸರ್ಕಾರ ಅಥವಾ ಅದರ ನಿಯೋಜಿತ ಅಧಿಕಾರಿಗಳು ಯೋಜನೆಗೆ ನೀರನ್ನು ನಿಲ್ಲಿಸಿದಲ್ಲಿ ಕಂಪನಿಗೆನಾದರೂ ನಷ್ಟ ಅಥವಾ ಇತರ ಅನಾನುಕೂಲಗಳು ಅಥವಾ ಪ್ರತಿಪೂರ್ಣತಾದಲ್ಲಿ ಸರ್ಕಾರವು ಜವಾಬ್ದಾರರಾಗಿರುವುದಿಲ್ಲ. ಇಂಥ ಸಂದರ್ಭಗಳಲ್ಲಿ ಕಂಪನಿಯು ದೂರುಗಳನ್ನು ಸಲ್ಲಿಸಬಾರದು ಹಾಗೂ ಒಂದು ವೇಳೆ ಸಲ್ಲಿಸಿದಲ್ಲಿ ಅದನ್ನು ಪರಿಗಣಿಸಲಾಗುವುದಿಲ್ಲ.
6. ಕಂಪನಿಯು ಕಾಮಗಾರಿಯನ್ನು ಕೈಗೊಳ್ಳುವಾಗ ಜಲಸಂಪನ್ಮೂಲ ಇಲಾಖೆಯ ಹಾಗೂ ಖಾಸಗಿ ಅಸ್ತಿ-ಪಾಸ್ತಿಗೆ ಹಾನಿಯಾಗದಂತೆ ಎಚ್ಚರವಹಿಸತಕ್ಕದ್ದು. ಒಂದು ವಸ್ತು ಯಾವುದೇ ಹಾನಿಯಾದಲ್ಲಿ ಕಂಪನಿಯೇ ನಷ್ಟದ ವೆಚ್ಚವನ್ನು ಭರಿಸತಕ್ಕದ್ದು. ಈ ಯೋಜನೆಯಿಂದ ಯೋಜನೆಯ ಕೆಳಭಾಗದಲ್ಲಿ ಬರುವ ಖಾಸಗಿ ಅಥವಾ ಸರ್ಕಾರದ ಅಸ್ತಿ-ಪಾಸ್ತಿಗಳಿಗಾಗಿ ಅಥವಾ ಯಾವುದೇ ಪ್ರಾಣಾಪಾಯವಿಗಾಗಿ ಅಥವಾ ಇನ್ಯಾವುದೇ ನಷ್ಟ ಉಂಟಾದಲ್ಲಿ ಕಂಪನಿಯೇ ಪೂರ್ತಿ ಜವಾಬ್ದಾರರಾಗಿರುವುದು ಹಾಗೂ ಆಪಘಾತಗಳೇನಾದರೂ ಆದಲ್ಲಿ ಕಾನೂನು ರೀತಿಯ ಕ್ರಮಗಳಿಗೆ ಕಂಪನಿಯು ಗುರಿಯಾಗಿರುವುದಲ್ಲದೆ ಸರ್ಕಾರ ನಿಗದಿಪಡಿಸಿದ ಪರಿಹಾರವನ್ನು ನೀಡಬೇಕಾಗಿರುವುದು.
7. ಭವಿಷ್ಯದಲ್ಲಿ ಯಾವುದೇ ಕೆಲಸಗಳನ್ನು ನೀರಿನ ಶೇಖರಣೆ ಉಪಯೋಗ ಮತ್ತು ಇನ್ಯಾವುದೇ ಕಾರಣಗಳಿಗಾಗಿ ಕಂಪನಿಯ ಅನುಮತಿಯಿಲ್ಲದೆ ತೆಗೆದು ಕೊಳ್ಳಬಹುದು. ಈ ರೀತಿಯ ಕೆಲಸಗಳನ್ನು ಕೈಗೊಂಡಲ್ಲಿ ಕಂಪನಿಯು ಉತ್ಪಾದನೆಗೆ ಯಾವುದೇ ರೀತಿಯ ತೊಂದರೆಯಾದಲ್ಲಿ ಸರ್ಕಾರವು ಯಾವುದೇ ರೀತಿ ಜವಾಬ್ದಾರರಲ್ಲ ಹಾಗೂ
8. ಕಂಪನಿಯ ಯೋಜನೆಯಾಗಿ ಅಥವಾ ಕಂಪನಿಯ ಅಸ್ತಿ ಮುಳುಗಡೆಯಾದಲ್ಲಿ ಅಥವಾ ಇನ್ಯಾವುದೇ ತೊಂದರೆಯಾದಲ್ಲಿ ಸರ್ಕಾರವು ಜವಾಬ್ದಾರರಲ್ಲ ಅಥವಾ ಯಾವುದೇ ಪರಿಹಾರವನ್ನು ಸರ್ಕಾರವು ನೀಡುವುದಿಲ್ಲ. ಈ ಕೆಲಸ ಕಾರ್ಯಗಳನ್ನು ಸರ್ಕಾರವು ಕಂಪನಿಯ ಯೋಜನೆಯ ಮೇಲ್ದಾಗಿವಲ್ಲದಿಲ್ಲದ ಅಥವಾ ಕೆಳಭಾಗದಲ್ಲದಿಲ್ಲದ ಕೈಗೊಳ್ಳಬಹುದು.
9. ಕಂಪನಿಯು ಕಟ್ಟಿದ ಯಾವುದೇ ಕಟ್ಟಡಗಳು (Mechanical, Civil and Electrical) ಕುಸಿದು ಬಿದ್ದು ನೀರಾವರಿಗೆ ಅಥವಾ ಕುಡಿಯುವ ನೀರಿಗೆ ಅಥವಾ ಯಾವುದೇ ರೀತಿಯಲ್ಲಿ ತೊಂದರೆಯಾದರೆ ಇದರಿಂದ ಸಂಭವಿಸುವ ಭೌತಿಕ ಮತ್ತು ಆರ್ಥಿಕ ನಷ್ಟಗಳನ್ನು ಕಂಪನಿಯೇ ಭರಿಸಬೇಕಾಗಿರುವುದು. ಇಂಥ ನಷ್ಟಗಳ ಮೊತ್ತವನ್ನು ಕಂಪನಿಗೆ ಯಾವುದೇ ಸೂಚನೆ ನೀಡದೆ ನಿರ್ಧರಿಸಲಾಗುವುದು.
10. ಕಾಮಗಾರಿಗಳನ್ನು ಮಾಡುವಾಗ ಜನಗಳಿಗಾಗಿ, ಜನಗಳ ಅಸ್ತಿ-ಪಾಸ್ತಿಗಳಿಗಾಗಿ, ಆರಾಧ್ಯ ಸಂಸ್ಥೆಗಳಿಗಾಗಿ ಅಥವಾ ವನ್ಯ ಪ್ರದೇಶಗಳಿಗಾಗಿ ಯಾವುದೇ ರೀತಿಯ ಹಾನಿ ಆಗಬಾರದು. ಹಾಗೆ ಯಾವುದೇ ಹಾನಿಯಾದಲ್ಲಿ ಕಂಪನಿಯೇ ಪೂರ್ಣ ಜವಾಬ್ದಾರರಾಗಿರುವುದು. ಇಂಥ ಹಾನಿಗಳಿಗೆ ಸರ್ಕಾರ ನಿಗದಿಪಡಿಸಿದ ಆರ್ಥಿಕ ಮತ್ತು ಇತರ ಯಾವುದೇ ರೀತಿಯ ಪರಿಹಾರಗಳನ್ನು ಯಾವುದೇ ತಂಟೆ ಹೆರಾಯಿಗಳಲ್ಲದೆ ಕಂಪನಿಯೇ ಕೊಡಬೇಕಾಗಿರುವುದು. ಈ ಕೆಲಸಗಳಿಂದ ಯಾವುದೇ ಹಾನಿಯು ಉಂಟಾದಲ್ಲಿ ಇಂಥ ಹಾನಿಯು ಆರ್ಥಿಕ ಅಥವಾ ಇತರ ಯಾವುದೇ ರೀತಿಯ ಪರಿಹಾರಗಳಿಂದ ಪರಿಹರಿಸುವುದು ಸಾಧ್ಯವಾಗದ ವಸ್ತುವು ಕೆಲಸಗಳು ಯಾವುದೇ ಹಂತದಲ್ಲಿಯೂ ಕಂಪನಿಗೆ ಯಾವುದೇ ಪರಿಹಾರ ಕೊಡದೆ ಸರ್ಕಾರವು ಅಥವಾ ಅದರ ನಿಯೋಜಿತ ಅಧಿಕಾರಿಗಳು ಕೆಲಸಗಳನ್ನು ನಿಲ್ಲಿಸಿ ಕಂಪನಿಗೆ ಕೊಟ್ಟ ಪರಿಹಾರವನ್ನು ಮುನ್ನೂಚನೆ ಇಲ್ಲದೆ ಹಿಂದಕ್ಕೆ ಪಡೆಯಬಹುದು.
11. ಕಂಪನಿಯು weir ನಲ್ಲಿ ಶೇಖರಿಸಿದ ನೀರನ್ನು ಯಾವುದೇ ಸಮಯದಲ್ಲಿ ಕುಡಿಯುವ ನೀರಿಗೆ ಉಪಯೋಗಿಸಲು ಸರ್ಕಾರಕ್ಕೆ ಅಧಿಕಾರವಿರುತ್ತದೆ. ಇದಕ್ಕೆ ಕಂಪನಿಯು ಯಾವುದೇ ರೀತಿಯಲ್ಲಿ ಆಕ್ಷೇಪಿಸಬಾರದು.
12. ಕಂಪನಿಯು ಜಲ ಸಂಪನ್ಮೂಲ ಇಲಾಖೆಯ ಅಧಿಕಾರಿಗಳ ನಿರ್ದೇಶನದಂತೆ ಸೂಕ್ತ ಸ್ಥಳದಲ್ಲಿ ನೀರಿನ ಮಾಪಕಗಳನ್ನು ತನ್ನ ವೆಚ್ಚದಲ್ಲಿ ಅಳವಡಿಸತಕ್ಕದ್ದು. ನೀರನ್ನು ಅಳತೆ ಮಾಡಲು ಅಳವಡಿಸುವ ನೀರಿನ ಮಾಪಕಗಳ ಬಗ್ಗೆ ಸಂಪೂರ್ಣ ಮಾಹಿತಿಯನ್ನು ನಕ್ಷೆಯೊಂದಿಗೆ ಸಲ್ಲಿಸತಕ್ಕದ್ದು ಹಾಗೂ ಸದರಿ ನೀರಿನ ಮಾಪಕಗಳನ್ನು ಕಾಲ ಕಾಲಕ್ಕೆ ಕ್ಯಾಲಿಬರೇಷನ್ ಮಾಡಿಸತಕ್ಕದ್ದು.
13. The Government or its designated officer will determine measurements of water used. ಈ ರೀತಿ ಸರ್ಕಾರವು ಅಥವಾ ಅದರ designated officer ಅಳತೆ ಮಾಡಿದ ನೀರಿನ ಪ್ರಮಾಣಕ್ಕೆ ಕಂಪನಿಯು ಮೊತ್ತವನ್ನು (water charges) ಭರಿಸಬೇಕಾಗಿರುತ್ತದೆ. ಈ ಮೊತ್ತವನ್ನು ಸರ್ಕಾರವು ಕಂಪನಿಗೆ ಮುನ್ನೂಚನೆ ಇಲ್ಲದಂತೆ ಯಾವುದೇ ಸಮಯದಲ್ಲಿ ಹೆಚ್ಚಿಸಬಹುದು. ಇದಕ್ಕೆ ಕಂಪನಿಯು ಯಾವುದೇ ಹೆರಾರಿಲ್ಲದೆ ಪಾವತಿಸಬೇಕು.

14. ಸರ್ಕಾರದಿಂದ ನಿಗದಿಪಡಿಸುವ ಸೇವಾ ಶುಲ್ಕವನ್ನು ಹಾಗೂ ಇತರ ಶುಲ್ಕಗಳನ್ನು ಕಂಪನಿಯು ಪಾವತಿಸತಕ್ಕದ್ದು. ಕಂಪನಿಯು ತಾನು ಬಳಸುವ ನೀರಿನ ಪ್ರಮಾಣಕ್ಕೆ ತನುಗುಣವಾಗಿ ಜಲ ಸಂಪನ್ಮೂಲ ಇಲಾಖೆ/ಸರ್ಕಾರವು ಕಾಲ ಕಾಲಕ್ಕೆ ನಿಗದಿಪಡಿಸುವ ನೀರಿನ ಶರ, ಸೇವಾ ಶುಲ್ಕ ಮತ್ತಿತರ ಶುಲ್ಕಗಳ ಜೊತೆಗೆ ರೂ.12,000/-ಗೆ/ವಾರ್ಷಿಕ ಗರಿಷ್ಠ ಭವನವನ್ನು ಸಹ ಇಲಾಖೆಗೆ ಪಾವತಿಸತಕ್ಕದ್ದು.
15. ಯೋಜನೆಗೆ ಬೇಕಾಗಬಹುದಾದ ಸರ್ಕಾರಿ ಜಮೀನು ಮತ್ತು ಇತರ ಅಸ್ತಿಗಳನ್ನು ಸರ್ಕಾರ ನಿಗದಿಪಡಿಸಿದ ದರಗಳ ಮೊತ್ತವನ್ನು ಕೆಲಸಗಳನ್ನು ಪ್ರಾರಂಭಿಸುವ ಮೊದಲೇ ಸರ್ಕಾರಕ್ಕೆ ಪಾವತಿಸಬೇಕು. ಈ ವಿಷಯದಲ್ಲಿ ಕಂಪನಿಯು ಯಾವುದೇ ತಂಟೆ ತೆರೆಯುಗಳನ್ನು ತೆಗೆಯಬಾರದು.
16. ಯೋಜನೆಯನ್ನು ಕಾರ್ಯಗತಗೊಳಿಸುವ ಸಮಯದಲ್ಲಿ ಲಭ್ಯವಾದ ಯೋಜನೆಯ ಕೆಲಸ ಮಾಡುವ ಸಮಯದಲ್ಲಿ ಯಾವುದೇ legal issues ಉದ್ಭವವಾದಲ್ಲಿ ಕಂಪನಿಯು ತನ್ನ ಖರ್ಚಿನಲ್ಲಿ ಇತ್ಯರ್ಥ ಮಾಡಿಕೊಳ್ಳಬೇಕು. ಇದಕ್ಕೆ ಸರ್ಕಾರವು ಯಾವುದೇ ರೀತಿಯ ಜವಾಬ್ದಾರಿರಲ್ಲ. ಹಾಗೂ ಸರ್ಕಾರವು ಯಾವುದೇ ರೀತಿಯ ಖರ್ಚನ್ನು ಭರಿಸುವುದಿಲ್ಲ.
17. ಖಾಸಗಿ ಜಮೀನುಗಳು ನೀರಿನಲ್ಲಿ ಮುಳುಗಡೆಯಾದಲ್ಲಿ ಅಥವಾ ಕಂಪನಿಯ ಕೆಲಸಗಳಿಗೆ ಬೇಕಾದಲ್ಲಿ ಕಂಪನಿಯೇ ಮೊತ್ತವನ್ನು ನೀಡಿ ಪಡೆಯಬೇಕು. ಖಾಸಗಿ ಜಮೀನುಗಳನ್ನು ವಶಪಡಿಸಿಕೊಳ್ಳುವಲ್ಲಿ ತಂಟೆ ತೆರೆಯುಗಳು ಉದ್ಭವಿಸಿದಲ್ಲಿ ಕಂಪನಿಯೇ ಖಾಸಗಿಯವರ ಹತ್ತಿರ ತನ್ನ ಸ್ವಂತ ಖರ್ಚಿನಲ್ಲಿ ಇತ್ಯರ್ಥ ಮಾಡಿಕೊಳ್ಳಬೇಕು. ಸರ್ಕಾರವು ಈ ವಿಷಯದಲ್ಲಿ ಯಾವುದೇ ತೆರವಾದ ಜವಾಬ್ದಾರಿಯನ್ನು ತೆಗೆದುಕೊಳ್ಳುವುದಿಲ್ಲ.
18. ಸರ್ಕಾರದ ಜಮೀನಿನಲ್ಲಿರುವ ಯಾವುದೇ ವಸ್ತುಗಳನ್ನು ಕಂಪನಿಯು ಯಾವುದೇ ಕೆಲಸಗಳಿಗೆ ಉಪಯೋಗಿಸಿದಲ್ಲಿ ಇವುಗಳ royalty ಯನ್ನು ಕಂಪನಿಯು ಸರ್ಕಾರವು ನಿಗದಿಪಡಿಸಿದ ರೀತಿಯಲ್ಲಿ ಸರ್ಕಾರಕ್ಕೆ ಯಾವುದೇ ಕಡರಾಯಿಗಳಿಲ್ಲದೆ ಪಾವತಿಸತಕ್ಕದ್ದು.
19. ಜಲ ಸಂಪನ್ಮೂಲ ಇಲಾಖೆಯ ಸಂಬಂಧವು ಕಾರ್ಯಪಾಲಕ ಇಂಜಿನಿಯರ್ ರವರೊಂದಿಗೆ ಮೇಲಿನ ಎಲ್ಲಾ ನಿಬಂಧನೆಗಳನ್ನು ಒಳಪಡಿಸಿ ಸೂಕ್ತ ಕಡಾರನ್ನು ಮಾಡಿಕೊಳ್ಳತಕ್ಕದ್ದು ಮತ್ತು ಅವರ ನಿರ್ದೇಶನದ ಅನುಸಾರ ಯೋಜನೆಯನ್ನು ಕಾರ್ಯಗತಗೊಳಿಸತಕ್ಕದ್ದು.
20. ಕಂಪನಿಯು ಮೇಲಿನ ಯಾವುದೇ ನಿಬಂಧನೆಗಳನ್ನು ಉಲ್ಲಂಘಿಸಿದಲ್ಲಿ ಯಾವುದೇ ಮುನ್ಸೂಚನೆ ನೀಡದೇ ಅನುಮತಿಯನ್ನು ಹಿಂದಕ್ಕೆ ಪಡೆಯಲಾಗುವುದು. ಹಾಗೂ ಯಾವುದೇ ಕಾರಣದಿಂದ ಸರ್ಕಾರಕ್ಕೆ ಆಗುವ ನಷ್ಟವನ್ನು ಕಂಪನಿಯಿಂದ ಭರಿಸಿಕೊಳ್ಳುವ ಅಧಿಕಾರವನ್ನು ಸರ್ಕಾರವು ಹೊಂದಿರುತ್ತದೆ.
21. ಸಾರಿಹಳ್ಳದಲ್ಲಿ ನೀರಿನ ಹರಿವು ಕಡಿಮೆಯಾದಾಗ ಕೈಗಾರಿಕೆಯು ನೀರಿನ ಸೂರೈಕೆಗಾಗಿ ಬೇರೆ ಸೂಕ್ತ ವ್ಯವಸ್ಥೆಯನ್ನು ಮಾಡಿಕೊಳ್ಳತಕ್ಕದ್ದು.
22. ಸದರಿ ಆದೇಶವು, ಆದೇಶವನ್ನು ಹೊರಡಿಸಿದ ದಿನಾಂಕದಿಂದ 5 ವರ್ಷಗಳ ಅವಧಿಗೆ ಒಳಪಡಿಸಲಾಗಿರುತ್ತದೆ. ನಂತರದ ಅವಧಿಗೆ ಪರಿವಾಸಗಿಯನ್ನು ನವೀಕರಿಸಿಕೊಳ್ಳಬೇಕಾಗುತ್ತದೆ.
23. ಮೇಲಿನ ನಿಬಂಧನೆಗಳ ಜೊತೆಗೆ ಸ್ಥಳೀಯವಾಗಿ ಅಗತ್ಯವೆನಿಸುವ ಇತರ ಯಾವುದೇ ನಿಬಂಧನೆಗಳನ್ನು ಜಲ ಸಂಪನ್ಮೂಲ ಇಲಾಖೆಯ ಸಂಬಂಧವು ಅಧಿಕಾರಿಯವರು ಸೂಚಿಸಿದಲ್ಲಿ ಅವುಗಳನ್ನು ಆಳವಡಿಸಿ ಸೂಕ್ತ ಕಡಾರನ್ನು ಕಂಪನಿಯವರು ಇಲಾಖಾ ಅಧಿಕಾರಿಯವರೊಂದಿಗೆ ಮಾಡಿಕೊಳ್ಳತಕ್ಕದ್ದು.

ತಮ್ಮ ವಿಶ್ವಾಸಿ,

(ಸಿ. ಶ್ರೀನಿವಾಸುಲು)

ಸರ್ಕಾರದ ಅಧೀನ ಕಾರ್ಮಿಕರ್ದರ್ಶಿ (ತಾಂತ್ರಿಕ-1)

ಜಲಸಂಪನ್ಮೂಲ ಇಲಾಖೆ,

ಪ್ರತಿಯನ್ನು:-

1. ವ್ಯವಸ್ಥಾಪಕ ನಿರ್ದೇಶಕರು, ಕರ್ನಾಟಕ ನೀರಾವರಿ ನಿಗಮ ನಿಯಮಿತ ಬೆಂಗಳೂರು.
2. ವ್ಯವಸ್ಥಾಪಕ ನಿರ್ದೇಶಕರು, ಕರ್ನಾಟಕ ನೀರು ಸರಬರಾಜು ಮತ್ತು ಒಳಚರಂಡಿ ಮಂಡಳಿ ನಂ.53ನ ಜಂಥವನ, ಬಿ.ಟಿ.ಎಂ ರೋಡ್ ಮೊದಲನೇ ಹಂತ ಬನ್ನೇರಘಟ್ಟ ಮುಖ್ಯರಸ್ತೆ ಬೆಂಗಳೂರು-29
3. ಕೀರ್ತಾಧಿಕಾರಿಗಳು, ತಾಂತ್ರಿಕ ಕೋಶ ವಾಣಿಜ್ಯ ಮತ್ತು ಕೈಗಾರಿಕೆ ಇಲಾಖೆ ವಿಶಾಸಘೃಹ, ಬೆಂಗಳೂರು.

11. Government will have absolute right to use the water in company's weir for drinking purpose. Company should not object this.
12. As per the directions of the officers of Water Resource Department, Company should install the water measurement equipments at their own cost. The details regarding the water measuring equipments along with the map should submit and said water measuring equipments should be calibrated from time to time.
13. The Government or its designated officer will determine measurements of water used. Company should make payment of water charges for the quantity determined by the Government or its designated officer. Government may increase such charges without any prior intimation to the company. Company should pay the charges without raising any disputes.
14. Company should pay the service charges and other taxes as stipulated by the Government. Company should make payment of service charges and other taxes as decided by the Water Resources Department/Government according to the quantity of water used as stipulated from time to time to Government along with ₹ 12,000/- annual honorarium to the department.
15. The company should pay the cost of the Government land and other properties required for the project at the rates as decided by the Government before starting the project. Company should not raise any disputes in this regard.
16. At the time of initiation of the project or during running the project, if any legal issues arise, company should solve such issues with their own expenses. Government is not responsible for such issues and Government will not bear any expenses.
17. If any private lands submerging in the water or the lands required for project the company should buy the lands by paying money. If any dispute arises during acquiring the private lands, Company should solve such issues with the private land owners at their own expenses. Government will not take any type of responsibilities in the matter.
18. If Company uses any items/things available in the Government land for any works, company should pay royalty as determined by the Government without and disputes.

19. You have to enter the agreement with concerned Executive Engineer of Water Resource Department by including all the above conditions in the agreement and as project should be implemented as per their directions.
20. If Company violates any of the above conditions, permission will be withdrawn without any prior intimation and Government will have right to take re-imbursement of loss occurred due to any reasons to Government from the company.
21. When the inward water flow is reduced to Narihalla, industry should make suitable alternative arrangements for water supply.
22. The said order is limited to 5 years of period from the date of issue of this order. Renewal is required for further period.
23. Apart from the above conditions, any other conditions found to be required locally by the Water Resource Department or its designated officers to be included and enter in to an agreement with the departmental officer by the company.

Yours faithfully,
Sd/-

(C Srinivasulu)
Under Secretary to Government (Technical-I)
Water Resource Department

Copy to:-

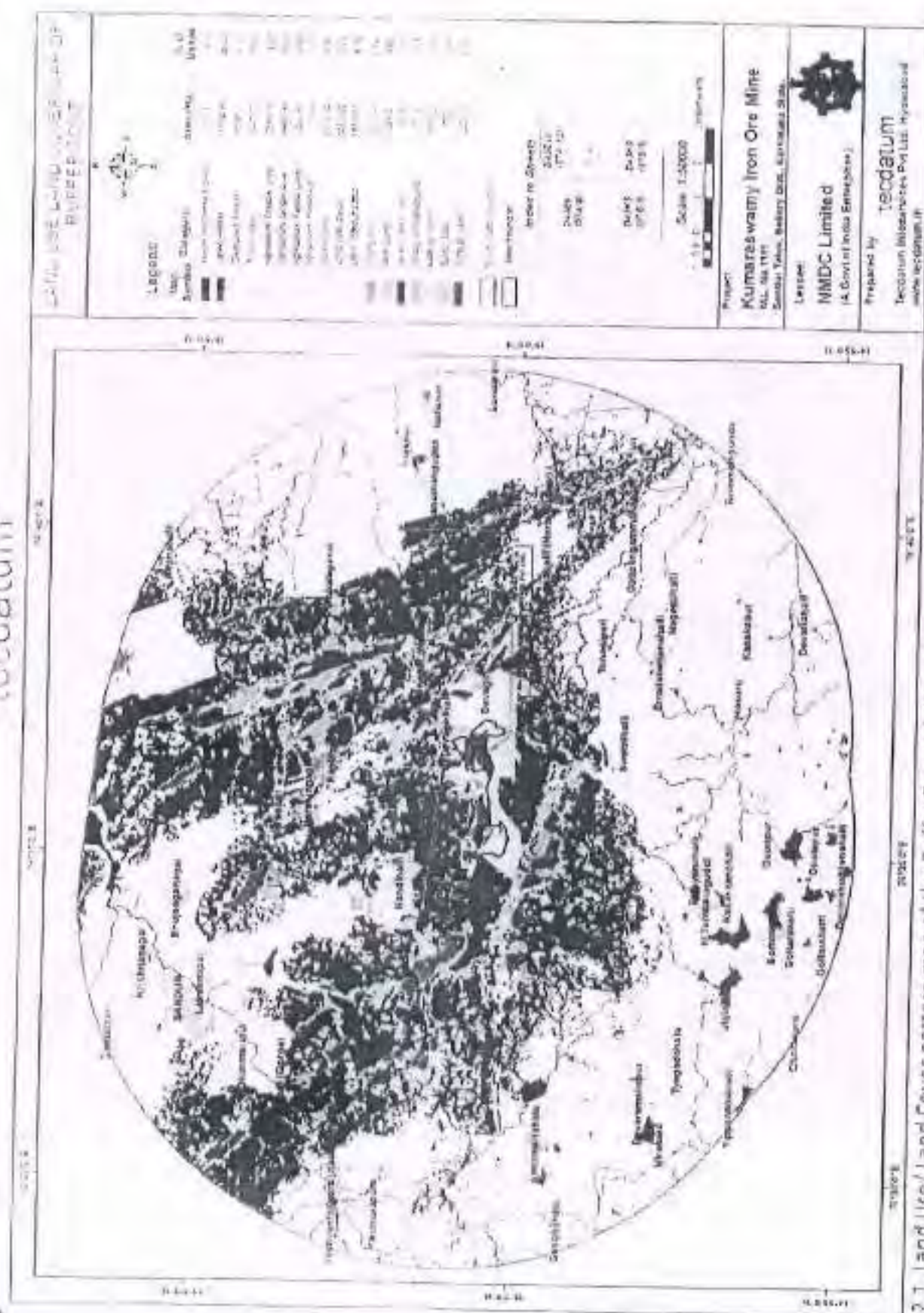
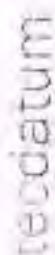
1. Managing Director, Kaveri Niravari Nigama Niyamitha, Bengaluru
2. Managing Director, Karnataka Water Supply and sewerage Board, no.5&6 Jalabhavana, BTM Layout, 1st Floor, Bannerughatta Main Road, Bengaluru-29
3. Desk officer, Technical Section, Department of Commerce and Industries, Vikasasoudha, Bengaluru



tecdatum

Table 2.1 Land use Land Cover details of 10 km Buffer zone

Land Use Land Cover Class		Area of Sub Class		Area of Class	
		Area In Ha	% of Usage	Area In Ha	% of Usage
Agriculture				12407.18	28.25
	Double Crop	2594.97	5.91		
	Single Crop	8469.48	19.28		
	Fallow Land	1269.49	2.89		
	Plantations	23.24	0.17		
Forest Cover				18009.48	41
	Moderate Dense Forest	519.13	4.18		
	Open Forest	11204.86	26.65		
	Degraded Forest	2347.73	5.34		
	Forest Blank	3437.76	7.83		
Waste Land				9716.69	22.11
	Barren Land	3818.82	8.68		
	Land with scrub	2302.02	5.24		
	Land without scrub	3595.85	8.19		
Others				3794.41	8.64
	Built Up Land	887.22	2.01		
	Mining area	1281.32	2.92		
	Mine Dump	259.01	0.59		
	Mineral Stockyard	25.54	0.06		
	Mining Infrastructures	73.47	0.17		
	Tailing Dam	47.96	0.11		
	Surface Water	1224.89	2.78		
Total Area		43927.76	100	43927.76	100



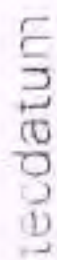


Annexure I

The classified data of the Mine area mine is depicted in Figure 2.2. The extents of various Land Use/Land Cover classes pertaining to the study area are given in Table 2.2.

Table 2.2 Land Use/ Land Cover details of core mine

Land Use Land Cover Class		Area of Sub Class		Area of Class	
		Area in Ha	% of Usage	Area in Ha	% of Usage
Forest Cover	Open Forest	197.82	22.01	395.15	53.40
	Degraded Forest	159.31	21.61		
	Forest Blank	15.54	2.42		
Waste Land				114.08	20.2
	Barren Rock	45.47	0.7		
	Land with scrub	5.84	0.2		
	Land without scrub	63.77	4.30		
Others				167.07	25.01
	Build-Up Land	7.43	0.13		
	Mining area	24.04	1.79		
	Conveyor Belt	1.5	0.02		
	Plantation	0.16	1.56		
	Waste Dump	22.00	1.11		
	Mineral Stock yard	11.4	2.04		
	Mining Infrastructures	0.96	0.15		
	Hard Road	19.92	2.90		
	Check Dam	0.06	0.01		
	Road	11.51	1.73		
	Stream	1.19	0.18		
Total Area		887.50	100	647.50	100





एन एम डी सी लिमिटेड N M D C Limited

(भारत सरकार का उद्यम / A Govt. of India Enterprise)

दोणिमलै लौह अयस्क खान / Donimalai Iron Ore Mine

ISO 9001:2000
ISO 14001:2004

Donimalai Township – 583 118, Dist: Bellary, Karnataka.
Phones: 08395 – 274654 / 274618, Fax : 08395 – 274687 / 274654

Ref: NMDC/KIOM/BDS/68(M)/2014/ १९१६.

Date: 4.3.2014

To,
The Deputy Conservator of Forests,
Bellary Division,
Bellary.

Sub: Submission of Bio-diversity study and conservation plan for Kumaraswamy Iron Ore Mine, NMDC Ltd., Donimalai, Dist. Bellary (ML No. 1111) reg.

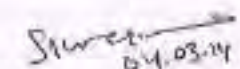
Ref: Letter no.A5(1) MSC.CR.6/2013-14 dated 21.1.2014 from Additional Principal Chief Conservator of Forests.

Sir,

With reference to the above letter from Additional Principal Chief Conservator of Forests (Forest Conservation), Bangalore , please find attached herewith the hard copy and CD containing soft copy of Bio-diversity study and Conservation plan of ML No. 1111 i.e Kumaraswamy Iron Ore Mine , NMDC Ltd. prepared by M/s Indian Institute of Bio-Social Research & Development (IIBRAD), Kolkata.

Submitted for kind perusal and necessary action please.

Yours faithfully


(S K Verma)
General Manager

Enclosure a/a

हिन्दी में पत्र व्यवहार को हम प्राथमिकता देते हैं। हिन्दी में पत्र व्यवहार का स्वागत है।

पंजीकृत कार्यालय : 10-3-311/ए खनिज भवन, कैसल हिल्स मासाब टैंक, हैदराबाद 500 173

Regd. Office: 10-3-311/A, Khanii Bhavan, Castle Hills, Masab Tank, Hyderabad 500 173



एन एम डी सी लिमिटेड N M D C Limited

(भारत सरकार का उद्यम / A Govt. of India Enterprise)

दोणिमलै लौह अयस्क खान / Donimalai Iron Ore Mine

ISO 9001:2000
ISO 14001:2004

Donimalai Township = 583 118, Dist: Bellary, Karnataka.

Phones: 08395 - 274654 / 274618, Fax : 08395 - 274687 / 274654

Ref: NMDC/KIOM/BDS/68(M)/2014/1995

Date: 4.3.2014

To,
The Chief Conservator of Forests,
Bellary Circle,
Bellary.

Sub: Submission of Bio-diversity study and conservation plan for Kumaraswamy Iron Ore Mine, NMDC Ltd., Donimalai, Dist. Bellary (ML No. 1111) reg.

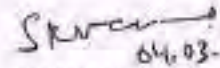
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Submitted for kind perusal and necessary action please.

Yours faithfully


04.03.14

(S K Verma)
General Manager

Enclosure a/a

हिन्दी में पत्र व्यवहार को हम प्राथमिकता देते हैं। हिन्दी में पत्र व्यवहार का स्वागत है।

पंजीकृत कार्यालय : 10-3-311/ए खनिज भवन, कैसल हिल्स मासाब टैंक, हैदराबाद 500 173

Regd. Office: 10-3-311/A. Khanii Bhavan, Castle Hills, Masab Tank, Hyderabad 500 173

Fugitive Dust Monitoring Status

Table No.26

Season: Winter Season 2019-2020

Pollutant ($\mu\text{g}/\text{m}^3$)	Codes	Min	Percentile			Max	AM	SD	Values exceeding Standards
			30	50	98				
SPM	FK-1	198	222.6	239.0	247.6	248	228.3	26.7	0
	FK-2	172	191.8	205.0	210.8	211	196.0	21.0	0
	FK-3	254	267.8	277.0	279.9	280	270.3	14.2	0
	FK-4	222	241.8	255.0	260.8	261	246.0	21.0	0
	FK-5	156	175.2	188.0	192.8	193	179.0	20.1	0
	FK-6	101	114.8	124.0	134.6	135	120.0	17.3	0
	FK-7	160	162.4	164.0	177.4	178	167.3	9.5	0
RPM	FK-1	98	104.0	108.0	116.6	117	107.7	9.5	0
	FK-2	79	89.8	97.0	101.8	102	92.7	12.1	0
	FK-3	112	125.2	134.0	147.4	148	131.3	18.1	0
	FK-4	101	116.6	127.0	136.6	137	121.7	18.6	0
	FK-5	66	76.2	83.0	89.7	90	79.7	12.3	0
	FK-6	40	49.0	55.0	60.8	61	52.0	10.8	0
	FK-7	61	69.4	75.0	80.8	81	72.3	10.3	0
TPM	FK-1	296	326.6	347.0	364.3	365	336	35.8	0
	FK-2	251	281.6	302.0	312.6	313	289	33.1	0
	FK-3	366	394.8	414.0	424.6	425	402	31.4	0
	FK-4	323	358.4	382.0	397.4	398	368	39.5	0
	FK-5	222	251.4	271.0	282.5	283	259	32.3	0
	FK-6	141	167.4	185.0	189.8	190	172	27.0	0
	FK-7	221	235.4	245.0	252.7	253	240	16.7	0

Codes	Location Names
FK-1	Pit No.1 of B Block
FK-2	C Block Benches
FK-3	Active Waste dumps
FK-4	Primary Crusher Area
FK-5	Near to Lump Ore Stock Pile of Loading Plant
FK-6	Near to Fine Ore Stock Pile of Loading Plant
FK-7	Near Tertiary Crusher of Screening Plant

Annexure-11

Details of PPE's issued between Oct-2019 to Mar-2020

Sl. No.	ITEM	Total
1	Safety shoes	819
2	Ankle shoes	70
3	Rain Suit	7
4	Helmet	71
5	Head band	15
6	Reflecting jacket	14
7	Dust mask	961
8	Ear Plug	431
9	Safety Goggles	88
10	Hand gloves	20
11	Torch light	22
12	Angavastrum	1122
13	water bottle	10
14	Webbing Lanyard	4
15	Harness Steel Hook	4
16	Full body Harness	4

Annexure-12

**NMDC YASHODA AROGYAVARDHINI
OCCUPATIONAL HEALTH CENTER, DONIMALAI
STATISTICS OF MEDICAL EXAMINATION
CONDUCTED FROM OCTOBER 2019 TO MARCH 2020**

	OCT,19	NOV,19	DEC,19	JAN,20	FEB,20	MARCH,20	TOTAL
JO/EXE	-	-	-	-	-	-	NIL
IME							
BELOW 45(PME)	11	02	01	-	09	-	23
ABOVE 45(PME)	06	01	-	02	20	02	31
SUPERANNUATION	02	-	-	01	-	03	06
TOTAL	19	03	01	03	29	05	60
WORKMEN	-	-	-	-	-	-	NIL
IME							
- BELOW 45(PME)	12	07	03	16	07	01	46
ABOVE 45(PME)	05	07	01	06	15	14	48
SUPERANNUATION	-	-	-	02	-	23	25
TOTAL	17	14	04	24	22	38	119
C.L-DIOM	02	71	43	63	07	03	189
IME							
PME	09	-	-	-	02	08	19
TOTAL	11	71	43	63	09	11	208
C.L KIOM	22	02	00	-	18	03	45
IME							
PME	-	-	-	-	05	-	05
TOTAL	22	02	-	-	23	03	50
APP.TRAINEES	02	-	88	-	02	-	92
CISF	-	-	-	-	-	-	00
ICH	-	-	06	02	-	-	08
YASHODA STAFF	44	07	-				51
HOUSE KEEPING	-	33	01				34
EYE REFRACTION	229						229
AUDIOMETRY	117	135	159	101	95	67	674

DUMP MANAGEMENT PLAN													
Status	Dump	Particulars of work		As executed/As Recommended				Rate per unit	Amount in Lakhs	Additional	Shortfall	Remark	
				Dimension in m			Qty.						
				Length	Width								Height
TOP	BOT												
Active	AD-1	Toe Wall at the toe of waste dump TW-1	Foundation in hard soil mixed with boulders including hard rock	245/990	2.4/2.5		0.80/0.80	470/1980	0/111	0/2.2	0	2.2	Work is in progress
			Plain cement concrete (1:4:8) in foundation	245/990	2.2/2.2		0.15/0.15	80.85/326.76	0/1860	0/6.08	0	6.08	Work is in progress
			Toe wall R-R stone	245/990	1/1	2/2	3/3	1102/4455	0/1232	0/54.89	0	54.89	Work is in progress
		Garland DrainGD-1a	Garland drain (1 m bottom width, 2 m top width and 1 m deep below toe wall)	245/1020	2/2	1/1	0/1	367.5/1530	0/111	0/1.7	0	1.7	Work is in progress
		Coir Matting	Providing coir mat on outer surface of slope of waste dump					0/2	0/1000000	0/20	0	20.0	Work is in progress
Active	AD-2	Toe Wall at the toe of waste dump TW-2	Foundation in hard soil mixed with boulders including hard rock	400.15/370	2.60/2.50		0.80/0.80	832.31/740	96/111	0.8/0.82	0	0.02	Work completed
			Plain cement concrete (1:4:8) in foundation	400.15/370	2.2/2.2		0.15/0.15	132.05/122.10	3927/1860	5.19/2.27	2.92	0	Work completed
			Toe wall R-R stone masonry in cement sand mortar (1:6)	400.15/370	1.1/1	2/2	3.65/3	2263.85/1665	3042.50/1232	68.88/20.51	48.37	0	Work completed
		Garland DrainGD-2	Garland drain (1 m bottom width, 2 m top width and 1 m deep below toe wall)	150/400	2.10/2	2.80/1	1.25/1	459.38/600	253.5/111	1.16/0.67	0.49	0	Work completed
		Coir Matting	Providing coir mat on outer surface of slope of waste dump					0.491/0.5	3000000/1000000	14.73/5	9.73	0	Work completed
Sliding Dump	SD-1	Toe Wall at the toe of waste dump TWSD-1	Foundation in hard soil mixed with boulders including hard rock	50/50	2.1/2		0.85/0.80	89.25/80	300/111	0.27/0.09	0.18	0	Work completed
			Plain cement concrete (1:4:8) in foundation	50/50	1.7/1.7		0.15/0.15	12.75/12.75	4903/1860	0.63/0.24	0.39	0	Work completed
			Toe wall R-R stone masonry in cement sand mortar (1:6)	50/50	0.5/0.5	1.5/1.5	3/2.5	150/125	4654.5/1232	6.98/1.54	5.44	0	Work completed
Sliding Dump	SD-2	Toe Wall at the toe of waste dump TWSD-2	Foundation in hard soil mixed with boulders including hard	80/80	2.1/2.0		0.85/0.80	142.8/128.0	300/111	0.43/0.14	0.29	0	Work completed
			Plain cement concrete (1:4:8) in foundation	80/80	1.7/1.7		0.15/0.15	20.4/20.4	4903/1860	1.0/0.38	0.62	0	Work completed
			Toe wall R-R stone masonry in cement sand mortar (1:6)	80/80	0.5/0.5	1.5/1.5	3.0/2.5	240/200	4654.5/1232	11.17/2.46	8.71	0	Work completed
Sliding Dump	SD-3	TToe Wall at the toe of waste dump TWSD-3	Foundation in hard soil mixed with boulders including hard	60/60	2.10/2.00		0.85/0.80	107.10/96.00	300/111	0.32/0.11	0.21	0	Work completed
			Plain cement concrete (1:4:8) in foundation	60/60	1.7/1.7		0.15/0.15	15.30/15.30	4903/1860	0.75/0.28	0.47	0	Work completed
			Toe wall R-R stone masonry in cement sand mortar (1:6)	60/60	0.50/0.50	1.50/1.50	3.00/2.50	180/150	4654.5/1232	8.38/1.85	6.53	0	Work completed

Table 5.3. PROPOSED ENGINEERING MEASURES OF SURFACE WATER MANAGEMENT ML No.1111

DUMP MANAGEMENT PLAN													
Status	Dump	Particulars of work		As executed/As Recomendced				Rate per unit	Amount in Lakhs	Addition al	Shortfall	Remark	
				Dimension in m			Qty.						
				Length	Width								Height
		TOP	BOT										
		Gully plug for Dumps											
AD-1 and AD-2 (up to conceptual period)		i. Brush Wood check Dam										These works are proposed as per modified time schedule for implimentation for LWCD,BWCD & LBCD up to conceptual period (Refer leter from ADG(EM) ICFRE dated 11.07.2018 addressed to The Chairman, Monitoring committe	
		BWCD	o/1000	o/2	o/1.5		o/1	o/2000	o/300	o/6	o		6.00
		BWCD	o/800	o/3	o/1.5		o/1	o/2400	o/300	o/7.20	o		7.20
		BWCD	o/600	o/4	o/1.50		o/1	o/2400	o/300	o/7.20	o		7.20
		BWCD	o/500	o/5	o/1.50		o/1	o/2500	o/300	o/7.50	o		7.50
		ii. Logwood check Dam											
		LWCD	o/750	o/4	o/2		o/1	o/3000	o/1200	o/36	o		36.00
		LWCD	o/600	o/5	o/2		o/1	o/3000	o/1200	o/36	o		36.00
		LWCD	o/450	o/6	o/2		o/1	o/2700	o/1200	o/32.4	o		32.40
		LWCD	o/300	o/7	o/2		o/1	o/2100	o/1200	o/25.20	o		25.20
		iii. Loose boulder check dam											
		LBCD	o/400	o/4	o/1	o/2	o/1.5	o/3600	o/400	o/14.4	o		14.40
		LBCD	o/300	o/5	o/1	o/2	o/1.5	o/3375	o/400	o/13.50	o		13.50
		LBCD	o/200	o/6	o/1	o/2	o/1.5	o/2700	o/400	o/10.80	o		10.80
	LBCD	o/100	o/8	o/1	o/2	o/1.5	o/1800	o/400	o/7.20	o	7.20		
		Check Dams for Nallah											
	N-1	LBCD-1	1/1	43/60	2.20/2	5/4	3/2	464.4/360	1506.62/400	7/1.44	5.56	o	Work completed
	N-2	LBCD-2	1/1	40/40	2/2	4.10/4	2.40/2	292.80/240	1506.62/400	4.41/0.96	3.45	o	Work completed
	N-2	LBCD-3	1/1	23/30	2.15/2	5.10/4	2.80/2	233.45/180	1506.62/400	3.52/0.72	2.8	o	Work completed
	N-2	LBCD-4	1/1	15.50/25	2.20/2	4.60/4	3.20/2	168.64/150	1506.62/400	2.54/0.60	1.94	o	Work completed
	N-4	LBCD-5	1/1	0/30	0/2	0/4	0/2	0/180	1506.62/400	0/0.72	o	0.72	Work completed
	N-4	LBCD-6	1/1	0/40	0/2	0/4	0/2	0/240	1506.62/400	0/0.96	o	0.96	Work completed
	N-4	LBCD-7	1/1	25/45	3/2	4.10/4	3.10/2	275.13/270	1506.62/400	4.15/1.08	3.07	o	Work completed
	N-4	LBCD-8	1/1	32/50	2.20/2	4.20/4	2.90/2	296.96/300	1506.62/400	4.47/1.20	3.27	o	Work completed
	N-7	LBCD-9	1/1	38/40	2.30/2	3.80/4	2.50/2	289.75/240	1506.62/400	4.37/0.96	3.41	o	Work completed
	N-7	LBCD-10	1/1	55/50	2.40/2	5.20/6	3.50/3	731.50/600	1506.62/400	11.02/2.40	8.62	o	Work completed
	N-9	LBCD-11	1/1	45/60	2.20/2	4/4	2.70/2	376.65/360	1506.62/400	5.67/1.44	4.23	o	Work completed
	N-9	LBCD-12	1/1	55/70	2.10/2	4.20/4	2.50/2	433.13/420	1506.62/400	6.53/1.68	4.85	o	Work completed
	N-11	LBCD-13	1/1	58/80	2/2	4/4	2.80/2	487.20/480	1506.62/400	7.34/1.92	5.42	o	Work completed
	N-13	LBCD-14	1/1	31/60	2.50/2	4.30/4	3.20/2	337.28/360	1506.62/400	5.08/1.44	3.64	o	Work completed
	N-13	LBCD-15	1/1	40/70	3/2	5/4	3.10/2	496/420	1506.62/400	7.47/1.68	5.79	o	Work completed
	N-14	LBCD-16	1/1	61.50/80	2.20/2	4/4	3.10/2	591.02/480	1506.62/400	8.90/1.92	6.98	o	Work completed
	N-14	LBCD-17	1/1	50/100	2.50/2	4.50/4	3/2	525/600	1506.62/400	7.91/2.40	5.51	o	Work completed

		Gabion/ Wire Crate Check Dam											
N-1	GCD-1	o/1	o/50	o/1	o/3	o/3	o/300	o/1200	o/3.60	o	3.60	It is in tender process	
N-1	GCD-2	o/1	o/40	o/1	o/3	o/3	o/240	o/1200	o/2.88	o	2.88	It is in tender process	
N-1	GCD-3	o/1	o/40	o/1	o/3	o/3	o/240	o/1200	o/2.88	o	2.88	It is in tender process	
N-2	GCD-4	o/1	o/40	o/1	o/3	o/3	o/240	o/1200	o/2.88	o	2.88	It is in tender process	
N-2	GCD-5	o/1	o/40	o/1	o/3	o/3	o/240	o/1200	o/2.88	o	2.88	It is in tender process	
N-3	GCD-6	o/1	o/40	o/2	o/4	o/3	o/360	o/1200	o/4.32	o	4.32	It is in tender process	
N-3	GCD-7	o/1	o/50	o/2	o/4	o/3	o/450	o/1200	o/5.40	o	5.40	It is in tender process	
N-3	GCD-8	o/1	o/60	o/2	o/4	o/3	o/540	o/1200	o/6.48	o	6.48	It is in tender process	
N-4	GCD-9	o/1	o/60	o/1	o/3	o/3	o/360	o/1200	o/4.32	o	4.32	It is in tender process	
N-4	GCD-10	o/1	o/80	o/1	o/3	o/3	o/480	o/1200	o/5.76	o	5.76	It is in tender process	
N-5	GCD-11	o/1	o/80	o/2	o/4	o/3	o/720	o/1200	o/8.64	o	8.64	It is in tender process	
N-6	GCD-12	o/1	o/80	o/2	o/4	o/3	o/720	o/1200	o/8.64	o	8.64	It is in tender process	
N-6	GCD-13	o/1	o/130	o/2	o/4	o/3	o/1170	o/1200	o/14.04	o	14.04	It is in tender process	
N-6	GCD-14	o/1	o/140	o/2	o/4	o/3	o/1260	o/1200	o/15.12	o	15.12	It is in tender process	
N-7	GCD-15	o/1	o/60	o/2	o/4	o/3	o/540	o/1200	o/6.48	o	6.48	It is in tender process	
N-7	GCD-16	o/1	o/80	o/2	o/4	o/3	o/720	o/1200	o/8.64	o	8.64	It is in tender process	
N-8	GCD-17	o/1	o/100	o/2	o/4	o/3	o/900	o/1200	o/10.80	o	10.80	It is in tender process	
N-9	GCD-18	o/1	o/120	o/2	o/4	o/3	o/1080	o/1200	o/12.96	o	12.96	It is in tender process	
N-10	GCD-19	o/1	o/80	o/2	o/4	o/3	o/720	o/1200	o/8.64	o	8.64	It is in tender process	
N-11	GCD-20	o/1	o/100	o/2	o/4	o/3	o/900	o/1200	o/10.8	o	10.80	It is in tender process	
N-12	GCD-21	o/1	o/100	o/2	o/4	o/3	o/900	o/1200	o/1.80	o	10.80	It is in tender process	
N-15	GCD-22	o/1	o/120	o/2	o/4	o/3	o/1080	o/1200	o/12.96	o	12.96	It is in tender process	
N-15	GCD-23	o/1	o/140	o/2	o/4	o/3	o/1260	o/1200	o/15.12	o	15.12	It is in tender process	
		Stone masonry check dam cement sand mortar (1:6)											
N-3	SMCD -1	o/1	61.0/50	0.85/1.0	1.85/2.0	2.25/2.0	61.0/50.0	32567.0/10000.0	19.87/5.0	14.87	0.00	Work Completed	
N-5	SMCD -2	o/1	70.05/70.0	0.85/1.0	1.85/2.0	2.25/2.0	70.05/70.0	32567.0/10000.0	22.81/7.0	15.81	0.00	Work Completed	
N-8	SMCD -3	o/1	74.80/70.0	0.85/1.0	1.85/2.0	2.25/2.0	74.80/70.0	32567.0/10000.0	24.36/7.0	17.36	0.00	Work Completed	
N-10	SMCD -4	o/1	86.10/100.0	0.85/1.0	1.85/2.0	2.25/2.0	86.10/100	32567.0/10000.0	28.04/10.0	18.04	0.00	Work Completed	
N-12	SMCD -5	o/1	120.0/120.0	0.85/1.0	1.85/2.0	2.25/2.0	120.0/120.0	32567.0/10000.0	39.08/12.0	27.08	0.00	Work Completed	
N-15	SMCD -6	o/1	80.10/80.0	0.85/1.0	1.85/2.0	2.25/2.0	80.10/80.0	32567.0/10000.0	26.09/8.0	18.09	0.00	Work Completed	

		Rain Water Harvesting Pit											
N-1		RWHP-1	0/1	30x30/30x30	20x20/20x20	2.5/3.0	1625/1950	0/190	0/3.71	0	3.71	Work in progress	
N-2		RWHP-2	0/1	30x30/30x31	20x20/20x21	1.0/3.0	650/1950	0/190	0/3.71	0	3.71	Work in progress	
N-3		RWHP-3	0/1	28x31/30x29	21x27/20x20	2.8/3.0	2009/1950	0/190	0/3.71	0	3.71	Work in progress	
N-4		RWHP-4	0/1	28x30/30x30	21x25/20x20	3.0/3.0	2047.5/1950	0/190	0/3.71	0	3.71	Work in progress	
N-5		RWHP-5	0/1	28x30/30x31	21x25/20x21	2.0/3.0	1365/1950	0/190	0/3.71	0	3.71	Work in progress	
N-6		RWHP-6	0/1	29x33/30x30	25x30/20x20	2.0/3.1	1707/1950	0/190	0/3.71	0	3.71	Work in progress	
N-7		RWHP-7	0/1	23x33/30x30	15x32/20x20	3.10/3.00	1897.2/1950	0/190	0/3.71	0	3.71	Work in progress	
N-8		RWHP-8	0/1	28x29/30x30	21x31/20x20	3.0/3.0	2194.5/1950	0/190	0/3.71	0	3.71	Work in progress	
N-10		RWHP-9	0/1	29x32/30x30	23x23/20x20	3.00/3.00	2496/1950	0/190	0/3.71	0	3.71	Work in progress	
N-11		RWHP-10	0/1	27x29/30x30	18x24/20x20	3.10/3.00	1883.25/1950	0/190	0/3.71	0	3.71	Work in progress	
N-12		RWHP-11	0/1	29x31/30x30	21x29/20x20	3.10/3.00	2337.4/1950	0/190	0/3.71	0	3.71	Work in progress	
N-12		RWHP-12	0/1	29x33/30x30	25x30/20x20	3.0/3.0	2560.5/1950	0/190	0/3.71	0	3.71	Work in progress	
N-15		RWHP-13	0/1	30x3/30x30	23x31/20x20	3.0/3.0	2554.5/1950	0/190	0/3.71	0	3.71	Work in progress	
		Silt Settling Tank											
N-5		SST-1	Dimension	30.05/30	15/15	3.20/3	1/1	2796457.33/800000	27.96/8	19.96	0	Work completed	
N-12		SST-2	Dimension	30.05/30	15/15	3.20/3	1/1	2796457.33/800000	27.96/8	19.96	0	Work completed	
N-15		SST-3	Dimension	30.05/30	15/15	3.20/3	1/1	2796457.33/800000	27.96/8	19.96	0	Work completed	
		Earthen Check Dam(with stone pitching)											
N-1		ECD-1	1/1	76/80	2.10/2	4.50/4	3.10/3	76/80	7488.30/1500	5.69/1.20	4.49	0	Work completed
N-2		ECD-2	1/1	60/80	2.05/2	4.20/4	3.05/3	60/80	7488.30/1500	4.49/1.20	3.29	0	Work completed
N-3		ECD-3	1/1	50/60	2.10/2	4.50/4	3.05/3	50/60	7488.30/1500	3.74/0.90	2.84	0	Work completed
N-4		ECD-4	1/1	80/80	2.05/2	4.20/4	3.10/3	80/80	7488.30/1500	5.99/1.20	4.79	0	Work completed
N-6		ECD-5	1/1	70/120	2.20/2	4.10/4	3.20/3	70/120	7488.30/1500	5.24/1.80	3.44	0	Work completed
N-7		ECD-6	1/1	45/70	2.10/2	4.10/4	3.15/3	45/70	7488.30/1500	3.37/1.05	2.32	0	Work completed
N-8		ECD-7	1/1	131/120	2.05/2	4.90/4	3.10/3	131/120	7488.30/1500	9.81/1.80	8.01	0	Work completed
N-10		ECD-8	1/1	115/140	2.50/2	5/4	3.50/3	115/140	7488.30/1500	8.61/2.10	6.51	0	Work completed
N-12		ECD-9	1/1	146/150	2.10/2	4.60/4	3.15/3	146/150	7488.30/1500	10.93/2.25	8.68	0	Work completed
N-15		ECD-10	1/1	146/80	2/2	4.50/4	3.10/3	146/80	7488.30/1500	10.93/1.20	9.73	0	Work completed

Bio-Engineering Measures.

Sl. No.	Activities	For the year 2016-17 and 2017-18			For the year 2018-19			Schedule for the year 2019-20		
		Qty (Ha.)	Progress in %	Details of Work	Qty (Ha.)	Progress in %	Details of work	Quantity (Ha.)	Details of work	
	Afforestation									
a	Avenue Plantation on Roads	0.5	100%	Mine Field Office Towards mine office (Total 1020 saplings)	1.00	100%	Main Road towards mine field office. Total 10000 saplings	As per Approved R&R Plan total Avenue Plantation work completed, no further targets.		
b	Plantation on dumps/ Afforestation	5.0	100%	1. At new CISF Barrack, 5000 saplings. 2.At Field Office,5000 saplings planted. Total 10000 saplings	53.50	100%	1.Area Near Sethu Dump=10000. 2. Area at Pillar No.38, towards Kamattur Village=10000. 3.Old Temporary camp of M/s. Gayatri Project near Primary Crusher House = 5000 (Total 25000 saplings).	20.0	100%	1) 15000 saplings plantation work in progress from Fly over bridge up to Rasiddeshwara dump slopes towrds BMM. 2) 15000 plants planting work at C-Block and 3) 15000 & 17000 plants plantation at V-turn above dumping area. Work Completed. Total 62000 saplings
c	Haul Road Plantation	0.35	100%	Haul Road plantation done at main road at mine field office. Total 2000 saplings	0.65	100%	Main road towards setu dump area (Total 4500 saplings).	As per Approved R&R Plan total Target for Haul Road Plantation is completed, no further targets.		
d	Plantation on encroached area	1.37	100%	Plantation at DMS mine occupied area. Total 3250 Saplings	8.74	100%	At Encroached area near to B-Block (Pit No.2) Total 2000 saplings.	Total encroached ara plantation completed, no furhter targets.		
e	Strengthening & Gap Plantation/ Safety Zone Plantation/Green Belt Development	2.5	100%	Safety Zone Plantation at new CISF Barrack towards Kamattur Village (Total 5000 saplings).	11.54	100%	From pillar No.12 to pillar no.27. Total 5000 saplings.	As per Approved R&R Plan total Safety zone plantation / Strenthering & Gap Plantation Completed, no further targets.		
f	Seed broadcasting on inactive dumps (Based on availability of area)	3.0	100%	1. Seed Broadcasting at V-Point dump.	3.00	100%	On Waste dump along with road side towards KIOM. (3.0 Ha towards KIOM mining office).	3.0	100%	Wotk in progress at C-Block.(3.00Ha. Near V Dump)

Plantation work at KIOM (Right Side towards Mining Office)-
Avenue plantation



Annexure-13A

Plantation work at KIOM (Left Side towards B-Block)



NMDC Ltd.,
Kumaraswamy Iron Ore Mine

**THE DETAILS OF COMPLIANCE OF CONDITIONS, ACTIONS TAKEN & PLANNED AGAINST ORDER OF
GOI F NO. 8-27/2005-FC DATED 24th JULY, 2006 FOR KUMARASWAMY IRON ORE MINE (M.L. No. 1111)**

COND. No.	DETAILS	COMPLIANCE STATUS	Compliances by the Forest Dept
1	Legal status of forest land will remain unchanged.	Agreed.	The legal status of the forestland remains unchanged.
2	(i) Compensatory Afforestation over double the degraded forest land shall be raised and maintained by the State Forest Department at the project Cost. (ii) Fencing protection and regeneration of the safety zone area (7.5metre strip all along the outer boundary of all the mining lease area) shall be done at the project cost. Besides this, Afforestation on degraded forest land to be selected elsewhere measuring one and a half times the area under safety zone, shall also be done at the project cost.	Agreed. As per the terms & conditions of the Stage-I approval, project has paid CA charges of Rs.370 lakhs for 341.20Ha, of ML area. The entire mine lease has been fenced and afforestation is being carried out in the safety zone of mine lease. Plantation of 5000 saplings has been done in safety zone. The area has been marked as a safety zone. The project has paid an amount of Rs.13lakhs towards safety zone charges. Additionally, project is implementing R&R plan duly approved by CEC and 10,000 saplings of native species has been planted in the safety zone till March, 2019.	The user agency has agreed and made payment towards CA charges of Rs 370 lakhs for 341.20 Ha.(Annexure-2) The user agency has agreed. The entire mine lease has been fenced and afforestation is being carried out in the safety zone of mine lease. The project has paid an amount of Rs.12.96lakhs towards safety zone charges. (Annexure-3)
3	Lease period of diverted forest land shall be co-terminus with the current mining lease granted under MMRD Act,1957.	Agreed.	The user agency has agreed to the condition.
4	The User agency shall take up rehabilitation and planted work on the static dumps during the advance mining operations.	Plantation of 5000 saplings of native species are planned every year in and around ML area. Every year 5000 saplings are being	The user agency has agreed and implementing as per R & R Plan of ICFRE team approved by CEC the field observation


RANGE FOREST OFFICER
Sandur South Range

COND. No.	DETAILS	COMPLIANCE STATUS	Compliances by the Forest Dept
		planted. Till date about 82000 saplings covering an area of about 39.7Ha. About 2000 saplings of Bamboo species planted on the slope of static dumps. R&R plan is approved by ICFRE and its action plan is in progress.	of plantation is substandard.
5	Reclamation and rehabilitation process of all the dumps shall be taken up concurrently who mining operations and shall be completed immediately after closure of the mine in the shortest possible period under supervision of the State Forest Department.	R&R plan is approved by ICFRE and its action plan is in progress and 10,000 saplings of native species has been planted on dumps and afforestation till March, 2019.	The user agency has agreed and implementing as per R & R Plan of ICFRE team approved by CEC
6	Any tree felling shall be done only when it is absolutely necessary and unavoidable and that too under strict supervision of the State Forest Department.	Agreed. To develop flora and fauna in the area intensive plantation of native species is being done along with seed spraying on the dumps. Additionally, project is implementing R&R plan approved by CEC.	The user agency has agreed to the condition.
7	No damage to the flora and fauna of the area shall be caused.	Agreed.	The user agency has agreed and given undertaking for the same. (Annexure-4)
8	Concurrent Reclamation plan shall be executed by the user agency from the very first year and an annual report shall be sent to the Nodal Officer and the Regional CCF, Bangalore. If it is found from the Annual Report that the annual programme mentioned in concurrent Reclamation Plan is not being adhered to by the user agency, the remain activities shall remain suspended till such time the annual programme is completed for that year.	Agreed.	The user agency has agreed and implementing as per R & R Plan of ICFRE plan approved by CEC.

[Signature]
RANGE FOREST OFFICER
 andur South Range
 Gandur

COND. No.	DETAILS	COMPLIANCE STATUS	Compliances by the Forest Dept
9	It shall be ensured that no labour camps are set up inside the forest area.	Agreed. No labour camps are established or existing in the mine lease area.	The user agency has agreed and given undertaking for the same. (Annexure-5)
10	The user agency shall protect the top soil at the project cost.	Top-soil in the area is very less and the same shall be stacked separately and utilized for Afforestation purposes.	Top-soil in the area is very less and the same is being utilized for Afforestation purposes and no stacking dumps of top soil is created.
11	The mining lease area shall be demarcated on ground at the project cost using four feet high RCC pillars, with each pillar inscribed with the serial number, forward and backward bearings and distance between two adjacent pillars.	Agreed and Complied with.	The user agency has agreed and complied against the condition.
12	The forest land shall not be used for any purpose other than that specified in the proposal.	Agreed.	The user agency has agreed and given undertaking for the same. (Annexure-6)
13	Any other conditions that the GoI (Central) Regional Office, Bangalore may impose from time to time for protection and improvement of flora and fauna in the forest area shall also be applicable.	Agreed.	The user agency has agreed and given undertaking for the same. (Annexure-7)
14	The approval shall be subject to the orders, if any passed by the Hon'ble Supreme Court of India in C.A No.7201-02/2001 which is sub-Judge.	Agreed	The user agency has agreed to the condition.

(Signature)
RANGE FOREST OFFICER
 Sandur South Range
 Sandur

(vi) PP shall needs to provide the time line for implementation of the activities proposed under CER. Activities proposed also needs to be quantified for future monitoring.

The total capital cost of Kumaraswamy Iron Ore Mine is Rs.899/-Cr. The CER expenditure works out Rs.449.50 Lakhs (0.5% of capital cost for brown field projects as per MoEF&CC's O.M No: 22-65/2017-IA.II(M) dated /5/018). The CER works have been identified under Education, Drinking water, Health & Hygiene and Infrastructure. The total estimated cost as per SOR 2018-19 / DSR 2018 for various works identified under CER works out Rs.441.09 lakhs. However, budget of **Rs.460.00 lakhs** have been provided to take care of premium over the estimated rates quoted by contractors. The details of proposed CER works along with estimate cost, budget provided, time line for implementation, etc is given below: -

S. no.	Name of Work	Estimated Cost / budget provided (Rs. In Lakhs) Capital works	Time line for Implementation (excluding the rainy season)	No. of beneficiaries	Brief Description of activity
1	Education: Construction of Dining Hall (20m X 10m) at Government High School, Donimalai.	38.41 / 44 As per SOR 2018-19 (<i>Estimate copy at Annexure-1</i>)	9 months	Approx. 500 Students	Providing hygienic space to the students for consumption of lunch.
2	Drinking Water: Construction of 1 No. R.O. Plant (2000 Litres) capacity at Narsinghapura Village. (5.5m X 5.5m)	19.85 / 23 As per SOR 2018-19 (<i>Estimate copy Annexure-2</i>)	9 months	Approx. 2000 Villagers	Providing potable drinking water to Narsinghapura Villagers.
3	Health and Hygiene: Construction of Primary Health Centre Building at Narsinghapura Village. (20 m X 10 m)	33.82 / 40 As per SOR 2018-19. (<i>Estimate copy at Annexure-3</i>)	9 months	Approx. 2000 Villagers	Providing regular health check-up facilities at Narsinghapura Village.
4	Infrastructure: Modernization of operation theatres in 4 Primary Health Centres of Ballari District.	200.00 As per PWD SR (Partnership with State Govt.) (<i>Annexure-4.</i>)	6 months	10000 Beneficiaries of 4 Taluks of Ballari district. 1. Kampli, Hospet Tq. 2. Tekkalakote Sirguppa Tq. 3. Magimavina halli, Hagribomm-anhalli Tq. 4. Gudekote,	To improve health care at Rural level and augment maternity services to improve MMR & IMR.

				Kudligi Tq.	
5	Infrastructure: Up-gradation of existing multipurpose Community Building at Narasinghapura Village.	29.01 / 33 As per SOR 2018-19. <i>(Estimated copy is enclosed as Annexure-5)</i>	9 months	Approx. 2000 Villagers	Renovation, Up-gradation and face lifting of existing community hall, which was constructed 15 years ago.
6	Infrastructure: Auditorium Construction in yeshwanthapura Village in Sandur taluk.	120.00 As per PWD SR (Partnership with State Govt.) <i>(Annexure-6.</i>	1 Year	Approx.700 Villagers	Would create space for holding official meetings and emergency gatherings.
	Total	441.09 / 460.00			

Annexure 1	
NMDC Limited	
Donimalai Kumaraswamy Iron Ore Mine Complex	
Civil Engg Department	
<u>GENERAL FEATURES OF THE ESTIMATE</u>	
1. Name of work	Construction of new Dining hall at Government High School, Donimalai.
2. Purpose of work	: Providing hygienic space to the students for consumption of lunch.
<u>3. Estimated cost: based on SOR'-2018-19</u>	
Total cost Excluding free issue Materials	₹ 33,00,392.70
Cost of FIM	₹ 0.00
Total cost Including free issue Materials .	₹ 33,00,392.70
Deduction for the Value of item No. 22,23,24 with GST of DSR-18	₹ 32,99,552.00
Add GST @ 12% on estimated value, as per Sl.-5 at Page-d of SOR-2018-19.(except 22,23,24)	₹ 3,95,946.24
Total Estimated cost (including GST in SOR-2018-19 & DSR-18)	₹ 36,96,338.94
Estimated cost of Electrical works (including GST in DSR-2018)	₹ 1,44,714.00
Total Estimated cost (inclusive of all taxes) for electrical & civil work	₹ 38,41,052.94
4. Reference	:SOR 18-19& DSR-2018
5. Completion time	: Nine months (exculding rainy season July to Oct.)
6 Materials to be issued free of cost by NMDC Ltd	: NIL
Processed By sd/- P K Chaudhary AGM (Civil)	Estimate Prepared by sd/- B R Prasad, Dy. Mgr. (Civil)

Construction of Dining Hall for Government High School, Donimalai
ABSTRACT OF ESTIMATE

ITEM NO.	Page No. (SOR 16)	ITEM CODE NO. (SOR 16)	DESCRIPTION	UNIT	Quantity	RATE including material	AMOUNT including material
1	6	2.3	Earth work excavation for foundation of building,water supply,sainatory lines and electrical conduits either in pits or in trenches 1.5m and above in width, in hard soil not exceeding 1.5m in depth including dressing the bottom and sides of pits and trenches, stacking the excavator soil clear from edges of excavation with lead upto 50m after breaking of clods complete as per specification.				
		2.3	Ordinary soil	Cum	130.00	299.00	38870.00
2	13	4.3	KSRB 4-1.3 Providing and laying in position plain cement concrete of mix 1:4:8 with OPC cement @ 180 kgs, with 40 mm and down size graded granite metal coarse aggregates @0.85cum and fine aggregates @0.57cum machine mixed, concrete laid in layers not exceeding 15 cms thick, well compacted, in foundation and plinth, including cost of all materials, labour. HOM of machinery, curing complete as per specifcations.	Cum	30.00	5114.00	153420.00
3	25	5.3	Providing and constructing granite/ trap/ basalt size stone masonry in foundation with cement mortar 1:6 stone hammered dressed in course not less than 20CM high, bond stones at 2m. apart in each course including cost of materials, labour, curing complete as per specifications.				
	25	5.3	Cement mortar 1:6 KBS 5.1.3	Cum	52.00	3528.00	183456.00
4	14	4.11	KSRB 4.2.2 : Providing and laying in position reinforced cement concrete of design mix M20 with OPC cement @320kgs, with 20mm and down size graded garnite metal coarse aggregates @0.69cum and fine aggregates @ 0.46 cum, with super plasticisers @ 3 litre confirming to IS 9103-1999 reafirmed-2008, machine mixed, concrete laid in layers not exceeding 15cms thick, vibrated for all works in foundation for footings, pedestals, retaining walls, return walls, walls (any thickness) including attached plasters, columns, pillars, posts, struts, buttresses, bed blocks, anchor blocks, and plinths etc., including cost of all materials, labour, HOM curing, complete but	Cum	25.00	5780.00	144500.00

ITEM NO.	Page No. (SOR 16)	ITEM CODE NO. (SOR 16)	DESCRIPTION	UNIT	Quantity	RATE including material	AMOUNT including material
5	14	4.13	KSRB 4.2.8 : Providing and laying in position reinforced cement concrete of mix M20 with OPC cement @320kgs, with 20mm and down size graded granite metal coarse aggregates @0.69cum and fine aggregates @ 0.46 cum, with super plasticisers @ 3 litre confirming to IS 9103-1999 reaffirmed-2008, machine mixed, concrete laid in layers not exceeding machine mixed, concrete laid in layers not exceeding 15cms thick, vibrated for all works in ground floor level for roof slabs, staircase, lintels, and beams retaining walls, return walls, walls (any thickness) including attached plasters, columns, pillars, posts, struts, buttresses, stiring or lacing courses, parpets, coping, bed bocks, anchor blocks, plain window cills, fillets etc., including cost of all materials, labour, HOM curing, complete but excluding cost of reinforcement as per specifications as per specifications.	Cum	100.00	6013.00	601300.00
6	7	2.10	Filling available excavated earth (excluding rock) in sides of foundations upto plinth in layers not exceeding 20 cms in depth compactintg each deposited layer by ramming after watering with lead upto 50 m, and lift upto 1.5m including cost of all the labour complete as per specifications.	Cum	154.00	201.00	30954.00
7	27	5.26	KSRB 5-14 : Providing and constructing load bearing wall with solid concrete blocks having block density not less than 1800 kg/cum having a minmum average compressive strength 4.00 N/sqm confirming to IS 2185 (Part1):2005 and constructed with c m 1:4 as per IS 2572:2005 including cost of material labour charges scaffolding, curing, hire charges of machinaries, complete as per specifications.				
	27	5.26.2	for 1sqm of CC.Block 40x15x20CM = Rs 919.00, hence for 1Cum = 919.00/0.20 = Rs 4595.00	Cum	54.00	4595.00	248130.00
8 (a)	16	4.28	Providing and removing centering , shuttering, strutting, propping etc, and removal of form work for foundation, footings, base of columns for mass concrete including cost of all material, labour complete as per specification.	sqm	62.00	263.00	16306.00

ITEM NO.	Page No. (SOR 16)	ITEM CODE NO. (SOR 16)	DESCRIPTION	UNIT	Quantity	RATE including material	AMOUNT including material
8(b)	17	4.34	KSRB 4-6.7 : Providing and removing centering, strutting, shuttering, propping etc., and removal of formwork for sides and soffits of beams, beam haunchings, cantilever girders, bressumers and lintels not exceeding 1m in depth including cost of all materials, labour complete as per specifications	sqm	291.00	292.00	84972.00
8(c)	16	4.32	Providing and removing centering, strutting, shuttering, propping etc., for columns, pillars, piers, abutments, post and struts, square/rectangular/ polygon in plan including cost of all materials, labour complete as per specifications	sqm	62.00	456.00	28272.00
8(d)	16	4.29.2	KSRB 4-6.2: Providing and removing centering, strutting, shuttering, propping etc., and removal of form work for flat surface such as suspended floors, roofs, landings, balconies and likes thickness upto 200mm including cost of all materials, labour complete as per specifications. up to 5 mtrs.	sqm	196.00	408.00	79968.00
8(e)	17	4.37	KSRB 4-6.10: Providing and removing centering, strutting, shuttering, propping etc., and removal of form work for chajja, corbel etc. Including edge including cost of all materials, labour complete as per specifications	sqm	10.00	329.00	3290.00
9	18	4.46.2	Providing T.M.T steel reinforcement for RCC work including straightening, cutting, bending, hooking, placing in position, lapping and/or welding wherever required, tying with binding wire and anchoring to the adjoining members wherever necessary complete as per design (laps, hooks and wastage shall not be measured and paid) cost of materials, labour, HOM of machinery complete as per specifications.	Kg	12500.00	70.31	878875.00
10	53	9.10	KSRB 9.4-1: Providing wood frames of doors, windows, clerestory windows, ventilators and other frames, wrought, framed or assembled including making plaster groves (excluding cost of cement concrete and side clamps) but including cost of materials, labour, HOM of machinery complete as per specifications	Cum	1.00	187663.00	187663.00

ITEM NO.	Page No. (SOR 16)	ITEM CODE NO. (SOR 16)	DESCRIPTION	UNIT	Quantity	RATE including material	AMOUNT including material
11	65	9.106	Providing and fixing flush door shutters made out of solid core black board type, well seasoned chemically treated hard wood battens and internal frame with minimum 45mm wide wooden frame all-round door shutters covered with cross bonded wooden sheets (core veneer) hot pressed and fastened on both sides of the door using liquid phenol formaldehyde resin as per IS specification : 2202 (Part I) 1991. From manufacturer (Factory) complete as per specification.				
11	65	9.106.6	35 mm thick both side commercial, including ISI marked Stainless Steel butt hinges with necessary screws	Sqm	6.00	2550.00	15300.00
12	109	14.45	Providing and fixing vitrified glazed tiles of approved cover make, quality of size 600 x 600 x 10mm thick fixed on bed of 12 mm thick cement mortar for flooring, skirting, and jointed with neat cement slurry mixed with pigment to match shade of tiles, including providing spacers at required interval and removing stains, including cost of all materials, mortar, labour charges etc. complete as per specification.	Sqm	213.00	974.00	207462.00
13	115	15.14	KSRB 15-3.6 : Providing 15 mm thick cement plaster in single coat with cement mortar 1:6, to brick masonry including rounding off corners wherever required smooth rendering, : Providing and removing scaffolding, including the cost of materials, labour, curing complete as per specifications.				
		15.14	Cement mortar 1:6	Sqm	211.00	204.00	43044.00
14	115	15.11	KSRB 15-3.3 : Providing 12 mm thick cement plaster in single coat with cement mortar 1:6, to brick masonry including rounding off corners wherever required smooth rendering, : Providing and removing scaffolding, including the cost of materials, labour, curing complete as per specifications.				
			Cement mortar 1:6	Sqm	206.00	190.00	39140.00

ITEM NO.	Page No. (SOR 16)	ITEM CODE NO. (SOR 16)	DESCRIPTION	UNIT	Quantity	RATE including material	AMOUNT including material
15	115	15.9	KSRB 15-3.1 : Providing 12 mm thick cement plaster in single coat with cement mortar 1:3, to brick masonry including rounding off corners wherever required smooth rendering, : Providing and removing scaffolding, including the cost of materials, labour, curing complete as per specifications.				
			Cement mortar 1:6	Sqm	507.00	209.00	105963.00
16	34	7.9	KSRB 7.9: Providing and fixing MS grill work for windows and ventilators using M.S. flats, or M.S. square rods, or combination of M.S. flats and square rods as per approved design, drawing including cutting steel sections and welding the same to required pattern with a coat of red lead primer, cost of materials, fixtures, labour, HOM of machinery complete as per specification.	Kg	270.00	95.00	25650.00
17	35	7.10	KSRB 7.10.2: Providing and fixing aluminium windows and ventilator as per approved drawing with sliding shutters using double track frame section of size 61.85x31.75mm with 1.2 mm thick bottom section section weight 0.695 kg/m, sides and top sections 1.3 mm thick weight 0.659 kg/m, and shutter comprising top and bottom section of size 40mmx18mm, 1.25 mm thick 0.417 kg/m, shutter outer section 40mm x 26.7mm, 1.1mm thick weight 0.469 kg/m the shutters mounted on nylon rollers with approved quality of fixtures such as aluminium handles tower bolts etc. and providing and fixing 5.5mm thick plain glass for shutters fitted with rubber beading aluminium sections including cutting to required length, joint mitred subdividing the frame tenoned and revetted in assembled frame stiffened with end clips at corner angles etc. and fixed to the wall lintels floor beams/cills as the case may be with necessary steel screws, rawl plugs, or teak wood gatties including cutting masonry or concrete and making good the original surface using cement mortar, aluminium sections pretreated for removal of any Specification No. KBS.				
		7.10.2	Using aluminium section powder coated to a minimum of 60-70 microns with exterior durable polyester grade powder of approved quality.	Sqm	22.00	4375.00	96250.00

ITEM NO.	Page No. (SOR 16)	ITEM CODE NO. (SOR 16)	DESCRIPTION	UNIT	Quantity	RATE including material	AMOUNT including material
18	119	15.49	KSRB 15-14.1: Providing and applying two or more coats with oil bound washable distemper of approved brand and shade on wall surface including priming coat with distemper primer after thoroughly brooming the surface free from mortar drops and other foreign matter including preparing the surface even and sand paper smooth, cost of materials, labour, complete as per specifications	Sqm	532.00	110.00	58520.00
19	120	15.53	KSRB 15-16.1: Providing and finishing external wall in two or more coats with water proof cement paint of approved brand and shade on wall surface including priming coat with distemper primer after thoroughly brooming the surface free from mortar drops and other foreign matter including preparing the surface even and sand paper smooth, cost of materials, labour, complete as per specifications.				
		15.53.2	With primer	Sqm	250.00	102.00	25500.00
20	120	15.56	Applying priming coat over new wood surface and /or wood based surface after brushing with wood primer pink paint including preparing the surface after thoroughly cleaning oil, grease, dirt and foreign matter, sand papering and preparing and knotting ready mix paint including cost of material, labour, complete as per specifications.	Sqm	7.00	46.00	322.00
21	121	15.60.1	Providing and Applying painting two or more coats on new wood surface and wood based surface with enamel paint to give an even shade, cleaning the surface of all dirt, dust and foreign matter, sand papering including cost of materials, labour, complete as per specifications.	Sqm	25.00	97.00	2425.00
22	159	9.96 DSR-2018	Providing and fixing aluminium sliding door bolts, ISI marked anodised (anodic coating not less than grade AC 10 as per IS : 1868), transparent or dyed to required colour or shade, with nuts and screws etc. complete				
		9.96.1	300x16 mm	Each	2.00	257.15	514.30

ITEM NO.	Page No. (SOR 16)	ITEM CODE NO. (SOR 16)	DESCRIPTION	UNIT	Quantity	RATE including material	AMOUNT including material
23	159	9.97 DSR-2018	Providing and fixing aluminium tower bolts, ISI marked, anodised (anodic coating not less than grade AC 10 as per IS : 1868) transparent or dyed to required colour or shade, with necessary screws etc. Complete.				
		9.97.2	250x10 mm	Each	2.00	103.55	207.10
24	160	9.100 DSR-2018	Providing and fixing aluminium handles, ISI marked, anodised (anodic coating not less than grade AC 10 as per IS : 1868) transparent or dyed to required colour or shade, with necessary screws etc. complete :				
		9.100.1	125 mm	Each	2.00	59.65	119.30
						Total	3300392.70

sd/-
AGM(Civil)

sd/-
Dy. Manager(Civil)

Name of work: Construction of Dining Hall for Government High School, Donimalai

Measurement Sheet

ITEM NO.	DESCRIPTION	No.	Length	Breadth/ Width	Height/ Depth	Quantity	Net quantity	Unit
	Dining hall Room Size 20.00 m x 10 m							
	Central line = [(20.00+.2+10+.2)x2]							
1	Earth work excavation for foundation of building, water supply sanitary lines and electrical conduits either in pits or in trenches 1.5m and above in width, in hard soil not exceeding 1.5m in depth including dressing the bottom and sides of pits and trenches, stacking the excavator soil clear from edges of excavation with lead upto 50m after breaking of clods complete as per specification. Ordinary soil.							
	For building earth work	1	60.80	1.00	1.20	72.96		
	columns	14	1.50	1.50	1.80	56.70		
					Total	129.66	130.00	Cum
2	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering - All work up to plinth level :							
	1:4:8 (1 Cement: 4 coarse sand : 8 graded local stone aggregate 40 mm nominal size.							
	For building earth work	1	60.80	1.00	0.10	6.08		
	columns	14	1.50	1.50	0.10	3.15		
	Total floor area	1	20.00	10.00	0.10	20.00		
					Total	29.23	30.00	Cum
3	Providing and constructing granite/trap/basalt size stone masonry in foundation with cement mortar 1:6 stone hammered dressed in course not less than 20CM high, bond stones at 2m. apart in each course including cost of materials, labour, curing complete as per specifications.							
	Cement mortar 1:6 KBS 5.1.13							
	For building earth work	1	60.80	0.75	0.40	18.24		
		1	60.80	0.60	0.40	14.59		
		1	60.80	0.45	0.40	10.94		
		1	60.80	0.30	0.40	7.30		
					Total	51.07	52.00	Cum
4	RCC Raft & footings of Column 1:2:4							
	bases of columns footings	14	1.40	1.40	0.50	13.72		
	[(1.4x1.4)+(0.6x0.6)]/2 up to PB	14	1.16		0.40	6.50		
	columns of footings	14	0.45	0.35	0.70	4.41		
					Total	24.63	25.00	Cum
5	RCC work in beams, Columns and slab 1:2:4							
	Columns	14	0.45	0.35	4.50	9.92		
	Plinth beam	1	60.80	0.35	0.40	8.51		
	Lintel beam	1	60.80	0.20	0.15	1.82		
	Slab beam	1	60.80	0.50	0.80	24.32		
		4	10.40	0.50	0.80	16.64		
	Slab	1	21.60	11.60	0.15	37.58		
	Chhajja	Door	2	1.50	0.60	0.27		
	Windows	5	2.00	0.60	0.15	0.90		
					Total	99.97	100.00	Cum

ITEM NO.	DESCRIPTION	No.	Length	Breadth/ Width	Height/ Depth	Quantity	Net quantity	Unit
6	Filling available excavated earth (excluding rock) in sides of foundations upto plinth in layers not exceeding 20 cms in depth compacting each deposited layer by ramming after watering with lead upto 50 m, and lift upto 1.5m including cost of all the labour complete as per specifications.							
	Total excavated earth in footings same as item-1	1	1.00	130.00		130.00		
	Deductions (RR wall)	-1	60.80	0.75	0.40	-18.24		
		-1	60.80	0.60	0.40	-14.59		
		-1	60.80	0.45	0.20	-5.47		
	Deductions (PCC)	-1	60.80	0.75	0.10	-4.56		
	Deductions (Column footing))	-14	1.50	1.50	0.10	-3.15		
		-14	1.40	1.40	0.50	-13.72		
		-14	1.16		0.40	-6.50		
	For building earth work	1	20.00	10.00	0.45	90.00		
					Total	153.77	154.00	Cum
7	Providing fixing of C C Block masonry							
	For Buildings	1	60.80	0.20	3.50	42.56		
	For Buildings parapet	1	60.80	0.20	1.00	12.16		
	Deductions Main door D	-1	1.20	0.20	2.13	-0.51		
	Windows	-2	1.50	0.20	1.20	-0.72		
					Total	53.49	54.00	Cum
8	Providing and removing centering , shuttering, strutting, propping etc., and removal of form work for foundation, footings, base of columns for mass concrete including cost of all material, labour complete as per specification.							
a	bases of columns footings	56	1.40		0.50	39.20		
	(1.4+.6)	56	1.00		0.40	22.40		
					Total	61.60	62.00	sqm
b	KSRB 4-6.7 : Providing and removing centering, strutting, shuttering, propping etc., and removal of formwork for sides and soffits of beams, beam haunchings, cantilever girders, brusses and lintels not exceeding 1m in depth including cost of all materials, labour complete as per specifications							
	Plinth beam	2	60.80		0.40	48.64		
	Lintel beam	2	60.80		0.15	18.24		
	Slab beam	2	60.80		0.80	97.28		
	(.8+.8+.5)Slab beam	6	10.00		2.10	126.00		
					Total	290.16	291.00	sqm
c	Providing and removing centering, strutting, shuttering, propping etc., for columns, pillars, piers, abutments, post and struts, square/rectangular/ polygon in plan including cost of all materials, labour complete as per specifications							
	columns below plinth beam	28	0.75		0.70	14.70		
	Columns	14	0.75		4.50	47.25		
					Total	61.95	62.00	sqm

ITEM NO.	DESCRIPTION	No.	Length	Breadth/ Width	Height/ Depth	Quantity	Net quantity	Unit
d	KSRB 4-6.2 : Providing and removing centering, strutting, shuttering, propping etc., and removal of form work for flat surface such as suspended floors, roofs, landings, balconies and likes thickness upto 200mm including cost of all materials, labour complete as per specifications							
	Slab	1	21.60		8.60	185.76		
		2	33.20		0.15	9.96		
					Total	195.72	196.00	sqm
e	KSRB 4-6.2 : Providing and removing centering, strutting, shuttering, propping etc., and removal of form work for chajja, corbel etc. Including edge including cost of all materials, labour complete as per specifications							
	Chhajja Door	2	1.50	0.60		1.80		
		4	0.60		0.15	0.36		
	Windows	5	2.00	0.60		6.00		
		10	0.60		0.15	0.90		
					Total	9.06	10.00	sqm
9	Reinfrcement for RCC work							
	For item No. -4	1	25.00	`@100Kg		2500.00		
	For item No. -5	1	100.00	`@100Kg		10000.00		
					Total	12500.00	12500.00	Kg
10	KSRB 9.4-1: Providing wood frames of doors, windows, clerestory windows, ventilators and other frames, wrought, framed or assembled including making plaster groves (excluding cost of cement concrete and side clamps) but including cost of materials, labour, HOM of machinery complete as per specifications							
	Door	4	2.10	0.150	0.10	0.13		
		4	1.20	0.150	1.10	0.79		
					Total	0.92	1.00	Cum
11	Providing and fixing flush door shutters made out of solid core black board type, well seasoned chemically treated hard wood battens and internal frame with minimum 45mm wide wooden frame all round door shutters covered with cross bonded wooden sheets (core veneer) hot pressed and fastened on both sides of the door using liquid phenol formaldehyde resin as per IS specification : 2202 (Part I) 1991. From manufacturer (Factory) complete as per specification.							
	Door	2	1.20		2.10	5.04		
					Total	5.04	6.00	Sqm
12	Flooring with tiles							
	Hall	1	20.00	10.00		200.00		
	Door passage	2	1.20	0.30		0.72		
	skirting	2	20.00	0.20		8.00		
		2	10.00	0.20		4.00		
					Total	212.72	213.00	Sqm

ITEM NO.	DESCRIPTION	No.	Length	Breadth/ Width	Height/ Depth	Quantity	Net quantity	Unit
13	KSRB 15-3.6 : Providing 15 mm thick cement plaster in single coat with cement mortar 1:6, to brick masonry including rounding off corners wherever required smooth rendering, : Providing and removing scaffolding, including the cost of materials, labour, curing complete as per specifications.							
	Outer side	2	20.40		3.50	142.80		
		2	10.40		3.50	72.80		
	Deductions Main door D	-0.5	1.20		2.10	-1.26		
	Windows	-2	1.50		1.20	-3.60		
					Total	210.74	211.00	Sqm
14	KSRB 15-3.3 : Providing 12 mm thick cement plaster in single coat with cement mortar 1:6, to brick masonry including rounding off corners wherever required smooth rendering, : Providing and removing scaffolding, including the cost of materials, labour, curing complete as per specifications.							
	Inside	2	20.00		3.50	140.00		
		2	10.00		3.50	70.00		
	Deductions Main door D	-0.5	1.20		2.10	-1.26		
	Windows	-2	1.50		1.20	-3.60		
					Total	205.14	206.00	Sqm
15	KSRB 15-3.1 : Providing 12 mm thick cement plaster in single coat with cement mortar 1:3, to brick masonry including rounding off corners wherever required smooth rendering, : Providing and removing scaffolding, including the cost of materials, labour, curing complete as per specifications.							
	Ceiling	1	20.00	10.00		200.00		
	Projection	2	21.20	0.60		25.44		
		2	10.40	1.60		33.28		
	Slab beam	2	60.80		0.80	97.28		
	(0.8+0.8+0.4)Slab beam	4	10.40		2.00	83.20		
	columns below plinth beam	28	0.75		0.70	14.70		
	Columns	14	0.75		4.00	42.00		
	Chhajja Door	2	1.50	0.60		1.80		
		4	0.60		0.15	0.36		
	Windows	6	2.00	0.60		7.20		
		10	0.60		0.15	0.90		
					Total	506.16	507.00	Sqm
16	KSRB 7.9: Providing and fixing MS grill work for windows and ventilators using M.S. flats, or M.S. square rods, or combination of M.S. flats and square rods as per approved design, drawing including cutting stel sections and welding the same to required pattern with a coat of red lead primer, cost of materials, fixtures, labour, HOM of machinery complete as per specification.							
	For windows	6	1.50		1.20	@25kg/sqm	270.00	
					Total	270.00		Kg
17	KSRB 7.10.2: Providing and fixing aluminium windows and ventilator as per approved drawing with sliding shutters using double track frame section of size 61.85x31.75mm with 1.2 mm thick. Bottom section.....							
	Aluminium Windows	170	1.50		1.20	21.60		

ITEM NO.	DESCRIPTION	No.	Length	Breadth/ Width	Height/ Depth	Quantity	Net quantity	Unit
					Total	21.60	22.00	Sqm
18	KSRB 15-14.1: Providing and applying two or more coats with oil bound washable distemper of approved brand and shade on wall surface including priming coat with distemper primer after thoroughly brooming the surface free from mortar drops and other foreign matter including preparing the surface even and sand paper smooth, cost of materials, labour, complete as per specifications							
	Inside	2	20.00		3.50	140.00		
		2	10.00		3.50	70.00		
		1	20.00	10.00		200.00		
	(0.8+0.8+0.5) Slab beam	6	10.00		2.10	126.00		
	Deductions Main door D	-0.5	1.20		2.10	-1.26		
	Windows	-2	1.50		1.20	-3.60		
					Total	531.14	532.00	Sqm
19	KSRB 15-16.1: Providing and finishing external wall in two or more coats with water proof cement paint of approved brand and shade on wall surface including priming coat with distemper primer after thoroughly brooming the surface free from mortar drops and other foreign matter including preparing the surface even and sand paper smooth, cost of materials, labour, complete as per specifications							
	With primer							
	Outer side	2	20.40		3.50	142.80		
		2	10.40		3.50	72.80		
	Deductions Main door D	-0.5	1.20		2.10	-1.26		
	Windows	-2	1.50		1.20	-3.60		
	Columns	14	0.80		3.50	39.20		
					Total	249.94	250.00	Sqm
20	KSRB 15-17.2: Applying priming coat over new wood or wood based surface after brushing with wood primer pink paint including preparing the surface after thoroughly cleaning oil, grease, dirt, and foreign matter, sand papering and knotting ready mix paint including cost of materials, labour, complete as per specifications							
15.6	Doors	2.4	1.20		2.10	6.05		
					Total	6.05	7.00	Sqm
21	KSRB 15-17.6: Providing and applying painting two coats (excluding priming coat) on new wood surface and/or wood based surface with enamel paint to give an even shade, cleaning the surface of all dirt, dust and foreign matter, sand papering including cost of materials, labour, complete as per specifications							
	Doors	2.4	1.20		2.10	6.05		
	Grill	10	1.50		1.20	18.00		
					Total	24.05	25.00	Sqm

ITEM NO.	DESCRIPTION	No.	Length	Breadth/ Width	Height/ Depth	Quantity	Net quantity	Unit
22	Providing and fixing aluminium sliding door bolts, ISI marked anodised (anodic coating not less than grade AC 10 as per IS : 1868), transparent or dyed to required colour or shade, with nuts and screws etc. complete							
	For Doors							
	300x16mm	2				2.00		
					Total	2.00	2.00	Each
23	Providing and fixing aluminium tower bolts, ISI marked, anodised (anodic coating not less than grade AC 10 as per IS : 1868) transparent or dyed to required colour or shade, with necessary screws etc. Complete.							
	For Doors							
	250x10mm	2				2.00		
					Total	2.00	2.00	Each
24	Providing and fixing aluminium handles, ISI marked, anodised (anodic coating not less than grade AC 10 as per IS : 1868) transparent or dyed to required colour or shade, with necessary screws etc. complete :							
	For Doors							
	125.00	2				2.00		
					Total	2.00	2.00	Each

sd/-
AGM(Civil)

sd/-
Dy. Manager(Civil)

NMDC LTD DONIMALAI - KUMARASWAMY IRON ORE MINE COMPLEX CIVIL ENGINEERING DEPARTMENT GENERAL FEATURES OF THE ESTIMATE					
1. Name of work	Construction of R.O. Plant (2000 Litres) capacity at Narsinghapura Village.				
2. Purpose of work	: Providing potable drinking water to Narsinghapura Villagers.				
3. Estimated cost: based on SOR'-2018-19					
Total cost Excluding free issue Materials	₹ 17,41,180.60				
Cost of FIM	₹ 0.00				
Total cost Including free issue Materials .	₹ 17,41,180.60				
Dedudction for the Value of item No. 22,23,24 with GST of DSR-18	₹ 16,67,468.20				
Add GST @ 12% on estimated value, as per Sl.-5 at Page-d of SOR-2018-19.(except 22,23,24)	₹ 2,00,096.18				
Total Estimated cost (including GST in SOR-2018-19 & DSR-18)	₹ 19,41,276.78				
Estimated cost of Electrical works (including GST in DSR-2018)	₹ 44,132.00				
Total Estimated cost (inclusive of all taxes) for electrical & civil work	₹ 19,85,408.78				
4. Reference	:SOR 18-19& DSR-2018				
5 Completion time	: 09 Months (exculding rainy season July to Oct.)				
6 Materials to be issued free of cost by NMDC Ltd	: NIL				
Processed By			Estimate Prepared by		
sd/-					sd/-
P K Chaudhary					B R Prasad,
AGM (Civil)					Dy. Mgr. (Civil)

Construction of RO Plant at Narsighpura village
ABSTRACT OF ESTIMATE

ITEM NO.	Page No. (SOR 16)	ITEM CODE NO. (SOR 16)	DESCRIPTION	UNIT	Quantity	RATE including material	AMOUNT including material
1	6	2.3	Earthwork excavation for foundation of buildings,water supply,sanitary lines and electrical conduits either in pits or in trenches in ordinary soil not exceeding 1.5 m in depth including dressing the bottoms and sides of pits and trenches, stacking the excavated soil clear from edges of excavation with lead up to 50m after breaking of clods and neatly dressed as per specifications.	Cum	63.00	299.00	18837.00
2	12	4.3	Providing and laying in position plain cement concrete of mix 1:4:8 with OPC cement @ 180 kgs, with 40 mm and down size graded granite metal coarse aggregates @0.85cum and fine aggregates @0.57cum machine mixed, concrete laid in layers not exceeding 15 cms thick, well compacted, in foundation and plinth, including cost of all materials, labour. HOM of machinery, curing complete as per specifications.	Cum	18.00	5114.00	92052.00
3	6	2.10	Filling available excavated earth (excluding rock) in sides of foundations upto plinth in layers not exceeding 20 cms in depth compactintg each deposited layer by ramming after watering with lead upto 50 m, and lift upto 1.5m including cost of all the labour complete as per specifications.	Cum	77.00	201.00	15477.00
4	27	5.26	KSRB 5-14 : Providing and constructing load bearing wall with solid concrete blocks having block density not less than 1800 kg/cum having a minmum average compressive strength 4.00 N/sqm confirming to IS 2185 (Part1):2005 and constructed with c m 1:4 as per IS 2572:2005 including cost of material labour charges scaffolding, curing, hire charges of machinaries, complete as per specifications.				
	27	5.26.2	for 1sqm of CC.Block 40x15x20CM = Rs 919.00, hence for 1Cum = 919.00/0.20 = Rs 4595.00	Cum	21.00	4595.00	96495.00

ITEM NO.	Page No. (SOR 16)	ITEM CODE NO. (SOR 16)	DESCRIPTION	UNIT	Quantity	RATE including material	AMOUNT including material
5	13	4.11	Providing and laying in position reinforced cement concrete of design mix M20 with OPC cement @320kgs, with 20mm and down size graded garnite metal coarse aggregates @0.69cum and fine aggregates @ 0.46 cum, machine mixed, concrete laid in layers not exceeding 15cms thick, vibrated for all works in foundation for footings, pedestals, retaining walls, return walls, walls (any thickness) including attached plasters, columns, pillars, posts, struts, buttresses, bed blocks, anchor blocks, and plinths etc., including cost of all materials, labour, HOM of machinery, curing, complete as per specifications.	Cum	11.00	5780.00	63580.00
6	14	4.13	Providing and laying in position reinforced cement concrete of mix M20 with OPC cement @320kgs, with 20mm and down size graded granite metal coarse aggregates @0.69cum and fine aggregates @ 0.46 cum, machine mixed, concrete laid in layers not exceeding 15cms thick, vibrated for all works in ground floor level fro roof slabs, staircase, lintels, and beams retaining walls, return walls, walls (any thickness) including attached plasters, columns, pillars, posts, struts, buttresses, stiring or lacing courses, parpets, coping, bed bocks, anchor blocks, plain window cills, fillets etc., including cost of all materials, labour, HOM of machinery, curing, complete as per specifications.	Cum	9.00	6013.00	54117.00
7	391	(DSR2018) 22.14	Grading roof for water proofing treatment with				
	391	22.14.1	Cement concrete 1:2:4 (1 Cement : 2 coarse sans: 4 graded stone aggregate 20 mm nominal size)	Cum	2.00	6924.65	13849.30
			(As item is not available in SOR2014, Item taken from DSR 2014)				
8(A)	15	4.30	Providing and removing centering, strutting, shuttering, propping etc., and removal of formwork for flat surface such as suspended floors, roofs, landings, balconies and likes thickness upto 200mm including cost of all materials, labour complete as per specifications	Sqm	61.00	360.00	21960.00
8(B)	16	4.34	Providing and removing centering, strutting, shuttering, propping etc., and removal of formwork for sides and soffits of beams, beam hanunchings, cantilever girders, bressumers and lintels not exceeding 1m in depth including cost of all materials, labour complete as per specifications	Sqm	50.00	292.00	14600.00

ITEM NO.	Page No. (SOR 16)	ITEM CODE NO. (SOR 16)	DESCRIPTION	UNIT	Quantity	RATE including material	AMOUNT including material
8(C)	16	4.32	Providing and removing centering, strutting, shuttering, propping etc.,for columns, pillars, piers, abutments, post and struts, square/rectangular/polygon in plan including cost of all materials, labour complete as per specifications	Sqm	62.00	456.00	28272.00
9	17	4.46	Providing T.M.T steel reinforcement for RCC work including straightening, cutting, bending, hooking, placing in position, lapping and/or welding wherever required, tying with binding wire and anchoring to the adjoining members wherever necessary complete as per design (laps, hooks and wastage shall not be measured and paid) cost of materials, labour, HOM of machinery complete as per specifications.	Kg	2000.00	70.31	140620.00
10	51	9.12	Providing Mathi wood frames of doors, windows, clerestory windows, ventilators and other frames, wrought, framed or assembled including making plaster groves (excluding cost of cement concrete and side clamps) but including cost of materials, labour, HOM of machinery complete as per specifications	Cum	0.30	76188.00	22856.40
11	56	9.71	Providing and fixing in position fully glazed for window shutters with Honne wood styles and rails of 30mm thick, 75mm wide in single shutters with 4mm thick plain glass fixed with wooden beading including cost of materials, labour charges, HOM of machinery complete as per specifications. (excluding cost of fixtures)	Sqm	10.00	3520.00	35200.00
12	52	9.22	Providing and fixing in position fully panelled Nandi wook shutter for doors, styles and rails of 30mm thick with bottom and lock rails of 180mm wide, top rail and styles 100 mm wide as per drawing and panels of 25mm thick including cost of materials, labour, HOM of machiner, complete as per specifications (excluding cost of fixtures)	Sqm	4.00	3914.00	15656.00

ITEM NO.	Page No. (SOR 16)	ITEM CODE NO. (SOR 16)	DESCRIPTION	UNIT	Quantity	RATE including material	AMOUNT including material
13	105	14.36	Providing ceramic tiles of approved make, shade and size for flooring,treads of steps and landings laid on a bed of 12 mm thick,cement mortar 1:3 mix, flush pointing with white cement using colour pigment,including cost of materials,labours,curing complete as per specifications.				
	108	14.36.2	for ceramic Tiles of size 30x30 cms 6 mm thick	Sqm	34.00	1208.00	41072.00
14	108	14.41	Providing skirting,dadoing, risers of steps with colour glazed tiles on 10 mm thick cement plaster 1:3 and jointed with white cement slurry over existing rough plaster surface using glazed tiles of approved make and size including cost of materials ,labour complete as per specifications				
		14.41.2	Colour glazed tiles 30x60 cm 6 mm thickwith border of size 30x10 cms.	Sqm	22.00	1630.00	35860.00
15	103	14.8	Providing and laying flooring with M15 cement concrete 40mm thick using broken granite 20mm and downsize laid to line and level in one layer and finish with a floating coat of neat cement, including cost of materials, labour, curing complete as per specifications.	Sqm	45.00	359.00	16155.00
16	115	15.14	Providing 15 mm thick cement plaster in single coat with cement mortar 1:6, to brick masonry including rounding off corners wherever required smooth rendering, : Providing and removing scaffolding, including the cost of materials, labour, curing complete as per specifications.	Sqm	216.00	204.00	44064.00
17	115	15.11	Providing 12 mm thick cement plaster in single coat with cement mortar 1:6, to brick masonry including rounding off corners wherever required smooth rendering, : Providing and removing scaffolding, including the cost of materials, labour, curing complete as per specifications.	Sqm	84.00	190.00	15960.00
18	115	15.9	Providing 12 mm thick cement plaster in single coat with cement mortar 1:3, to brick masonry including rounding off corners wherever required smooth rendering, : Providing and removing scaffolding, including the cost of materials, labour, curing complete as per specifications.	Sqm	92.00	209.00	19228.00
19	34	7.9	Providing and fixing MS grill work for windows and ventilators using M.S. flats, or M.S. square rods, or combiation of M.S. flats and square rods as per approved design , drawing including cutting stel sections and welding the same to required pattern with a coat of red lead primer, cost of materials, fixtures, labour, HOM of machinery complete as per specification.	Kg	909.00	95.00	86355.00

ITEM NO.	Page No. (SOR 16)	ITEM CODE NO. (SOR 16)	DESCRIPTION	UNIT	Quantity	RATE including material	AMOUNT including material
20	43	7.30	Fabricating, supplying & erecting M.S. Angular truss for all spans as per approved design and drawing. The entire truss is anchored suitably by 4 Nos of MS anchor bolts at each support, with base plate and shoe plate. The work includes cutting, straightening, placing in position of MS angle and welding wherever necessary, and applying one coat of red oxide primer coat to all the member including cost of all materials, labour charges, & higher charges of machineries for cutting, welding, grinding & erection equipments, etc. complete as per specifications.	Kg	309.00	128.00	39552.00
21	119	15.49	Providing and applying two coats with oil bound washable distemper of approved brand and shade on wall surface including priming coat with distemper primer after thoroughly brooming the surface free from mortar drops and other foreign matter including preparing the surface even and sand paper smooth, cost of materials, labour, complete as per specifications				
	119	15.49.1	_do_	Sqm	121.00	110.00	13310.00
22	232	(DSR2018) 13.46	Finishing walls with Acrylic Smooth exterior paint of required shade				
	232	13.46.1	New work (Two or more coat applied @ 1.67 ltr/10 sqm over and including base coat of water proofing cement paint applied @ 2.20kg/ 10 sqm)	Sqm	220.00	164.70	36234.00
			(As item is not available in SOR2014, Item taken from DSR 2014)				
23	121	15.60.1	Providing and applying painting two coats (excluding priming coat) on new wood surface and/or wood based surface with enamel paint to give an even shade, cleaning the surface of all dirt, dust and foreign matter, sand papering including cost of materials, labour, complete as per specifications	Sqm	40.00	97.00	3880.00
24	123	15.74	Providing and applying enamel metal paint two coats (excluding priming coat) over new steel or other metal surface brushing to give an even shade after cleaning oil, grease dirt, and other foreign matter including cost of materials, labour, complete as per specifications	Sqm	49.00	95.00	4655.00
25	96	13.78	Providing and placing on terrace, polyethylene water storage tanks as per IS 12701 :1996 with manhole lid and suitable locking arrangements, making holes of suitable diameter for inlet, outlet and over flow pipes, including cost of all materials, labour, transport charges, HOM of equipments and testing complete as per specifications (For 1000 litre capacity).	Each	4.00	6828.00	27312.00

ITEM NO.	Page No. (SOR 16)	ITEM CODE NO. (SOR 16)	DESCRIPTION	UNIT	Quantity	RATE including material	AMOUNT including material
26	97	13.79	Providing and fixing gun metal wheel valve conforming to IS specification of approved make as per directions including all lead and lift., complete.				
		13.79.3	25 mm dia	Each	6.00	395.00	2370.00
		13.79.6	50 mm dia	Each	2.00	734.00	1468.00
27	92	13.10	Providing and fixing in trenches galvanised/mild steel tubes (medium grade) 15mm,25mm and 50mm dia nominal bore with fittings(earth work in trenches to be measured and paid for separately) including cost of all materials,labour charges, HOM of equipments and testing complete as per specifications.				
		13.11	15 mm	Mtr	15.00	144.00	2160.00
		13.12	25 mm	Mtr	30.00	177.00	5310.00
28	93	13.23	Providing and fixing in position brass bib cock of approved quality 15 mm nominal bore including cost of all materials,labour and HOM of equipment with all leads complete as per specifications.				
			15 mm dia	Each	4.00	190.00	760.00
29	155	(DSR2018) 9.62	Providing and fixing ISI marked oxidised sliding door bolts with nuts and screws etc. complete				
		9.62.2	250x16mm	Each	4.00	170.00	680.00
			(As item is not available in SOR2014, Item taken from DSR 2014)				
30	155	(DSR2018) 9.63	Providing and fixing ISI marked oxidised MS tower bolt black finish (Barrel Type) with nuts and screws etc. complete				
			(As item is not available in SOR2014, Item taken from DSR 2014)				
a	155	9.63.1	250x10mm	Each	4.00	74.15	296.60
b	155	9.63.4	100x10mm	Each	8.00	38.70	309.60
31	155	(DSR2018) 9.66	Providing and fixing ISI marked oxidised MS Handles conforming to IS:4992 with necessary screws etc. complete				
			(As item is not available in SOR2014, Item taken from DSR 2014)				
a	155	9.66.2	100mm	Each	2.00	27.95	55.90
b	155	9.66.3	75mm	Each	4.00	23.90	95.60
32	160	(DSR2018) 9.101	Providing and fixing aluminium hanging door stopper,ISI marked.anodised transperent or dyed to required colour and shade,with necessary screws etc. complete.				
	160	9.101.2	Twin rubber stopper	Each	2.00	62.05	124.10
			(As item is not available in SOR2014, Item taken from DSR 2014)				
33	234	(DSR2018) 13.71	Lettering with black japan paint of approved brand and manufacturer.	per letter per cm height	810.00	62.05	50260.50
			(As item is not available in SOR2014, Item taken from DSR 2014)				

ITEM NO.	Page No. (SOR 16)	ITEM CODE NO. (SOR 16)	DESCRIPTION	UNIT	Quantity	RATE including material	AMOUNT including material
34	218	12.50 DSR-2018	Providing and fixing precoated galvanised iron profile sheets (size, shape and pitch of corrugation as approved by Engineer-in-charge) 0.50 mm (+ 0.05 %) total coated thickness with zinc coating 120 grams per sqm as per IS: 277, in 240 mpa steel grade, 5-7 microns epoxy primer on both side of the sheet and polyester top coat 15-18 microns. Sheet should have protective guard film of 25 microns minimum to avoid scratches during transportation and should be supplied in single length upto 12 metre or as desired by Engineer-in-charge. The sheet shall be fixed using self drilling /self tapping screws of size (5.5x 55 mm) with EPDM seal, complete upto any pitch in horizontal/ vertical or curved surfaces, excluding the cost of purlins, rafters and trusses and including cutting to size and shape wherever required.	Sqm	32.00	627.55	20081.60
			(As item is not available in SOR2018, Item taken from DSR 2018)				
			RO units :				
35	CE/w/10(125)/2017/1168 /3579 dated30.04.2018		Supply of Water purification plant skid mounted 2000 LPH RO unit design with TDS<3000ppm manually operated with pre filtration system with 5000 & 3000 Ltrs storage tank, one year consumables, Installation and commissioning, transportation, maintainance for one year including all taxes for village (Supply of RO plant, Instatllation & Comissining of RO and AMC Charges of one year.	Each	1.00	640000.00	640000.00
						Total	1741180.60

sd/-
AGM(Civil)

sd/-
Dy. Manager(Civil)

Construction of RO Plant at Narsighpura village

Measurement Sheet

ITEM NO.	DESCRIPTION	No.	Length	Breadth/ Width	Height/ Depth	Quantity	Net quantity	Unit
1	Earthwork excavation for foundation of buildings,water supply,sanitary lines and electrical conduits either in pits or in trenches in ordinary soil not exceeding 1.5 m in depth including dressing the bottoms and sides of pits and trenches, stacking the excavated soil clear from edges of excavation with lead up to 50m after breaking of clods and neatly dressed as per specifications.							
	Footings	8	1.40	1.40	1.60	25.09		
	for RRM	8	1.25	1.00	1.00	10.00		
	For tank base	2	7.00	1.00	1.00	14.00		
		2	3.00	1.00	1.00	6.00		
	For pipe trench	1	30.00	0.50	0.50	7.50		
					Total	62.59	63.00	Cum
2	Providing and laying in position plain cement concrete of mix 1:4:8 with OPC cement @ 180 kgs, with 40 mm and down size graded granite metal coarse aggregates @0.85cum and fine aggregates @0.57cum machine mixed, concrete laid in layers not exceeding 15 cms thick, well compacted, in foundation and plinth, including cost of all materials, labour. HOM of machinery, curing complete as per specifcations.							
	Footings	8	1.40	1.40	0.10	1.57		
	for RRM	8	1.25	1.00	0.10	1.00		
	For Raw water tank storage foundation	2	7.00	1.00	0.10	1.40		
		2	3.00	1.00	0.10	0.60		
	Front RO Room	1	6.00	4.00	0.10	2.40		
	Front of Raw water storage shed	1	7.00	3.00	0.10	2.10		
	Inside	1	5.50	5.50	0.10	3.03		
	Plinth Protection (RO plant Room)	2	5.50	1.00	0.10	1.10		
		2	7.50	1.00	0.10	1.50		
	Plinth Protection (Raw water Tank Room)	2	7.00	1.00	0.10	1.40		
		2	5.00	1.00	0.10	1.00		
					Total	17.09	18.00	Cum
3	Filling available excavated earth (excluding rock) in sides of foundations upto plinth in layers not exceeding 20 cms in depth compactintg each deposited layer by ramming after watering with lead upto 50 m, and lift upto 1.5m including cost of all the labour complete as per specifications.							
	Foundation Filling	1.00	5.30	5.30	0.50	14.05		
		1	6.60	2.60	0.50	8.58		
	85% of footing excavation	1	0.85	63.00		53.55		
					Total	76.18	77.00	Cum
4	Providing and constructing precast concrete solid blocks with compressive strength not less than 35 N/sqm with cement mortar 1:4 masonry (quoin, jamb, closer blocks) with solid concrete blocks of size 40x20x20 cms conforming to IS: 2185/1965 in superstructure including cost of materials, labour charges, scaffolding, curing complete as per specifications.							

ITEM NO.	DESCRIPTION	No.	Length	Breadth/ Width	Height/ Depth	Quantity	Net quantity	Unit
		4	5.50	0.20	3.00	13.20		
		2	7.00	0.20	1.20	3.36		
		2	3.00	0.20	1.20	1.44		
	Columns of raw water tank storage	2	3.00	0.40	0.40	0.96		
	Add for steps	2	1.50	0.90	0.15	0.41		
		2	1.50	0.60	0.15	0.27		
		2	1.50	0.30	0.15	0.14		
	Above slab	4	5.50	0.20	0.80	3.52		
	Deduct							
	Window	4	1.50	1.20	0.20	-1.44		
	Ventilators	7	0.80	0.40	0.20	-0.45		
	lintel	4	5.50	0.20	0.15	-0.66		
					Total	20.74	21.00	Cum
5	Providing and laying in position reinforced cement concrete of design mix M20 with OPC cement @320kgs, with 20mm and down size graded garnite metal coarse aggregates @0.69cum and fine aggregates @ 0.46 cum, machine mixed, concrete laid in layers not exceeding 15cms thick, vibrated for all works in foundation for footings, pedestals, retaining walls, return walls, walls (any thickness) including attached plasters, columns, pillars, posts, struts, buttresses, bed blocks, anchor blocks, and plinths etc., including cost of all materials, labour, HOM of machinery, curing, complete as per specifications.							
	Footings	8	1.20	1.20	0.40	4.61		
	plinth beam	4	5.50	0.40	0.30	2.64		
	Columns	6	4.50	0.30	0.40	3.24		
					Total	10.49	11.00	Cum
6	Providing and laying in position reinforced cement concrete of mix M20 with OPC cement @320kgs, with 20mm and down size graded granite metal coarse aggregates @0.69cum and fine aggregates @ 0.46 cum, machine mixed, concrete laid in layers not exceeding 15cms thick, vibrated for all works in ground floor level fro roof slabs, staircase, lintels, and beams retaining walls, return walls, walls (any thickness) including attached plasters, columns, pillars, posts, struts, buttresses, stiring or lacing courses, parpets, coping, bed bocks, anchor blocks, plain window cills, fillets etc., including cost of all materials, labour, HOM of machinery, curing, complete as per specifications.							
	Lintels	4	5.50	0.20	0.15	0.66		
	Chajjas	1	5.50	0.50	0.10	0.28		
	Roof Beam	6	5.50	0.30	0.30	2.97		
	Slab	1	6.50	6.50	0.12	5.07		
					Total	8.98	9.00	Cum
7	Grading roof for water proofing treatment with							
	Cement concrete 1:2:4 (1 Cement : 2 coarse sans: 4 graded stone aggregate 20 mm nominal size)	1	6.50	6.50	0.04	1.69		
					Total	1.69	2.00	Cum

ITEM NO.	DESCRIPTION	No.	Length	Breadth/ Width	Height/ Depth	Quantity	Net quantity	Unit
8(A)	Providing and removing centering, strutting, shuttering, propping etc., and removal of formwork for flat surface such as suspended floors, roofs, landings, balconies and likes thickness upto 200mm including cost of all materials, labour complete as per specifications							
	Footing sides	8	4.00	1.20	0.40	15.36		
	Slab	1	6.50	6.50		42.25		
	Sides	4	6.50	0.120		3.12		
					Total	60.73	61.00	Sqm
8(B)	Providing and removing centering, strutting, shuttering, propping etc., and removal of formwork for sides and soffits of beams, beam hanunchings, cantilever girders, bressumers and lintels not exceeding 1m in depth including cost of all materials, labour complete as per specifications							
	Plinth beam	4	2.00	5.80	0.40	18.56		
	Roof Beam	6	2.00	5.80	0.30	20.88		
	Chajjas	1	6.10	0.60		3.66		
	Lintel	4	2.00	5.70	0.15	6.84		
					Total	49.94	50.00	Sqm
8(C)	Providing and removing centering, strutting, shuttering, propping etc.,for columns, pillars, piers, abutments,post and struts, square/ rectangular polygon in plan including cost of all materials, labour complete as per specifications							
	Columns up to top of slab	8	1.40	4.50		50.40		
	Columns above slab	8	1.40	1.00		11.20		
					Total	61.60	62.00	Sqm
9	Providing T.M.T steel reinforcement for RCC work including straightening, cutting, bending, hooking, placing in position, lapping and/or welding wherever required, tying with binding wire and anchoring to the adjoining members wherever necessary complete as per design (laps, hooks and wastage shall not be measured and paid) cost of materials, labour, HOM of machinery complete as per specifications.							
	Total RCC =		11.00					
	Item No:6,7		9.00					
	Assuming 100 Kg/ Cum of concrete = 20.00 Cum x 100 Kg/Cum =	1	20.00	@100Kg		2000.00		
					Total	2000.00	2000.00	Kg
10	Providing Mathi wood frames of doors, windows, clerestory windows, ventilators and other frames, wrought, framed or assembled including making plaster groves (excluding cost of cement concrete and side clamps) but including cost of materials, labour, HOM of machinery complete as per specifications							
	Door	1	6.00	0.075	0.100	0.045		
	Window	1	6.60	0.075	0.100	0.050		
	Ventilators	7	2.40	0.075	0.100	0.126		
					Total	0.221	0.30	Cum

ITEM NO.	DESCRIPTION	No.	Length	Breadth/ Width	Height/ Depth	Quantity	Net quantity	Unit
11	Providing and fixing in position fully glazed for window shutters with Honne wood styles and rails of 30mm thick, 75mm wide in single shutters with 4mm thick plain glass fixed with wooden beading including cost of materials, labour charges, HOM of machinery complete as per specifications. (excluding cost of fixtures)							
	Windows	4	1.50	1.20		7.20		
	Ventilators	7	0.80	0.40		2.24		
					Total	9.440	10.00	Sqm
12	Providing and fixing in position fully panelled Nandi wook shutter for doors, styles and rails of 30mm thick with bottom and lock rails of 180mm wide, top rail and styles 100 mm wide as per drawing and panels of 25mm thick including cost of materials, labour, HOM of machiner, complete as per specifications (excluding cost of fixtures)							
	Doors	1	1.50	2.10		3.15		
					Total	3.150	4.00	Sqm
13	Providing ceramic tiles of approved make, shade and size for flooring,treads of steps and landings laid on a bed of 12 mm thick,cement mortar 1:3 mix, flush pointing with white cement using colour pigment, including cost of materials, labours,curing complete as per specifications.							
	Room	1	5.50	5.50		30.25		
	Skirtings	4	5.50	0.15		3.30		
					Total	33.550	34.00	Sqm
14	Providing skirting,dadoing, risers of steps with colour glazed tiles on 10 mm thick cement plaster 1:3 and jointed with white cement slurry over existing rough plaster surface using glazed tiles of approved make and size including cost of materials ,labour complete as per specifications							
	Colour glazed tiles 30x60 cm 6 mm thickwith border of size 30x10 cms.							
	Front wall	1	7.20	2.70		19.44		
	Steps	3	1.50	0.45		2.03		
					Total	21.465	22.00	Sqm
15	Providing and laying flooring with M15 cement concrete 40mm thick using broken granite 20mm and downsize laid to line and level in one layer and finish with a floating coat of neat cement, including cost of materials, labour, curing complete as per specifications.							
	Storage of Raw water tanks	1	7.00	3.00		21.00		
	Front	1	6.00	4.00		24.00		
					Total	45.000	45.00	Sqm
16	Providing 15 mm thick cement plaster in single coat with cement mortar 1:6, to brick masonry including rounding off corners wherever required smooth rendering, : Providing and removing scaffolding, including the cost of materials, labour, curing complete as per specifications.							
	Exterior wall faces with plinth	4	5.50	3.65		80.30		

ITEM NO.	DESCRIPTION	No.	Length	Breadth/ Width	Height/ Depth	Quantity	Net quantity	Unit
	Parapet	4	5.50	2.00		44.00		
	Raw water Brick columns	4	1.60	3.30		21.12		
	Raw water tank walls	2	7.00	1.30		18.20		
		2	3.00	1.30		7.80		
	Plinth Protection (RO plant Room)	2	5.50	1.00		11.00		
		2	7.50	1.00		15.00		
	Plinth Protection (Raw water Tank Room)	2	7.00	1.00		14.00		
		2	5.00	1.00		10.00		
	Deduct Door	1	0.50	1.50	2.10	-1.58		
	Deduct Window	4	0.50	1.50	1.20	-3.60		
	Ventilators	7	0.50	0.80	0.40	-1.12		
	RO				Total	215.125	216.00	Sqm
17	Providing 12 mm thick cement plaster in single coat with cement mortar 1:6, to brick masonry including rounding off corners wherever required smooth rendering, : Providing and removing scaffolding, including the cost of materials, labour, curing complete as per specifications.							
	For walls	4	5.50		3.00	66.00		
	Raw water tank walls	2	7.00	1.20		16.80		
		2	3.00	1.20		7.20		
	Deduct Door	1	0.50	1.50	2.10	-1.58		
	Deduct Window	4	0.50	1.50	1.20	-3.60		
	Ventilators	7	0.50	0.80	0.40	-1.12		
					Total	83.705	84.00	Sqm
18	Providing 12 mm thick cement plaster in single coat with cement mortar 1:3, to brick masonry including rounding off corners wherever required smooth rendering, : Providing and removing scaffolding, including the cost of materials, labour, curing complete as per specifications.							
	Ceiling	1	5.50	5.50		30.25		
	Beam sides	4	5.50	0.30		6.60		
	Chajja	1	5.50	1.10		6.05		
	Slab projection	4	6.50	1.10		28.60		
	Columns	6	0.30	3.00		5.40		
		6	0.40	3.00		7.20		
		8	0.20	3.00		4.80		
		8	0.10	3.00		2.40		
					Total	91.300	92.00	Sqm
19	Providing and fixing MS grill work for windows and ventilators using M.S. flats, or M.S. square rods, or combination of M.S. flats and square rods as per approved design , drawing including cutting stel sections and welding the same to required pattern with a coat of red lead primer, cost of materials, fixtures, labour, HOM of machinery complete as per specification.							
					Kgs/Sqm.			
	For window	4	1.50	1.20	20.00	144.00		
	Ventilators	7	0.80	0.40	20.00	44.80		
	Raw water tank sides	2	7.00	1.80	20.00	504.00		
		2	3.00	1.80	20.00	216.00		
					Total	908.800	909.00	Kg

ITEM NO.	DESCRIPTION	No.	Length	Breadth/ Width	Height/ Depth	Quantity	Net quantity	Unit
20	Fabricating, supplying & erecting M.S. Angular truss for all spans as per approved design and drawing. The entire truss is anchored suitably by 4 Nos of MS anchor bolts at each support, with base plate and shoe plate. The work includes cutting, straightening, placing in position of MS angle and welding wherever necessary, and applying one coat of red oxide primer coat to all the member including cost of all materials, labour charges, & higher charges of machineries for cutting, welding, grinding & erection equipments, etc. complete as per specifications.							
	Angle 65x65x6	3	8.00	6.80		163.20		
	Angle 50x50x6	7	4.00	4.50		126.00		
	Cleats	28	0.15	4.50		18.90		
					Total	308.100	309.00	Kg
21	Providing and applying two coats with oil bound washable distemper of approved brand and shade on wall surface including priming coat with distemper primer after thoroughly brooming the surface free from mortar drops and other foreign matter including preparing the surface even and sand paper smooth, cost of materials, labour, complete as per specifications							
	For walls	4	5.50		3.00	66.00		
	Ceiling	1	5.50	5.50		30.25		
	Beam sides	4	5.50	0.30		6.60		
	Raw water tank storage walls	2	7.00	1.20		16.80		
		2	3.00	1.20		7.20		
	Deduct Door	1	0.50	1.50	2.10	-1.58		
	Deduct Window	4	0.50	1.50	1.20	-3.60		
	Ventilators	7	0.50	0.80	0.40	-1.12		
					Total	120.555	121.00	Sqm
22	Finishing walls with Acrylic Smooth exterior paint of required shade							
	New work (Two or more coat applied @ 1.67 ltr/10 sqm over and including base coat of water proofing cement paint applied @ 2.20kg/ 10 sqm)							
	Exterior wall faces with plinth	4	5.50	3.65		80.30		
	Parapet	4	5.50	2.00		44.00		
	Raw water Brick columns	4	1.60	3.30		21.12		
	Raw water tank walls	2	7.00	1.30		18.20		
		2	3.00	1.30		7.80		
	Deduct Door	1	0.50	1.50	2.10	-1.58		
	Deduct Window	4	0.50	1.50	1.20	-3.60		
	Ventilators	7	0.50	0.80	0.50	-1.40		
	Chajja	1	5.50	1.10		6.05		
	Slab projection	4	6.50	1.10		28.60		
	Columns	6	0.30	3.00		5.40		
		6	0.40	3.00		7.20		
		8	0.20	3.00		4.80		
		8	0.10	3.00		2.40		
					Total	219.295	220.00	Sqm

ITEM NO.	DESCRIPTION	No.	Length	Breadth/ Width	Height/ Depth	Quantity	Net quantity	Unit
23	Providing and applying painting two coats (excluding priming coat) on new wood surface and/or wood based surface with enamel paint to give an even shade, cleaning the surface of all dirt, dust and foreign matter, sand papering including cost of materials, labour, complete as per specifications							
	Doors	2	1.50	2.10	1.15	9.42		
	Windows shutters	4	1.50	1.20		18.72		
	Windows Frame with grills	4	1.50	1.20		7.20		
	Ventilator shutters	7	0.80	0.40		2.24		
	Ventilator Frame with grills	7	0.80	0.40		2.24		
					Total	39.819	40.00	Sqm
24	Providing and applying enamel metal paint two coats (excluding priming coat) over new steel or other metal surface brushing to give an even shade after cleaning oil, grease dirt, and other foreign matter including cost of materials, labour, complete as per specifications							
	Raw water tank sides	2	7.00	1.80		25.20		
		2	3.00	1.80		10.80		
	Structural works							
	Angle 65x65x6	3	8.00	0.26		6.24		
	Angle 50x50x6	7	4.00	0.20		5.60		
	Cleats	28	0.15	0.20		0.84		
					Total	48.680	49.00	Sqm
25	Providing and placing on terrace, polyethylene water storage tanks as per IS 12701 :1996 with manhole lid and suitable locking arrangements, making holes of suitable diameter for inlet, outlet and over flow pipes, including cost of all materials, labour, transport charges, HOM of equipments and testing complete as per specifications (For 1000 litre capacity) .	1	4.00			4.00		
					Total	4.00	4.00	Each
26	Providing and fixing gun metal wheel valve conforming to IS specification of approved make as per directions including all lead and lift., complete.							
	25 mm dia	1	6.00			6.00		
					Total	6.00	6.00	Each
	50 mm dia	1	2.00			2.00		
					Total	2.00	2.00	Each
27	Providing and fixing in trenches galvanised/mild steel tubes (medium grade) 25mm dia nominal bore with fittings (earth work in trenches to be measured and paid for separately) including cost of all materials, labour charges, HOM of equipments and testing complete as per specifications.							
a	15 mm	1	15.00			15.00		
					Total	15.00	15.00	Mtr
b	25 mm	1	30.00			30.00		
		187			Total	30.00	30.00	Mtr

ITEM NO.	DESCRIPTION	No.	Length	Breadth/ Width	Height/ Depth	Quantity	Net quantity	Unit
28	Providing and fixing in position brass bib cock of approved quality 15 mm nominal bore including cost of all materials,labour and HOM of equipment with all leads complete as per specifications.							
	15 mm dia	1	4.00			4.00		
					Total	4.00	4.00	Each
29	Providing and fixing ISI marked oxidised sliding door bolts with nuts and screws etc. complete							
	For Doors							
	250x16mm	2	2.00			4.00		
					Total	4.00	4.00	Each
30	Providing and fixing ISI marked oxidised MS tower bolt black finish (Barrel Type) with nuts and screws etc. complete							
	For Doors							
a	250x10mm	2	2.00			4.00		
					Total	4.00	4.00	Each
	For windows							
b	100x10mm	1	4.00	2.00		8.00		
					Total	8.00	8.00	Each
31	Providing and fixing ISI marked oxidised MS Handles conforming to IS:4992 with necessary screws etc. complete							
	For Doors							
a	100mm	1	2.00	1.00		2.00		
					Total	2.00	2.00	Each
	For windows							
b	75mm	1	4.00	1.00		4.00		
					Total	4.00	4.00	Each
32	providing and fixing aluminium hanging door stopper,ISI marked.anodised transperent or dyed to required colour and shade,with necessary screws etc. complete.							
	For Doors							
	Twin rubber stopper	2	1.00			2.00		
					Total	2.00	2.00	Each
33	Lettering with black japan paint of approved brand and manfacturer.	54	15.00			810.00		
					Total	810.00	810.00	eight
34	Providing and fixing precoated galvanized iron profile sheets (size,shape and pitch of corugation as approved by engineer in charge) 0.45mm/0.50mm (+0.05%) total coated thickness with zinc coating 120 gms per sqm as per IS 277, in 240 mpa steel grade, 5-7 microns epoxy primer on both side of the sheet and polyster top coat 15-18 microns. Sheet should have protective guard film	1	8.00	4.00		32.00		
					Total	32.00	32.00	Sqm
35	Supply of Water purification plant skid mounted 2000 LPH RO unit design with TDS<3000ppm manually operated with pre filtration system with 5000 & 3000 Ltrs storage tank, one year consumables, Installation and commissioning, transportation, maintainance for one year including all taxes for village (Supply of RO plant, Instatllation & Comissining of RO and AMC Charges of one year.	1				1.00		
		188			Total	1.00	1.00	Each

Annexure - 3	
NMDC LTD	
DONIMALAI - KUMARASWAMY IRON ORE MINE COMPLEX	
CIVIL ENGINEERING DEPARTMENT	
<u>GENERAL FEATURES OF THE ESTIMATE</u>	
1. Name of work	Health and Hygiene: Construction of Primary Health Centre Building at Narsinghapura Village.
2. Purpose of work	: Providing regular health check-up facilities at Narsinghapura Village.
<u>3. Estimated cost: based on SOR'-2018-19</u>	
Total cost Excluding free issue Materials	₹ 26,26,313.30
Cost of FIM	₹ 0.00
Total cost Including free issue Materials .	₹ 26,26,313.30
Deduction for the Value of item No. 22,23,24 with GST of DSR-18	₹ 26,22,109.80
Add GST @ 12% on estimated value, as per Sl.-5 at Page-d of SOR-2018-19.(except 22,23,24)	₹ 3,14,653.18
Total Estimated cost (including GST in SOR-2018-19 & DSR-18)	₹ 29,40,966.48
Estimated cost of Electrical works (including GST in DSR-2018)	₹ 4,41,144.97
Total Estimated cost (inclusive of all taxes) for electrical & civil work	₹ 33,82,111.45
4. Reference	:SOR 18-19& DSR-2018
5. Completion time	: 9 months (exculding rainy season July to Oct.)
6. Materials to be issued free of cost by NMDC Ltd	: NIL
Processed By sd/- P K Chaudhary AGM (Civil)	Estimate Prepared by sd/- B R Prasad, Dy. Mgr. (Civil)

Health and Hygiene: Construction of Primary Health Centre Building at Narsinghapura Village.

ABSTRACT OF ESTIMATE

ITEM NO.	Page No. (SOR 16)	ITEM CODE NO. (SOR 16)	DESCRIPTION	UNIT	Quantity	RATE including material	AMOUNT including material
1	6	2.3	Earth work excavation for foundation of building, water supply, sanitary lines and electrical conduits either in pits or in trenches 1.5m and above in width, in hard soil not exceeding 1.5m in depth including dressing the bottom and sides of pits and trenches, stacking the excavator soil clear from edges of excavation with lead upto 50m after breaking of clods complete as per specification.				
		2.3	Ordinary soil	Cum	173.00	299.00	51727.00
2	13	4.3	KSRB 4-1.3 Providing and laying in position plain cement concrete of mix 1:4:8 with OPC cement @ 180 kgs, with 40 mm and down size graded granite metal coarse aggregates @0.85cum and fine aggregates @0.57cum machine mixed, concrete laid in layers not exceeding 15 cms thick, well compacted, in foundation and plinth, including cost of all materials, labour. HOM of machinery, curing complete as per specifications.	Cum	22.00	5114.00	112508.00
3	25	5.3	Providing and constructing granite/ trap/ basalt size stone masonry in foundation with cement mortar 1:6 stone hammered dressed in course not less than 20CM high, bond stones at 2m. apart in each course including cost of materials, labour, curing complete as per specifications.				
	25	5.3	Cement mortar 1:6 KBS 5.1.3	Cum	58.00	3528.00	204624.00
4	14	4.11	KSRB 4.2.2 : Providing and laying in position reinforced cement concrete of design mix M20 with OPC cement @320kgs, with 20mm and down size graded granite metal coarse aggregates @0.69cum and fine aggregates @ 0.46 cum, with super plasticisers @ 3 litre confirming to IS 9103-1999 reaffirmed-2008, machine mixed, concrete laid in layers not exceeding 15cms thick, vibrated for all works in foundation for footings, pedestals, retaining walls, return walls, walls (any thickness) including attached plasters, columns, pillars, posts, struts, buttresses, bed blocks, anchor blocks, and plinths etc., including cost of all materials, labour, HOM curing, complete but	Cum	13.00	5780.00	75140.00

ITEM NO.	Page No. (SOR 16)	ITEM CODE NO. (SOR 16)	DESCRIPTION	UNIT	Quantity	RATE including material	AMOUNT including material
5	14	4.13	KSRB 4.2.8 : Providing and laying in position reinforced cement concrete of mix M20 with OPC cement @320kgs, with 20mm and down size graded granite metal coarse aggregates @0.69cum and fine aggregates @ 0.46 cum, with super plasticisers @ 3 litre confirming to IS 9103-1999 reaffirmed-2008, machine mixed, concrete laid in layers not exceeding machine mixed, concrete laid in layers not exceeding 15cms thick, vibrated for all works in ground floor level for roof slabs, staircase, lintels, and beams retaining walls, return walls, walls (any thickness) including attached plasters, columns, pillars, posts, struts, buttresses, stiring or lacing courses, parpets, coping, bed bocks, anchor blocks, plain window cills, fillets etc., including cost of all materials, labour, HOM curing, complete but excluding cost of reinforcement as per specifications as per specifications.	Cum	48.00	6013.00	288624.00
6	7	2.10	Filling available excavated earth (excluding rock) in sides of foundations upto plinth in layers not exceeding 20 cms in depth compactintg each deposited layer by ramming after watering with lead upto 50 m, and lift upto 1.5m including cost of all the labour complete as per specifications.	Cum	133.00	201.00	26733.00
7	27	5.26	KSRB 5-14 : Providing and constructing load bearing wall with solid concrete blocks having block density not less than 1800 kg/cum having a minmum average compressive strength 4.00 N/sqm confirming to IS 2185 (Part1):2005 and constructed with c m 1:4 as per IS 2572:2005 including cost of material labour charges scaffolding, curing, hire charges of machinaries, complete as per specifications.				
	27	5.26.2	for 1sqm of CC.Block 40x15x20CM = Rs 919.00, hence for 1Cum = 919.00/0.20 = Rs 4595.00	Cum	85.00	4595.00	390575.00
8 (a)	16	4.28	Providing and removing centering , shuttering, strutting, propping etc, and removal of form work for foundation, footings, base of columns for mass concrete including cost of all material, labour complete as per specification.	sqm	56.00	263.00	14728.00

ITEM NO.	Page No. (SOR 16)	ITEM CODE NO. (SOR 16)	DESCRIPTION	UNIT	Quantity	RATE including material	AMOUNT including material
8(b)	17	4.34	KSRB 4-6.7 : Providing and removing centering, strutting, shuttering, propping etc., and removal of formwork for sides and soffits of beams, beam haunchings, cantilever girders, bressumers and lintels not exceeding 1m in depth including cost of all materials, labour complete as per specifications	sqm	313.00	292.00	91396.00
8(c)	16	4.32	Providing and removing centering, strutting, shuttering, propping etc., for columns, pillars, piers, abutments, post and struts, square/rectangular/ polygon in plan including cost of all materials, labour complete as per specifications	sqm	62.00	456.00	28272.00
8(d)	16	4.29.2	KSRB 4-6.2: Providing and removing centering, strutting, shuttering, propping etc., and removal of form work for flat surface such as suspended floors, roofs, landings, balconies and likes thickness upto 200mm including cost of all materials, labour complete as per specifications. up to 5 mtrs.	sqm	156.00	408.00	63648.00
8(e)	17	4.37	KSRB 4-6.10: Providing and removing centering, strutting, shuttering, propping etc., and removal of form work for chajja, corbel etc. Including edge including cost of all materials, labour complete as per specifications	sqm	10.00	329.00	3290.00
9	18	4.46.2	Providing T.M.T steel reinforcement for RCC work including straightening, cutting, bending, hooking, placing in position, lapping and/or welding wherever required, tying with binding wire and anchoring to the adjoining members wherever necessary complete as per design (laps, hooks and wastage shall not be measured and paid) cost of materials, labour, HOM of machinery complete as per specifications.	Kg	6100.00	70.31	428891.00
10	53	9.10	KSRB 9.4-1: Providing wood frames of doors, windows, clerestory windows, ventilators and other frames, wrought, framed or assembled including making plaster grooves (excluding cost of cement concrete and side clamps) but including cost of materials, labour, HOM of machinery complete as per specifications	Cum	0.60	187663.00	112597.80

ITEM NO.	Page No. (SOR 16)	ITEM CODE NO. (SOR 16)	DESCRIPTION	UNIT	Quantity	RATE including material	AMOUNT including material
11	65	9.106	Providing and fixing flush door shutters made out of solid core black board type, well seasoned chemically treated hard wood battens and internal frame with minimum 45mm wide wooden frame all-round door shutters covered with cross bonded wooden sheets (core veneer) hot pressed and fastened on both sides of the door using liquid phenol formaldehyde resin as per IS specification : 2202 (Part I) 1991. From manufacturer (Factory) complete as per specification.				
11	65	9.106.6	35 mm thick both side commercial, including ISI marked Stainless Steel butt hinges with necessary screws	Sqm	16.00	2550.00	40800.00
12	109	14.45	Providing and fixing vitrified glazed tiles of approved cover make, quality of size 600 x 600 x 10mm thick fixed on bed of 12 mm thick cement mortar for flooring, skirting, and jointed with neat cement slurry mixed with pigment to match shade of tiles, including providing spacers at required interval and removing stains, including cost of all materials, mortar, labour charges etc. complete as per specification.	Sqm	113.00	974.00	110062.00
13	115	15.14	KSRB 15-3.6 : Providing 15 mm thick cement plaster in single coat with cement mortar 1:6, to brick masonry including rounding off corners wherever required smooth rendering, : Providing and removing scaffolding, including the cost of materials, labour, curing complete as per specifications.				
		15.14	Cement mortar 1:6	Sqm	353.00	204.00	72012.00
14	115	15.11	KSRB 15-3.3 : Providing 12 mm thick cement plaster in single coat with cement mortar 1:6, to brick masonry including rounding off corners wherever required smooth rendering, : Providing and removing scaffolding, including the cost of materials, labour, curing complete as per specifications.				
			Cement mortar 1:6	Sqm	474.00	190.00	90060.00

ITEM NO.	Page No. (SOR 16)	ITEM CODE NO. (SOR 16)	DESCRIPTION	UNIT	Quantity	RATE including material	AMOUNT including material
15	115	15.9	KSRB 15-3.1 : Providing 12 mm thick cement plaster in single coat with cement mortar 1:3, to brick masonry including rounding off corners wherever required smooth rendering, : Providing and removing scaffolding, including the cost of materials, labour, curing complete as per specifications.				
			Cement mortar 1:6	Sqm	251.00	209.00	52459.00
16	34	7.9	KSRB 7.9: Providing and fixing MS grill work for windows and ventilators using M.S. flats, or M.S. square rods, or combination of M.S. flats and square rods as per approved design, drawing including cutting steel sections and welding the same to required pattern with a coat of red lead primer, cost of materials, fixtures, labour, HOM of machinery complete as per specification.	Kg	225.00	95.00	21375.00
17	35	7.10	KSRB 7.10.2: Providing and fixing aluminium windows and ventilator as per approved drawing with sliding shutters using double track frame section of size 61.85x31.75mm with 1.2 mm thick bottom section section weight 0.695 kg/m, sides and top sections 1.3 mm thick weight 0.659 kg/m, and shutter comprising top and bottom section of size 40mmx18mm, 1.25 mm thick 0.417 kg/m, shutter outer section 40mm x 26.7mm, 1.1mm thick weight 0.469 kg/m the shutters mounted on nylon rollers with approved quality of fixtures such as aluminium handles tower bolts etc. and providing and fixing 5.5mm thick plain glass for shutters fitted with rubber beading aluminum sections including cutting to required length, joint mitred subdividing the frame tenonned and revetted in assembled frame stiffened with end clips at corner angles etc. and fixed to the wall lintels floor beams/cills as the case may be with necessary steel screws, rawl plugs, or teak wood gatties including cutting masonry or concrete and making good the original surface using cement mortar, aluminium sections pretreated for removal of any Specification No. KBS.				
		7.10.2	Using aluminium section powder coated to a minimum of 60-70 microns with exterior durable polyester grade powder of approved quality.	Sqm	18.00	4375.00	78750.00

ITEM NO.	Page No. (SOR 16)	ITEM CODE NO. (SOR 16)	DESCRIPTION	UNIT	Quantity	RATE including material	AMOUNT including material
18	119	15.49	KSRB 15-14.1: Providing and applying two or more coats with oil bound washable distemper of approved brand and shade on wall surface including priming coat with distemper primer after thoroughly brooming the surface free from mortar drops and other foreign matter including preparing the surface even and sand paper smooth, cost of materials, labour, complete as per specifications	Sqm	474.00	110.00	52140.00
19	120	15.53	KSRB 15-16.1: Providing and finishing external wall in two or more coats with water proof cement paint of approved brand and shade on wall surface including priming coat with distemper primer after thoroughly brooming the surface free from mortar drops and other foreign matter including preparing the surface even and sand paper smooth, cost of materials, labour, complete as per specifications.				
		15.53.2	With primer	Sqm	353.00	102.00	36006.00
20	120	15.56	Applying priming coat over new wood surface and /or wood based surface after brushing with wood primer pink pink paint including preparing the surface after thoroughly cleaning oil, grease, dirt and other foreign matter, sand papering and preparing and knotting ready mix paint including cost of material, labour, complete as per specifications.	Sqm	16.00	46.00	736.00
21	121	15.60.1	Providing and Applying painting two or more coats on new wood surface and wood based surface with enamel paint to give an even shade, cleaning the surface of all dirt, dust and foreign matter, sand papering including cost of materials, labour, complete as per specifications.	Sqm	34.00	97.00	3298.00
22	159	9.96 DSR-2018	Providing and fixing aluminium sliding door bolts, ISI marked anodised (anodic coating not less than grade AC 10 as per IS : 1868), transparent or dyed to required colour or shade, with nuts and screws etc. complete				
		9.96.1	300x16 mm	Each	10.00	257.15	2571.50

ITEM NO.	Page No. (SOR 16)	ITEM CODE NO. (SOR 16)	DESCRIPTION	UNIT	Quantity	RATE including material	AMOUNT including material
23	159	9.97 DSR-2018	Providing and fixing aluminium tower bolts, ISI marked, anodised (anodic coating not less than grade AC 10 as per IS : 1868) transparent or dyed to required colour or shade, with necessary screws etc. Complete.				
		9.97.2	250x10 mm	Each	10.00	103.55	1035.50
24	160	9.100 DSR-2018	Providing and fixing aluminium handles, ISI marked, anodised (anodic coating not less than grade AC 10 as per IS : 1868) transparent or dyed to required colour or shade, with necessary screws etc. complete :				
		9.100.1	125 mm	Each	10.00	59.65	596.50
			Sanitary & Water Supply				
25	90	12.116	Providing and fixing to wall, ceiling and floor unplasticised PVC 6.00 Kgs/sqcm working pressure with pipe fittings, wall clip etc and making good the wall, ceiling and floor for sanitary pipelines including cost of all materials, labour charges, HOM of equipments and testing complete as per specification.				
A		12.116.3	160mm	Mtr	70.00	853.00	59710.00
B		12.116.1	110mm	Mtr	70.00	434.00	30380.00
26	90	12.113	Providing and fixing CI Nahani trap of approved make conforming to IS specifications and as per direction (Similar Item) (Rate is inclusive of cost of materials and fixtures and conveyance of materials to work spot)				
		12.113.1	10cms x 7.5cms	Each	4.00	250.00	1000.00
27	90	12.112	Providing stoneware gully trap of approved quality and make fixing in M-15 and plastering with CM 1:3 wherever necessary (Rate includes cost of all materials, fixtures and lead)				
		12.112.1	10cms x 10 cms	Each	12.00	190.00	2280.00
28	83	12.26	Providing and fixing white vitreous china clay, flat back wash basin size 550 x 400 mm with a single 15mm CP brass pillar tap with CI/MS brackets, 32 mm CP brass waste of standard pattern, painting of fittings and brackets, cutting and making good the wall and floor wherever required, including cost of all materials, labour, complete as per specification.	Each	4.00	3021.00	12084.00

ITEM NO.	Page No. (SOR 16)	ITEM CODE NO. (SOR 16)	DESCRIPTION	UNIT	Quantity	RATE including material	AMOUNT including material
29	79	12.2	Providing and fixing white vitreous china clay water closet orissa pattern of size 580 x 440mm with integral type footrest 100mm S or P trap, 10litrs low level PVC flushing cistern (all are approved make) with fittings, CI/MS brakets 32mm diameter flush pipe fittings and clamps, overflow arrangements with special and 25mm mosquito proof coupling of approved design, painting of fitting and brakets, cutting and making good the wall and floor wherever required including cost of materials, labour complete as per specification.	Each	2.00	4224.00	8448.00
30	94	13.78	Providing and placing on terrace,polyethylene water storage tanks as per IS:12701:1996 with manhole lid and suitable locking arrangements,making holes of suitable diameter for inlet & outlet and overflow pipe including cost of all materials labour, transport charge, HOP of equipment and testing complete as per specification (For 1000 litrs capacity)	Each	1.00	6828.00	6828.00
31	82	12.39	Providing and fixing 600x450mm bevelled edge mirror of superior glass with 6mm hard board backing and fixed to wooden clits with CP screws washers including cost of materials, labour complete as per specification.	Each	2.00	1157.00	2314.00
32	90	13.1	Providing and fixing to wall, ceiling and floor galvanised/mild steel tube 15 mm dia nominal bore with fittings (medium grade weight 1.27 kg/m) B class including cost of all materials, labour charge, HOM of equipments and testing complete as per specification				
A		13.1	15mm dia	Mtr	70.00	203.00	14210.00
B		13.3	25mm dia	Mtr	70.00	311.00	21770.00
33	94	13.34	Providing and fixing in position brass gate valve with CI wheel/avialable in market of approved quality (Screwed end) 25 mm nominal bore including cost of all material, labour and HOM of equipment with all leads complete as per specifications.	Each	2.00	449.00	898.00

ITEM NO.	Page No. (SOR 16)	ITEM CODE NO. (SOR 16)	DESCRIPTION	UNIT	Quantity	RATE including material	AMOUNT including material
34	94	13.46	Providing and fixing unplasticised PVC connection pipe with brass union 15mm nominal bore 450mm length of PVC connection including cost of all material, labour and HOM of equipment with all leads complete as per specification.	Each	4.00	234.00	936.00
35	93	13.23	Providing and fixing in position brass bib cock of approved quality 15mm nominal bore including cost of all material, labour and HOM of equipment with all leads complete as per specification	Each	14.00	190.00	2660.00
36	93	13.26	Providing and fixing in position brass stop cock of approved quality 15mm nominal bore including cost of all material, labour and HOM of equipment with all leads complete as per specification	Each	16.00	140.00	2240.00
37	Rate analysis		Providing and fixing display board of size 1.20 x 0.90 mtrs using Structural steel angles 65x65x6mm, MS Plate 3.15mm, painting and lettering the same.	No	1.00	5900.00	5900.00
						Total	2626313.30
sd/- AGM(Civil)				sd/- Dy. Manager(Civil)			

Construction of Primary Health centre at Narsinghpura Village								
Measurement Sheet								
ITEM NO.	DESCRIPTION	No.	Length	Breadth/ Width	Height/ Depth	Quantity	Net quantity	Unit
	Health ncenter Size 20.00 m x 10 m							
	Central line = [(20.00+.2+10+.2)x2]							
1	Earth work excavation for foundation of building, water supply sainatory lines and electrical conduits either in pits or in trenches 1.5m and above in width, in hard soil not exceeding 1.5m in depth including dressing the bottom and sides of pits and trenches, stacking the excavator soil clear from edges of excavation with lead upto 50m after breaking of clods complete as per specification. Ordinary soil.							
	For building earth work	1	69.00	0.80	1.00	55.20		
	columns	14	1.40	1.40	1.20	32.93		
	Septic tank	2	6.00	3.00	2.00	72.00		
	Soack pit	2	2.00	1.50	2.00	12.00		
					Total	172.13	173.00	Cum
2	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering - All work up to plinth level :							
	1:4:8 (1 Cement: 4 coarse sand : 8 graded local stone aggregate 40 mm nominal size.							
	For building earth work	1	69.00	1.00	0.10	6.90		
	columns	14	1.20	1.20	0.10	2.02		
	Total floor area	1	4.50	4.00	0.10	1.80		
		1	4.50	2.50	0.10	1.13		
		1	3.50	6.00	0.10	2.10		
		2	3.50	3.00	0.10	2.10		
		1	3.50	2.50	0.10	0.88		
	Septic tank	2	6.00	3.00	0.10	3.60		
	Soack pit	2	2.00	1.50	0.10	0.60		
					Total	21.12	22.00	Cum
3	Providing and constructing granite/trap/basalt size stone masonry in foundation with cement mortar 1:6 stone hammered dressed in course not less than 20CM high, bond stones at 2m. apart in each course including cost of materials, labour, curing complete as per specifications.							
	Cement mortar 1:6 KBS 5.1.13							
	For building earth work	1	69.00	0.75	0.40	20.70		
		1	69.00	0.60	0.40	16.56		
		1	69.00	0.45	0.40	12.42		
		1	69.00	0.30	0.40	8.28		
					Total	57.96	58.00	Cum
4	RCC Raft & footings of Column 1:2:4							
	bases of columns footings	14	1.20	1.20	0.40	8.06		
	columns of footings	14	0.45	0.35	0.70	4.41		

ITEM NO.	DESCRIPTION	No.	Length	Breadth/ Width	Height/ Depth	Quantity	Net quantity	Unit
					Total	12.47	13.00	Cum
5	RCC work in beams, Columns and slab 1:2:4							
	Columns	14	0.45	0.35	3.50	7.72		
	Plinth beam	1	69.00	0.35	0.30	7.25		
	Lintel beam	1	69.00	0.20	0.15	2.07		
	Slab beam	1	69.00	0.30	0.30	6.21		
	Slab	1	13.00	9.20	0.15	17.94		
	Septic tank slab	2	6.00	3.00	0.15	5.40		
	Chhajja Door	2	1.50	0.60	0.15	0.27		
	Windows	5	2.00	0.60	0.15	0.90		
					Total	47.75	48.00	Cum
6	Filling available excavated earth (excluding rock) in sides of foundations upto plinth in layers not exceeding 20 cms in depth compactintg each deposited layer by ramming after watering with lead upto 50 m, and lift upto 1.5m including cost of all the labour complete as per specifications.							
	Total excavated earth in footings same as item-1	1	1.00	173.00		173.00		
	Deductions (RR wall)	-1	69.00	0.75	0.40	-20.70		
		-1	69.00	0.60	0.40	-16.56		
		-1	69.00	0.45	0.20	-6.21		
	Deductions (PCC)	-1	69.00	0.75	0.10	-5.18		
	Deductions (Column footing))	-14	1.50	1.50	0.10	-3.15		
		-14	1.40	1.40	0.50	-13.72		
		-14	1.16		0.40	-6.50		
	For building earth work	1	4.50	4.00	0.40	7.20		
		1	4.50	2.50	0.40	4.50		
		1	3.50	6.00	0.40	8.40		
		2	3.50	3.00	0.40	8.40		
		1	3.50	2.50	0.40	3.50		
					Total	132.99	133.00	Cum
7	Providing fixing of C C Block masonry							
	For Buildings	1	69.00	0.20	3.50	48.30		
	For Buildings parapet	1	69.00	0.20	1.00	13.80		
	Toilet	2	2.20	0.20	3.50	3.08		
		2	1.20	0.20	3.50	1.68		
	Deductions Main & back doors D	-6	1.20	0.20	2.13	-3.07		
	Windows	-5	1.50	0.20	1.20	-1.80		
	Septic tank	4	6.00	0.20	2.00	9.60		
		6	3.00	0.20	2.00	7.20		
	Soack pit	4	2.00	0.20	2.00	3.20		
		4	1.50	0.20	2.00	2.40		
					Total	84.39	85.00	Cum
8	Providing and removing centering , shuttering,strutting,propping etc,and removal of form work for foundation,footings,base of columns for mass concrete including cost of all material, labour complete as per specification.							
a	bases of columns footings	56	1.20		0.50	33.60		
		56	1.00		0.40	22.40		
					Total	56.00	56.00	sqm

ITEM NO.	DESCRIPTION	No.	Length	Breadth/ Width	Height/ Depth	Quantity	Net quantity	Unit
b	KSRB 4-6.7 : Providing and removing centering, strutting, shuttering, propping etc., and removal of formwork for sides and soffits of beams, beam hanchings, cantilever girders, bressumers and lintels not exceeding 1m in depth including cost of all materials, labour complete as per specifications							
	Plinth beam	2	69.00		0.40	55.20		
	Lintel beam	2	69.00		0.15	20.70		
	Slab beam	2	69.00		0.80	110.40		
		6	10.00		2.10	126.00		
					Total	312.30	313.00	sqm
c	Providing and removing centering, strutting, shuttering, propping etc., for columns, pillars, piers, abutments, post a`nd struts, square/rectangular/ polygon in plan including cost of all materials, labour complete as per specifications							
	columns below plinth beam	28	0.75		0.70	14.70		
	Columns	14	0.75		4.50	47.25		
					Total	61.95	62.00	sqm
d	KSRB 4-6.2 : Providing and removing centering, strutting, shuttering, propping etc., and removal of form work for flat surface such as suspended floors, roofs, landings, balconies and likes thickness upto 200mm including cost of all materials, labour complete as per specifications							
	Slab	1	13.00		9.20	119.60		
	Septic tank	2	6.00	3.00		36.00		
					Total	155.60	156.00	sqm
e	KSRB 4-6.2 : Providing and removing centering, strutting, shuttering, propping etc., and removal of form work for chajja, corbel etc. Including edge including cost of all materials, labour complete as per specifications .							
	Chhajja Door	2	1.50	0.60		1.80		
		4	0.60		0.15	0.36		
	Windows	5	2.00	0.60		6.00		
		10	0.60		0.15	0.90		
					Total	9.06	10.00	sqm
9	Reinfrcement for RCC work							
	For item No. -4	1	13.00	`@100Kg		1300.00		
	For item No. -5	1	48.00	`@100Kg		4800.00		
					Total	6100.00	6100.00	Kg
10	KSRB 9.4-1: Providing wood frames of doors, windows, clerestory windows, ventilators and other frames, wrought, framed or assembled including making plaster groves (excluding cost of cement concrete and side clamps) but including cost of materials, labour, HOM of machinery complete as per specifications							
	Door	12	2.10	0.150	0.10	0.38		

ITEM NO.	DESCRIPTION	No.	Length	Breadth/ Width	Height/ Depth	Quantity	Net quantity	Unit
		12	1.20	0.150	0.10	0.22		
					Total	0.59	0.60	Cum
11	Providing and fixing flush door shutters made out of solid core black board type, well seasoned chemically treated hard wood battens and internal frame with minimum 45mm wide wooden frame all round door shutters covered with cross bonded wooden sheets (core veneer) hot pressed and fastened on both sides of the door using liquid phenol formaldehyde resin as per IS specification : 2202 (Part I) 1991. From manufacturer (Factory) complete as per specification.							
	Door	6	1.20		2.10	15.12		
					Total	15.12	16.00	Sqm
12	Flooring with tiles							
	Total floor area	1	4.50	4.00		18.00		
		1	4.50	2.50		11.25		
		1	3.50	6.00		21.00		
		2	3.50	3.00		21.00		
		1	3.50	2.50		8.75		
		2	2.20	1.20		5.28		
		4	2.20	2.00		17.60		
		4	1.20	2.00		9.60		
					Total	112.48	113.00	Sqm

ITEM NO.	DESCRIPTION	No.	Length	Breadth/ Width	Height/ Depth	Quantity	Net quantity	Unit
13	KSRB 15-3.6 : Providing 15 mm thick cement plaster in single coat with cement mortar 1:6, to brick masonry including rounding off corners wherever required smooth rendering, : Providing and removing scaffolding, including the cost of materials, labour, curing complete as per specifications.							
	Outer side	1.5	69.00		3.50	362.25		
	Deductions Main & back door door D	-2.5	1.20		2.10	-6.30		
	Windows	-2.5	1.20		1.20	-3.60		
					Total	352.35	353.00	Sqm
14	KSRB 15-3.3 : Providing 12 mm thick cement plaster in single coat with cement mortar 1:6, to brick masonry including rounding off corners wherever required smooth rendering, : Providing and removing scaffolding, including the cost of materials, labour, curing complete as per specifications.							
	Inside	2	69.00		3.50	483.00		
	Deductions Main door D	-2.5	1.20		2.10	-6.30		
	Windows	-2.5	1.20		1.20	-3.60		
					Total	473.10	474.00	Sqm
15	KSRB 15-3.1 : Providing 12 mm thick cement plaster in single coat with cement mortar 1:3, to brick masonry including rounding off corners wherever required smooth rendering, : Providing and removing scaffolding, including the cost of materials, labour, curing complete as per specifications.							
	Ceiling	1	13.00	9.20		119.60		
	Slab beam	2	69.00		0.60	82.80		
	Columns	14	0.65		4.00	36.40		
	Chhajja Door	5	1.50	0.60		4.50		
		4	0.60		0.15	0.36		
	Windows	5	2.00	0.60		6.00		
		10	0.60		0.15	0.90		
					Total	250.56	251.00	Sqm
16	KSRB 7.9: Providing and fixing MS grill work for windows and ventilators using M.S. flats, or M.S. square rods, or combination of M.S. flats and square rods as per approved design, drawing including cutting stel sections and welding the same to required pattern with a coat of red lead primer, cost of materials, fixtures, labour, HOM of machinery complete as per specification.							
	For windows	5	1.50		1.20	@25kg/sqm	225.00	
						Total	225.00	Kg
17	KSRB 7.10.2: Providing and fixing aluminium windows and ventilator as per approved drawing with sliding shutters using double track frame section of size 61.85x31.75mm with 1.2 mm thick. Bottom section.....							
	Aluminium Windows	203	1.50		1.20	18.00		

ITEM NO.	DESCRIPTION	No.	Length	Breadth/ Width	Height/ Depth	Quantity	Net quantity	Unit
					Total	18.00	18.00	Sqm
18	KSRB 15-14.1: Providing and applying two or more coats with oil bound washable distemper of approved brand and shade on wall surface including priming coat with distemper primer after thoroughly brooming the surface free from mortar drops and other foreign matter including preparing the surface even and sand paper smooth, cost of materials, labour, complete as per specifications							
	Same qty of item no-14	1	474.00		3.50	474.00		
					Total	474.00	474.00	Sqm
19	KSRB 15-16.1: Providing and finishing external wall in two or more coats with water proof cement paint of approved brand and shade on wall surface including priming coat with distemper primer after thoroughly brooming the surface free from mortar drops and other foreign matter including preparing the surface even and sand paper smooth, cost of materials, labour, complete as per specifications							
	With primer							
	Outer side	1	353.00		3.50	353.00		
					Total	353.00	353.00	Sqm
20	KSRB 15-17.2: Applying priming coat over new wood or wood based surface after brushing with wood primer pink paint including preparing the surface after thoroughly cleaning oil, grease, dirt, and foreign matter, sand papering and knotting ready mix paint including cost of materials, labour, complete as per specifications							
15.6	Doors	6.0	1.20		2.10	15.12		
					Total	15.12	16.00	Sqm
21	KSRB 15-17.6: Providing and applying painting two coats (excluding priming coat) on new wood surface and/or wood based surface with enamel paint to give an even shade, cleaning the surface of all dirt, dust and foreign matter, sand papering including cost of materials, labour, complete as per specifications							
	Doors	6.0	1.20		2.10	15.12		
	Grill	10	1.50		1.20	18.00		
					Total	33.12	34.00	Sqm
22	Providing and fixing aluminium sliding door bolts, ISI marked anodised (anodic coating not less than grade AC 10 as per IS : 1868), transparent or dyed to required colour or shade, with nuts and screws etc. complete							
	For Doors							
	300x16mm	204				10.00		

ITEM NO.	DESCRIPTION	No.	Length	Breadth/ Width	Height/ Depth	Quantity	Net quantity	Unit
					Total	10.00	10.00	Each
23	Providing and fixing aluminium tower bolts, ISI marked, anodised (anodic coating not less than grade AC 10 as per IS : 1868) transparent or dyed to required colour or shade, with necessary screws etc. Complete.							
	For Doors							
	250x10mm	10				10.00		
					Total	10.00	10.00	Each
24	Providing and fixing aluminium handles, ISI marked, anodised (anodic coating not less than grade AC 10 as per IS : 1868) transparent or dyed to required colour or shade, with necessary screws etc. complete :							
	For Doors							
	125.00	10				10.00		
					Total	10.00	10.00	Each
	Sanitary & Water Supply							
25	P/F PVC pipe with fitting							
A	160 mm	1	70				70.00	Mtr
B	110 mm	1	70				70.00	Mtr
26	P/F CI Nahani trap 10 x 7.5 Cm	4	1				4.00	Each
27	Providing Gully trap	2	6				12.00	Each
28	P/F Wash Basin	2	2				4.00	Each
29	P/F Orissa pattern WC pan	2	1				2.00	Each
30	P/F PVC Water tank							
	1000 litres	1	1				1.00	Each
31	P/F 600x450mm mirror	2	1				2.00	Each
32	P/F GI Pipe							
A	15mm dia	1	70				70.00	Mtr
B	25mm dia	1	70				70.00	Mtr
33	P/F Brass Gate Valve 25mm dia	2	1				2.00	Each
34	P/F PVC Connection pipe	4	1				4.00	Each
35	P/F Brass Bib Cock 15mm dia	1	14				14.00	Each
36	P/F Brass Stop Cock 15mm dia	1	16				16.00	Each
37	Making Board	1					1.00	No
sd/- AGM(Civil) sd/- Dy. Manager(Civil)								

CSR PROPOSAL DETAILS FOR 2020-21(Ballari District)

Sl no	Focus area	
1	- o Education - o Drinking water - o Health and hygiene - o Infrastructure - o Integrated village development - o Skill development and income generation /or items under schedule VII of companies act 2013	Infrastructure development
2.	Title of the proposal	Modernization of operation theatres in 4 Primary Health Centers
3.	Aim and objectives of the proposal	To improve healthcare at rural level and augment maternity services to improve MMR and IMR
4	Why needed(justification in terms of expected /benefits/outcomes or targets)	To reduce MMR and IMR
5	Type of work(new/old/purchase/others)	Up gradation
6	Nature of work - o Social engineering project - o Infrastructure development - o Operation and management of existing institution - o Others incl.events (please specify)	Infrastructure development
7	Location District ,Block,Village/Gram Panchayat and complete address, land mark	Primary Health Centers 1.Kampli (Hospete Taluk) 2.Tekkalakote (Sirguppa Taluk) 3.Magimavinahalli (Hagaribommanahalli Taluk) 4.Gudekote (Kudlagi Taluk)
8	Details of infrastructure / proposal - o Type of construction ,built up area (or measurement/dimensions)etc in case of infrastructure projects - o For social engineering works-nature of resources being deployed in terms of manpower/material etc and nature, tenure and terms of their engagement/deployment - o Operation and maintenance, details with respect to engagement of services providers i.e, nature of engagement etc.	Procurement of operation theater equipment and civil works
9	Estimated cost(please specify premium, if any)and allocation sought for	Rs 2.00 crores
10	Basis of estimate (SOR/PWD/CPWD etc for infrastructure works , market rates/DGS&D rate for purchase proposals and other criteria for other proposals if any)	PWD SR
11	Tentative/proposed duration of completion/ implementation	06 months

12	Nature of fund requirement from NMDC ○ Fully funded ○ Partially funded (Note : if any other source of funding is there viz Govt funding/aid etc NMDC will not be funding for the initiative /activity)	Fully funded
13	Additional information if any (additional sheets may be attached including drawings, plans and other supporting documents based on need)	-----


 Deputy Commissioner
 Ballari

Note: If details are provided by implementing officer, endorsement of the district collector is required

Annexure 5	
NMDC LTD	
DONIMALAI - KUMARASWAMY IRON ORE MINE COMPLEX	
CIVIL ENGINEERING DEPARTMENT	
GENERAL FEATURES OF THE ESTIMATE	
1. Name of work	Up-gradation of existing multipurpose Community Building at Narasinghapura Village.
2. Purpose of work	: Renovation, Up-gradation and face lifting of existing community hall.
3. Estimated cost: based on SOR'-2018-19	
Total cost Excluding free issue Materials	₹ 24,67,847.95
Cost of FIM	₹ 0.00
Total cost Including free issue Materials .	₹ 24,67,847.95
Deduction for the Value of item No. 22,23,24 with GST of DSR-18	₹ 24,63,047.95
Add GST @ 12% on estimated value, as per Sl.-5 at Page-d of SOR-2018-19.(except 22,23,24)	₹ 2,95,565.75
Total Estimated cost (including GST	₹ 27,63,413.70
Estimated cost of Electrical works (including GST in DSR-2018)	₹ 1,38,170.69
Total Estimated cost (inclusive of all taxes) for electrical & civil work	₹ 29,01,584.39
4. Reference	:SOR 18-19& DSR-2018
5. Completion time	: 09 Months (exculding rainy season July to Oct.)
6. Materials to be issued free of cost by NMDC Ltd	: NIL
Processed By sd/- P K Chaudhary AGM (Civil)	Estimate Prepared by sd/- B R Prasad, Dy. Mgr. (Civil)

Up-gradation of existing multipurpose Community Building at Narasinghapura Village.

ABSTRACT OF ESTIMATE

ITEM NO.	Page No. (SOR 16)	ITEM CODE NO. (SOR 16)	DESCRIPTION	UNIT	Quantity	RATE including material	AMOUNT including material
1	6	2.3	Earth work excavation for foundation of building,water supply,sainatory lines and electrical conduits either in pits or in trenches 1.5m and above in width, in hard soil not exceeding 1.5m in depth including dressing the bottom and sides of pits and trenches, stacking the excavator soil clear from edges of excavation with lead upto 50m after breaking of clods complete as per specification.				
		2.3	Ordinary soil	Cum	5.00	299.00	1495.00
2	13	4.3	KSRB 4-1.3 Providing and laying in position plain cement concrete of mix 1:4:8 with OPC cement @ 180 kgs, with 40 mm and down size graded granite metal coarse aggregates @0.85cum and fine aggregates @0.57cum machine mixed, concrete laid in layers not exceeding 15 cms thick, well compacted, in foundation and plinth, including cost of all materials, labour. HOM of machinery, curing complete as per specifcations.	Cum	2.00	5114.00	10228.00
4	14	4.11	KSRB 4.2.2 : Providing and laying in position reinforced cement concrete of design mix M20 with OPC cement @320kgs, with 20mm and down size graded garnite metal coarse aggregates @0.69cum and fine aggregates @ 0.46 cum, with super plasticisers @ 3 litre confirming to IS 9103-1999 reafirmed-2008, machine mixed, concrete laid in layers not exceeding 15cms thick, vibrated for all works in foundation for footings, pedestals, retaining walls, return walls, walls (any thickness) including attached plasters, columns, pillars, posts, struts, buttresses, bed blocks, anchor blocks, and plinths etc., including cost of all materials, labour, HOM curing, complete but excluding cost of reinforcement as per specifications.	Cum	2.00	5780.00	11560.00

ITEM NO.	Page No. (SOR 16)	ITEM CODE NO. (SOR 16)	DESCRIPTION	UNIT	Quantity	RATE including material	AMOUNT including material
5	27	5.26	KSRB 5-14 : Providing and constructing load bearing wall with solid concrete blocks having block density not less than 1800 kg/cum having a minmum average compressive strength 4.00 N/sqm confirming to IS 2185 (Part1):2005 and constructed with c m 1:4 as per IS 2572:2005 including cost of material labour charges scaffolding, curing, hire charges of machinaries, complete as per specifications.				
	27	5.26.2	for 1sqm of CC.Block 40x15x20CM = Rs 919.00, hence for 1Cum = 919.00/0.20 = Rs 4595.00	Cum	10.00	4595.00	45950.00
6	16	4.28	Providing and removing centering , shuttering, strutting, propping etc, and removal of form work for foundation, footings, base of columns for mass concrete including cost of all material, labour complete as per specification.	sqm	17.00	263.00	4471.00
7	18	4.46.2	Providing T.M.T steel reinforcement for RCC work including straightening, cutting, bending, hooking, placing in position, lapping and/or welding wherever required, tying with binding wire and anchoring to the adjoining members wherever necessary complete as per design (laps, hooks and wastage shall not be measured and paid) cost of materials, labour, HOM of machinery complete as per specifications.	Kg	160.00	70.31	11249.60
8	109	14.45	Providing and fixing vitrified glazed tiles of approved cover make, quality of size 600 x 600 x 10mm thick fixed on bed of 12 mm thick cement mortar for flooring, skirting, and jointed with neat cement slurry mixed with pigment to match shade of tiles, including providing spacers at required interval and removing stains, including cost of all materials, mortar, labour charges etc. complete as per specification.	Sqm	438.00	974.00	426612.00
10		18.34	Dismatling of door windows with frame of steel work	Kg	2.00	1396.00	2792.00

ITEM NO.	Page No. (SOR 16)	ITEM CODE NO. (SOR 16)	DESCRIPTION	UNIT	Quantity	RATE including material	AMOUNT including material
11	53	9.10	KSRB 9.4-1: Providing wood frames of doors, windows, clerestory windows, ventilators and other frames, wrought, framed or assembled including making plaster grooves (excluding cost of cement concrete and side clamps) but including cost of materials, labour, HOM of machinery complete as per specifications	Cum	4.00	187663.00	750652.00
12	65	9.106	Providing and fixing flush door shutters made out of solid core black board type, well seasoned chemically treated hard wood battens and internal frame with minimum 45mm wide wooden frame all-round door shutters covered with cross bonded wooden sheets (core veneer) hot pressed and fastened on both sides of the door using liquid phenol formaldehyde resin as per IS specification : 2202 (Part I) 1991. From manufacturer (Factory) complete as per specification.				
	65	9.106.6	35 mm thick both side commercial, including ISI marked Stainless Steel butt hinges with necessary screws	Sqm	26.00	2550.00	66300.00
13	35	7.11	KSRB 7.10.2: Providing and fixing aluminium windows and ventilator as per approved drawing with sliding shutters using three track frame section of size 61.85x31.75mm with 1.2 mm thick bottom section section weight 0.695 kg/m, sides and top sections 1.3 mm thick weight 0.659 kg/m, and shutter comprising				
		7.11.2	Using aluminium section powder coated to a minimum of 60-70 microns with exterior durable polyster grade powder of approved quality.	Sqm	21.00	4473.00	93933.00
14	115	15.14	KSRB 15-3.6 : Providing 15 mm thick cement plaster in single coat with cement mortar 1:6, to brick masonry including rounding off corners wherever required smooth rendering, : Providing and removing scaffolding, including the cost of materials, labour, curing complete as per specifications.				
		15.14	Cement mortar 1:6	Sqm	318.00	204.00	64872.00

ITEM NO.	Page No. (SOR 16)	ITEM CODE NO. (SOR 16)	DESCRIPTION	UNIT	Quantity	RATE including material	AMOUNT including material
15	115	15.11	KSRB 15-3.3 : Providing 12 mm thick cement plaster in single coat with cement mortar 1:6, to brick masonry including rounding off corners wherever required smooth rendering, : Providing and removing scaffolding, including the cost of materials, labour, curing complete as per specifications.				
			Cement mortar 1:6	Sqm	259.00	190.00	49210.00
16	34	7.9	KSRB 7.9: Providing and fixing MS grill work for windows and ventilators using M.S. flats, or M.S. square rods, or combination of M.S. flats and square rods as per approved design, drawing including cutting steel sections and welding the same to required pattern with a coat of red lead primer, cost of materials, fixtures, labour, HOM of machinery complete as per specification.	Kg	897.75	95.00	85286.25
17	119	15.49	KSRB 15-14.1: Providing and applying two or more coats with oil bound washable distemper of approved brand and shade on wall surface including priming coat with distemper primer after thoroughly brooming the surface free from mortar drops and other foreign matter including preparing the surface even and sand paper smooth, cost of materials, labour, complete as per specifications	Sqm	945.00	110.00	103950.00
18	230	DSR-2018 13.26	Providing and applying plaster of paris putty of 2 mm thickness over plastered surface to prepare the surface even and smooth complete	Sqm	945.00	196.70	185881.50
19	120	15.53	KSRB 15-16.1: Providing and finishing external wall in two or more coats with water proof cement paint of approved brand and shade on wall surface including priming coat with distemper primer after thoroughly brooming the surface free from mortar drops and other foreign matter including preparing the surface even and sand paper smooth, cost of materials, labour, complete as per specifications.				
		15.53.2	With primer	Sqm	737.00	102.00	75174.00

ITEM NO.	Page No. (SOR 16)	ITEM CODE NO. (SOR 16)	DESCRIPTION	UNIT	Quantity	RATE including material	AMOUNT including material
21	121	15.60.1	Providing and Applying painting two or more coats on new wood surface and wood /steel based surface with enamel paint to give an even shade, cleaning the surface of all dirt, dust and foreign matter, sand papering including cost of materials, labour, complete as per specifications.	Sqm	145.00	97.00	14065.00
22	159	9.96 DSR-2018	Providing and fixing aluminium sliding door bolts, ISI marked anodised (anodic coating not less than grade AC 10 as per IS : 1868), transparent or dyed to required colour or shade, with nuts and screws etc. complete				
		9.96.1	300x16 mm	Each	10.00	257.15	2571.50

ITEM NO.	Page No. (SOR 16)	ITEM CODE NO. (SOR 16)	DESCRIPTION	UNIT	Quantity	RATE including material	AMOUNT including material
23	159	9.97 DSR-2018	Providing and fixing aluminium tower bolts, ISI marked, anodised (anodic coating not less than grade AC 10 as per IS : 1868) transparent or dyed to required colour or shade, with necessary screws etc. Complete.				
		9.97.2	250x10 mm	Each	10.00	103.55	1035.50
24	160	9.100 DSR-2018	Providing and fixing aluminium handles, ISI marked, anodised (anodic coating not less than grade AC 10 as per IS : 1868) transparent or dyed to required colour or shade, with necessary screws etc. complete :				
		9.100.1	125 mm	Each	20.00	59.65	1193.00
25	218	12.50 DSR-2018	Providing and fixing precoated galvanised iron profile sheets (size, shape and pitch of corrugation as approved by Engineer-in-charge) 0.50 mm (+ 0.05 %) total coated thickness with zinc coating 120 grams per sqm as per IS: 277, in 240 mpa steel grade, 5-7 microns epoxy primer on both side of the sheet and polyester top coat 15-18 microns. Sheet should have protective guard film of 25 microns minimum to avoid scratches during transportation and should be supplied in single length upto 12 metre or as desired by Engineer-in- charge. The sheet shall be fixed using self drilling /self tapping screws of size (5.5x 55 mm) with EPDM seal, complete upto any pitch in horizontal/ vertical or curved surfaces, excluding the cost of purlins, rafters and trusses and including cutting to size and shape wherever required.	Sqm	732.00	627.55	4,59,366.60
						Total	2467847.95
sd/- AGM(Civil)						sd/- Dy. Manager(Civil)	

Renovation, Up-gradation and face lifting of existing community hall at Narsinghapura village

Measurement Sheet

ITEM NO.	DESCRIPTION	No.	Length	Breadth/ Width	Height/ Depth	Quantity	Net quantity	Unit
1	Earth work excavation for foundation of building, water supply sainatory lines and electrical conduits either in pits or in trenches 1.5m and above in width, in hard soil not exceeding 1.5m in depth including dressing the bottom and sides of pits and trenches, stacking the excavator soil clear from edges of excavation with lead upto 50m after breaking of clods complete as per specification. Ordinary soil.							
	For building earth work L/S	1	10.20	0.80	0.50	4.08		
					Total	4.08	5.00	Cum
2	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering - All work up to plinth level :							
	1:4:8 (1 Cement: 4 coarse sand : 8 graded local stone aggregate 40 mm nominal size.							
	For building earth work L/S	1	10.20	1.20	0.10	1.22		
					Total	1.22	2.00	Cum
4	RCC work footings of Column 1:2:4							
	bases of columns footings	10	0.45	0.45	0.60	1.22		
					Total	1.22	2.00	Cum
5	Providing fixing of C C Block masonry							
	For Buildings repairing works	1	10.00	0.20	0.90	1.80		
	For Buildings parapet	2	10.25	0.20	0.50	2.05		
	Compund wall	1	50.00	0.20	0.60	6.00		
					Total	9.85	10.00	Cum
6	Providing and removing centering , shuttering, strutting, propping etc, and removal of form work for foundation, footings, base of columns for mass concrete including cost of all material, labour complete as per specification.							
	bases of columns footings	30	0.90		0.60	16.20		
					Total	16.20	17.00	sqm
7	Reinfrcement for RCC work							
	For item No. -4	1	2.00	`@80Kg		160.00		
					Total	160.00	160.00	Kg
8	Flooring with tiles							
	Hall	1	30.30	11.40		345.42		
	Door pasage	10	1.20	0.30		3.60		
	Chabutara	2	3.80	1.00		7.60		
	Chabutara	2	5.90	1.00		11.80		
	inside room	2	4.80	1.80		17.28		
	inside room	1	8.80	3.00		26.40		
	Hall	2	30.30		0.20	12.12		
		2	11.40		0.20	4.56		
	Door	-5	1.20		0.20	-1.20		
	inside room	4	4.80		0.20	3.84		
		4	1.80		0.20	1.44		
	inside room	2	8.80		0.20	3.52		
		245	3.00		0.20	1.20		

ITEM NO.	DESCRIPTION	No.	Length	Breadth/ Width	Height/ Depth	Quantity	Net quantity	Unit
					Total	437.58	438.00	Sqm
10	Dismatling of door windows							
	Door	10	1.20	2.10	`@25	630.00		
	Windows	12	1.40	1.20	`@26	504.00		
						1.13	2.00	Kg
11	KSRB 9.4-1: Providing wood frames of doors, windows, clerestory windows, ventilators and other frames, wrought, framed or assembled including making plaster groves (excluding cost of cement concrete and side clamps) but including cost of materials, labour, HOM of machinery complete as per specifications.							
	Door (10)	20	2.10	0.100	0.10	0.42		
		20	1.20	0.100	1.10	2.64		
					Total	3.06	4.00	Cum
12	Providing and fixing flush door shutters made out of solid core black board type, well seasoned chemically treated hard wood battens and internal frame with minimum 45mm wide wooden frame all round door shutters covered with cross bonded							
	Door	10	1.20		2.10	25.20		
					Total	25.20	26.00	Sqm
13	KSRB 7.10.2: Providing and fixing aluminium windows and ventilator as per approved drawing with sliding shutters using tripple track frame section of size 61.85x31.75mm with 1.2 mm thick. Bottom section.....							
	Aluminium Windows	12	1.40		1.20	20.16		
					Total	20.16	21.00	Sqm

ITEM NO.	DESCRIPTION	No.	Length	Breadth/ Width	Height/ Depth	Quantity	Net quantity	Unit
14	KSRB 15-3.6 : Providing 15 mm thick cement plaster in single coat with cement mortar 1:6, to brick masonry including rounding off corners wherever required smooth rendering, : Providing and removing scaffolding, including the cost of materials, labour, curing complete as per specifications.							
	Outer side	2	35.00		3.50	245.00		
		2	13.50		3.50	94.50		
	Deductions Main door D	-5	1.20		2.00	-12.00		
	Windows	-6	1.40		1.20	-10.08		
					Total	317.42	318.00	Sqm
15	KSRB 15-3.3 : Providing 12 mm thick cement plaster in single coat with cement mortar 1:6, to brick masonry including rounding off corners wherever required smooth rendering, : Providing and removing scaffolding, including the cost of materials, labour, curing complete as per specifications.							
	Inside	2	30.30		3.50	212.10		
		2	10.00		3.50	70.00		
	Deductions Main door D	-5	1.20		2.10	-12.60		
	Windows	-6	1.50		1.20	-10.80		
					Total	258.70	259.00	Sqm
16	KSRB 7.9: Providing and fixing MS grill work for windows and ventilators using M.S. flats, or M.S. square rods, or combination of M.S. flats and square rods as per approved design, drawing including cutting steel sections and welding the same to required pattern with a coat of red lead primer, cost of materials, fixtures, labour, HOM of machinery complete as per specification.							
	For windows	12	1.40		1.20	`@25kg/sqm	504.00	
	For grills gate	1	35.00		0.45	`@25kg/sqm	393.75	
						Total	897.75	Kg
17	KSRB 15-14.1: Providing and applying two or more coats with oil bound washable distemper of approved brand and shade on wall surface including priming coat with distemper primer after thoroughly brooming the surface free from mortar drops and other foreign matter including preparing the surface even and sand paper smooth, cost of materials, labour, complete as per specifications.							
	Inside	2	30.30		3.20	193.92		
	Gable wall	2	11.40		3.20	72.96		
	Top	1	30.30	11.40		345.42		
		2	11.40		2.93	66.69		
	Deductions Main door D	-5	1.20		2.10	-12.60		
	Windows	-6	1.50		1.20	-10.80		
	inside room	2	4.80		3.00	28.80		
		2	4.80		2.40	23.04		
		247	1.80		2.70	19.44		

ITEM NO.	DESCRIPTION	No.	Length	Breadth/ Width	Height/ Depth	Quantity	Net quantity	Unit
		4	8.80		3.20	112.64		
		2	3.00		3.20	19.20		
		2	8.80		5.13	90.20		
	Deductions Main door D	-1	1.20		2.10	-2.52		
	Windows	-1	1.40		1.20	-1.68		
					Total	944.71	945.00	Sqm
19	Providing fixing putty in internal wall							
	Same qty of distemper items	1	945.00				945.00	Sqm
20	KSRB 15-16.1: Providing and finishing external wall in two or more coats with water proof cement paint of approved brand and shade on wall surface including priming coat with distemper primer after thoroughly brooming the surface free from mortar drops and other foreign matter including preparing the surface even and sand paper smooth, cost of materials, labour, complete as per specifications							
	With primer							
	Outer side	2	35.50		4.40	312.40		
	Gable wall	2	13.50		4.40	118.80		
		2	13.50		2.93	78.98		
	Deductions Main door D	-5	1.20		2.10	-12.60		
	Windows	-6	1.50		1.20	-10.80		
	Compound wall	2	50.00		2.50	250.00		
					Total	736.78	737.00	Sqm
21	KSRB 15-17.6: Providing and applying painting two coats (excluding priming coat) on new wood surface and/or wood based surface with enamel paint to give an even shade, cleaning the surface of all dirt, dust and foreign matter, sand papering including cost of materials, labour, complete as per specifications							
	Doors	12	1.20		2.10	30.24		
	Grill	12	1.40		1.20	20.16		
	windows	2.4	1.40		1.20	4.03		
	outer grill	2	35.00		0.90	63.00		
		2	13.50		0.90	24.30		
	gate	1	2.00		1.50	3.00		
					Total	144.73	145.00	Sqm
22	Providing and fixing aluminium sliding door bolts, ISI marked anodised (anodic coating not less than grade AC 10 as per IS : 1868), transparent or dyed to required colour or shade, with nuts and screws etc. complete							
	For Doors							
	300x16mm	10				10.00		
					Total	10.00	10.00	Each
23	Providing and fixing aluminium tower bolts, ISI marked, anodised (anodic coating not less than grade AC 10 as per IS : 1868) transparent or dyed to required colour or shade, with necessary screws etc. Complete.							
	For Doors							

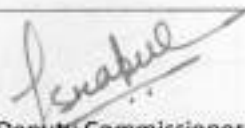
ITEM NO.	DESCRIPTION	No.	Length	Breadth/ Width	Height/ Depth	Quantity	Net quantity	Unit
	250x10mm	10				10.00		
					Total	10.00	10.00	Each
24	Providing and fixing aluminium handles, ISI marked, anodised (anodic coating not less than grade AC 10 as per IS : 1868) transparent or dyed to required colour or shade, with necessary screws etc. complete :							
	For Doors							
	125.00	20				20.00		
					Total	20.00	20.00	Each
25	Providing fixing Coloured coated sheet							
	Hall	1	33.00	13.50		445.50		
	Veramdah	2	35.00	2.50		175.00		
		2	13.50	2.50		67.50		
	inside room	2	4.80	1.80		17.28		
		1	8.80	3.00		26.40		
					Total	731.68	732.00	Sqm

Annexure 6

CSR PROPOSAL DETAILS FOR 2020-21(Ballari District)

Sl no	Focus area	
1	- o Education - o Drinking water - o Health and hygiene - o Infrastructure - o Integrated village development - o Skill development and income generation /or items under schedule VII of companies act 2013	Infrastructure
2.	Title of the proposal	Auditorium construction at Yeshwanthanagar village in Sandur taluk
3.	Aim and objectives of the proposal	Would create a space for holding official meetings and emergency gatherings in Yeshwanthanagar village
4	Why needed(justification in terms of of expected /benefits/outcomes or targets)	1. Would serve the purpose of facilitating meetings and other official gatherings in yeshwanthanagar village 2. Would host cultural events and promote local artists 3. Would conduct official functions .
5	Type of work(new/old/purchase/others)	New
6	Nature of work - o Social engineering project - o Infrastructure development - o Operation and management of existing institution - o Others incl.events (please specify)	Infrastructure development
7	Location District ,Block,Village/Gram Panchayat and complete address, land mark	Ballari district, Yeshwanthanagar village, Sandur taluk
8	Details of infrastructure / proposal - o Type of construction ,built up area (or measurement/dimensions)etc in case of infrastructure projects - o For social engineering works-nature of resources being deployed in terms of manpower/material etc and nature, tenure and terms of their engagement/deployment - o Operation and maintenance, details with respect to engagement of services providers I.e, nature of engagement etc.	Infrastructure development. Would facilitate official meetings and promote cultural events by providing space

9	Estimated cost(please specify premium, if any)and allocation sought for	Rs. 120 Lakhs
10	Basis of estimate (SOR/PWD/CPWD etc for infrastructure works , market rates/DGS&D rate for purchase proposals and other criteria for other proposals if any)	PWD
11	Tentative/proposed duration of completion/ implementation	One year
12	Nature of fund requirement from NMDC - o Fully funded - o Partially funded (Note : if any other source of funding is there viz Govt funding/aid etc NMDC will not be funding for the initiative /activity)	Fully funded
13	Additional information if any(additional sheets may be attached including drawings, plans and other supporting documents based on need)	*****


Deputy Commissioner
Ballari

Note: if details are provided by implementing officer, endorsement of the district collector is required

- vii Project proponent should prepare the EMP till lease validity and future extension and time bound, activity wise EMP along with budgetary provisions both recurring and capital needs to be submitted.**

The Environmental Management Plan covering various works is prepared and enclosed as **Annexure-1**.

The Kumaraswamy Iron Ore Mine is an existing project and various Environmental Pollution Control measures are in place. Further, the recommendations of ICFRE suggested in R&R plan are being implemented. The EMP covers various Engg structures such as Toe wall, garland drains for 4 no.s of waste dumps. Such structures have already been completed for waste dump no: 2 (AD-2) and are in progress for waste dump no. 1 (AD-1). Similar structures have also been planned for proposed waste dump no: 3 & 4. Geo-coir matting and seed broad casting shall be carried out on passive dumps. The various Engg. structures such as Loose boulder check dams (LB CD), Silt settling tanks, Stone masonry check dams, earthen check dams, rain water harvesting pits, gabion / wire crate check dams have also been undertaken for surface water management. The repair and maintenance and de-silting of material accumulated behind above structures shall be undertaken periodically. Progressive afforestation along with its maintenance is also being undertaken within KIOM ML. Soil management with grasses and geo-coir matting is also being done. Dust suppression system by means of water sprinkling tankers, fog / mist sprinkler system at primary crusher & down hill conveyor and fixed water sprinkling pipeline on the permanent haul roads is being implemented for effective dust suppression system. The EMP also covers continuation of post project environmental monitoring studies such as AAQ monitoring, fugitive dust monitoring, water quality & water flow studies, ambient and work zone noise level monitoring, soil quality, etc during all seasons in a year by engaging recognised laboratories of MoEF&CC / CPCB. The ground water levels and quality monitoring once in a season for four seasons in a year shall also be continued. The source monitoring studies and personal sampling studies for respirable dust and free silica analysis once in 6 months shall also be continued. The monitoring equipments such as Micro-meteorological station, Continuous Ambient Air Quality Monitoring Station, Personal noise dosi meter, mini mate instrument, high speed video camera for recording of blasting in slow motion and blasting software shall be procured. The evaluation of plantation programme shall be done once in 5 years by third party. The various Environmental awareness programmes shall be conducted every year for creating awareness among employees, stake holders, etc.

The lease is validity upto 17.10.2022. However, lease shall be extended as per Rule 3(2) of Mineral (Mining by Government Company) Rules 2015 for further period of 20 years. The extended lease period shall be valid upto 17.10.2042. the EMP is planned till 2042-43.

The details of expenditure under EMP till extended lease period shall be as follows:

- | | |
|--|-----|
| 1. Capital cost already incurred (till 2019-20) | Rs. |
| 1,880.60 lakhs | |
| (R&R works as per ICFRE report and DPR) | |
| 2. Capital cost (proposed) from 2020-21 to 2042-43 | Rs. |
| 7,001.89 lakhs | |
| 3. Recurring cost (proposed) from 2020-21 to 2042-43 | Rs. |
| 6,615.90 lakhs | |

ANNEXURE: 1																																																						
ENVIRONMENTAL MANAGEMENT PLAN - TIME BOUND & ACTIVITY WISE ALONG WITH BUDGETARY PROVISION BOTH CAPITAL & RECURRING AT KUMARASWAMY IRON ORE MINE (ML NO: 1111) OF NMDC LIMITED																																																						
				Amount in Rs. Lakhs (C- Capital & R-Recurring)																																																		
S No.	Description of EMP works			2019-20		2020-21		2021-22		2022-23		2023-24		2024-25		2025-26		2026-27		2027-28		2028-29		2029-30		2030-31		2031-32		2032-33		2033-34		2034-35		2035-36		2036-37		2037-38		2038-39		2039-40		2040-41		2041-42		2042-43				
				C/R	Amount as of now	C/R	Amount	C/R	Amount	C/R	Amount	C/R	Amount	C/R	Amount	C/R	Amount	C/R	Amount	C/R	Amount	C/R	Amount	C/R	Amount	C/R	Amount	C/R	Amount	C/R	Amount	C/R	Amount	C/R	Amount	C/R	Amount	C/R	Amount	C/R	Amount	C/R	Amount	C/R	Amount	C/R	Amount	C/R	Amount					
1	Rehabilitation and Reclamation measures recommended by ICFRE	Engineering Structures for Waste dumps	Toe Wall at toe of Waste dumps	C	130.34	C	160.37	C	102.29	R	13.03	R	13.29	R	13.56	R	13.83	R	14.11	R	14.39	R	14.68	R	14.97	R	15.27	C	178.94	C	184.54	C	173.32	R	8.67	C	161.01	C	165.48	C	156.14	R	7.81	R	7.96	R	8.12	R	8.28	R	8.28			
			Garland Drains	C	18.3	C	9.89	C	5.62	R	1.83	R	1.87	R	1.90	R	1.94	R	1.98	R	2.02	R	2.06	R	2.10	R	2.14	C	14.02	C	14.45	C	13.26	R	0.66	C	12.60	C	12.95	C	12.26	R	0.61	R	0.63	R	0.64	R	0.65	R	0.65			
			Geo coir matting & seed broad casting, plantation on dumps	C	422.11	C	17.15	C	13.97	C	14.68	C	15.41	C	16.18	C	16.99	C	17.84	C	18.73	C	19.67	C	20.65	C	21.68	C	33.18	C	34.64	C	36.17	C	26.36	C	37.06	C	38.7	C	42.88	C	32.04	C	33.64	C	35.32	C	37.09	C	37.09			
		Engineering structures for Surface Water Management	Loose Boulder Check dams (LBKD)	As per ICFRE recommendation, this work will be carried out in the conceptual stage.																																				C	340.00	C	345.00	C	350.00	C	355.00	C	365.50					
			Silt Settling Tank (SST)	C	83.89	Repair and maintenance works shall starts from 2020-21 onwards	R	8.39	R	8.47	R	8.56	R	8.64	R	8.73	R	8.82	R	8.91	R	8.99	R	9.08	R	9.17	R	9.27	R	9.36	R	9.45	R	9.55	R	9.64	R	9.74	R	9.84	R	9.94	R	10.03	R	10.13	R	10.24	R	10.24				
			Check Dams for Nallah (LBKD)	C	82.92		R	8.29	R	8.37	R	8.46	R	8.54	R	8.63	R	8.71	R	8.80	R	8.89	R	8.98	R	9.07	R	9.16	R	9.25	R	9.34	R	9.44	R	9.53	R	9.63	R	9.72	R	9.82	R	9.92	R	10.02	R	10.12	R	10.12				
			Stone masonry check dam cement sand mortar(1:6)	C	160.14		R	16.01	R	16.17	R	16.34	R	16.50	R	16.66	R	16.83	R	17.00	R	17.17	R	17.34	R	17.51	R	17.69	R	17.87	R	18.04	R	18.23	R	18.41	R	18.59	R	18.78	R	18.97	R	19.16	R	19.35	R	19.54	R	19.54				
			Eartnen Check Dam	C	68.82		R	6.88	R	6.95	R	7.02	R	7.09	R	7.16	R	7.23	R	7.31	R	7.38	R	7.45	R	7.53	R	7.60	R	7.68	R	7.75	R	7.83	R	7.91	R	7.99	R	8.07	R	8.15	R	8.23	R	8.31	R	8.40	R	8.40				
			Rainwater Harvesting Pit	C	117.74		R	14.13	R	14.27	R	14.41	R	14.56	R	14.70	R	14.85	R	15.00	R	15.15	R	15.30	R	15.45	R	15.61	R	15.76	R	15.92	R	16.08	R	16.24	R	16.40	R	16.57	R	16.73	R	16.90	R	17.07	R	17.24	R	17.24				
			Gabion/ Wire Crate Check Dam	Proposed for 2020-21	C	282.18	R	28.22	R	28.50	R	28.79	R	29.07	R	29.36	R	29.66	R	29.95	R	30.25	R	30.56	R	30.86	R	31.17	R	31.48	R	31.80	R	32.11	R	32.44	R	32.76	R	33.09	R	33.42	R	33.75	R	34.09	R	34.43	R	34.43				
		Biological measures	Afforestation and maintenance within ML area	C	140.91	C	163.01	C	114.70	C	23.63	C	49.62	C	52.10	C	54.71	C	57.45	C	60.32	C	63.34	C	66.51	C	69.84	C	73.33	C	77.00	C	80.85	C	84.89	C	89.13	C	93.59	C	98.27	C	103.18	C	108.34	C	113.76	C	119.45	C	119.45			
			Soil Management with grasses/geo-coir matting	C	106	C	4.75	C	4.99	C	5.24	C	5.50	R	6.05	R	6.11	R	6.17	R	6.23	R	6.30	R	6.36	R	6.42	R	6.49	R	6.55	R	6.62	R	6.68	R	6.75	R	6.82	R	6.89	R	6.95	R	7.02	R	7.09	R	7.17	R	7.17			
2	Dust Suppression in the mine by means of water sprinkling tankers			C	278.9	C	260	R	20	R	23.00	R	25.00	R	28	R	30	R	33	R	35.00	R	37.00	R	40	C	270	R	40	R	45.00	R	47.00	R	50	R	53	R	55	R	57.00	R	60.00	R	65	R	70	R	20	R	20			
3	Fog / Mist sprinkler system at Primary crusher			C	200	C	71.5	R	5	R	6.00	R	7.00	R	8	R	9	R	10	R	11.00	R	11.00	R	11.5	C	60	R	12	R	13.00	R	13.50	R	14	R	14.5	R	15	R	15.00	R	16.00	R	16.5	R	17	R	20	R	20			
4	Fixed Water Sprinkling Pipelines on the permanent haul roads			C	11.5	C	40	R	2	R	2.50	R	3.00	R	3	C	25	R	4	R	4.50	R	5.00	R	5	C	30	R	5	R	5.50	R	6.00	R	6	R	6.5	C	35	R	7.00	R	7.50	R	7.5	R	7.5	R	8.5	R	8.8			
5	Environmental Monitoring & Evaluation		Post project Environmental monitoring studies such as AAQ, fugitive dust, Water quality, water flow, ambient noise levels, work zone noise levels, soil quality, etc during all seasons in a year by recognised laboratories	Env. Monitoring studies shallcarriedo ut all seasons in a year		R	27	R	29	R	30.00	R	31.00	R	32	R	33	R	34	R	35.00	R	36.00	R	38	R	39	R	40	R	40.00	R	41.00	R	42	R	43	R	43	R	43.00	R	44.00	R	44	R	45	R	46	R	46			
			Ground water levels and monitoring once in season for four seasons in a year			R	6.5	R	6.5	R	7.00	R	7.50	R	8	R	8.5	R	9	R	9.50	R	10.00	R	10	R	10	R	10.5	R	11.00	R	11.50	R	12	R	12.5	R	13	R	13.50	R	14.00	R	14.5	R	14.5	R	15	R	15			
			Source Monitoring studies and personal sampling studies for respirable dust and free silica once in 6 months every year			R	15	R	16	R	16.50	R	17.00	R	17.5	R	18	R	18.5	R	19.00	R	19.50	R	20	R	20	R	20	R	20.00	R	20.00	R	20	R	20	R	20.00	R	20.00	R	20	R	20	R	20	R	20					
			Monitoring equipments: Procurement of Micro-meteorological station, CAAQM station (1 no), Personal dosi meter, Mini mate instrument, high speed video camera (for recording of blasting in slow motion) and blasting software.		C	59	R	5	C	35	R	5.50	R	6.00	R	6.5	C	6.5	C	80	R	6.00	R	6.50	R	7	R	6.5	R	6.5	R	6.50	C	100.00	R	7.5	R	8	R	7.5	R	8.00	R	8.00	R	8.5	R	9	R	9	R	9		
			Evaluation of plantation programme by third party once in 5 years.					R	10									R	10																																			
6	Env. Management Awarenss		Celebration of MEMC week, WED, Ozone day, Earth day, etc.			R	5	R	5.5	R	6.00	R	6.50	R	7	R	7.5	R	8	R	8.50	R	9.00	R	9.5	R	10	R	10.5	R	11.00	R	11.50	R	12	R	12.5	R	13	R	13.50	R	14.00	R	14.5	R	15	R	15	R	15			
			Imparting training programme(s) on EMP, Sustainable development, Carbon foot print, water audit, energy audit, GRI reporting, IMS lead auditor, Internal auditor and Environmental awareness programmes through Training institute during LOP, MVT, etc.			R	30	R	31.5	R	33.00	R	34.50	R	36	R	37.5	R	39	R	41.00	R	42.50	R	44	R	45.5	R	47	R	48.50	R	50.00	R	51.5	R	53	R	54.5	R	56.00	R	57.50	R	59	R	60	R	60	R	60			
			Total Expenditure		1880.6		1097.354		483.99		270.66		306.76		320.2		353.83		429.15		358.16		370.38		384.3		695.96		597.95		609.08		703.03		435.5		633.72		668.65		645.5		828.62		850.09		881.91		841.10		851.90			
			Capital Cost Rs.in Lakhs				1008.854		276.57		43.55		70.53		68.28		103.2		155.29		79.05		83.01		87.16		451.52		299.47		310.63		403.6		111.25		299.8		345.72		309.55		475.22		486.98		499.08		511.54		522.04			
			RECURRING RS IN LAKHS				88.5		207.42		227.11		236.23		251.92		250.63		273.86		279.11		287.37		297.14		244.44		298.48		298.45		299.43		324.25		333.92		322.93		335.95		353.40		363.11		382.83		329.56		329.86			

- viii: **PP shall submit the activities and budgetary provision till the proposed lease validity under OHS**

The Occupational Health Centre is established at Project Hospital at Donimalai and the activities of the OHS is given below.

OCCUPATIONAL HEALTH SERVICES (OHS)

1) OHS Setup

- OHS centre consist of five rooms and a waiting area;
- Equipped with standardized equipment such as digital audiometer, Pulmonary Function test machine, File cabinet for medical records, weight machine, First Aid boxes; and
- Well trained OHS physician, Nurse, Audiologist.

2) Add on Hospital adjacent to OHS centre

- 50 bedded hospital with around 20 Doctors;
- Trained Disaster Management Team for emergency;
- Radiology department having digital X-ray machine;
- Well equipped laboratory having automatic cell counter, Biochemistry, Electrolyte analyzer;
- Medical Store and Pharmacy with adequate medicines;
- Two bedded well-equipped casualty with 24 hours highly qualified doctor availability;
- Indoor and Outdoor facility with qualified Doctors, Nurses and Para Medical staffs; and
- Dental department with standardized modern equipment;
- Eye refraction room with visiting Ophthalmologist twice weekly.

3) Objectives of OHS

- Prevention of occupational health disease.
- Promotion of health and safety at work place.
- Prevention of communicable and non communicable diseases.
- Health awareness and first aid training.
- Improvement of general nutrition and health.
- Promotion of stress-free life and psychosocial well being.

4) Activities of OHC

- Statutory medical examination for employees, casual labours, ICH workers, CISF Jawans.
- First aid training and replenishment of first aid items in the first aid stations in the mines, Plants and workshops.
- Medical evaluation of long absentees and high-risk patients.
- Annual medical examination of school children.
- Hazard Identification and Risk Analysis
- Injury Prevention by analyzing the injury statistics
- Communicating Notified Diseases
- Counselling on life style disorders and medical issues
- Organizing Health Awareness programs
- Counselling and treatment for substance abuse



OHS DOCTOR ROOM



PULMONARY FUNCTION TEST ROOM



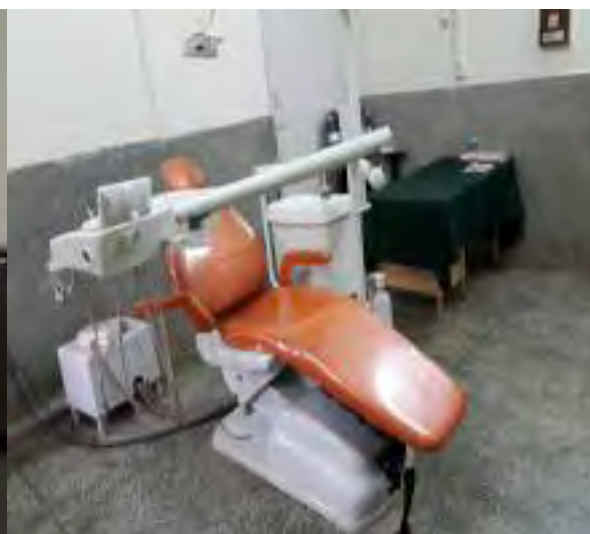
AUDIOMETRY ROOM



OHC NURSE ROOM



OPHTHALMOLOGY ROOM



DENTAL ROOM

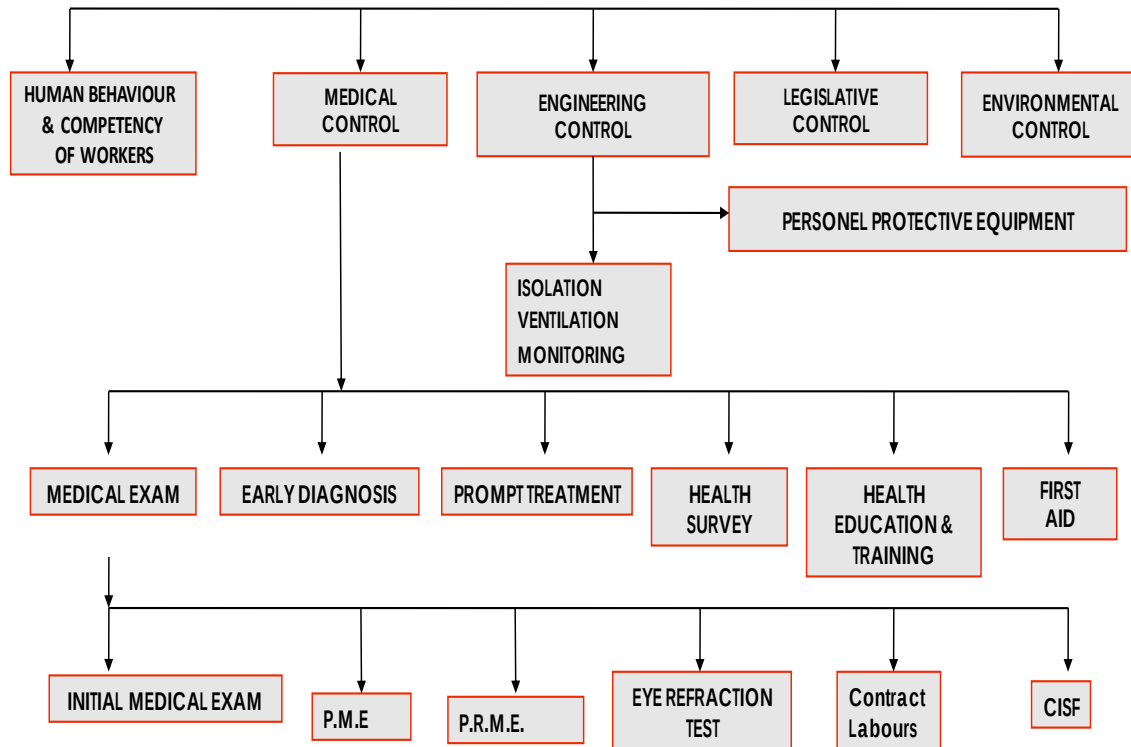


LABORATORY



LABORATORY

METHODOLOGY FOR PREVENTION & CONTROL OF OCCUPATIONAL DISEASES



5.0 IDENTIFIED OCCUPATIONL HEALTH HAZARDS AND MEASURES TAKEN THEREOF

a) DUST

Fine dust particles of size range 0.5 microns to 5 microns can enter lung parenchyma and cause an occupational disease called pneumoconiosis. The exposure levels should be 3mg/m³ for eight hours-time weighted average. Dust monitoring has been done by National Institute of Miners' Health at various sites of KIOM. (**Annexure 1**)

Measures taken to reduce dust level-

- Reducing the generation of dust at source and use of sprinklers for haul roads.
- Monitoring of dust at the work place.
- Educating the employees about dust hazard and use of PPE at work.

b) NOISE

Hearing defects may be caused due to exposure to excessive noise. {Above 85 to 90 dBA during 8 hrs. of work}. Report attached as **Annexure-2**.

Measures taken

- Reducing the exposure of persons to noise where ever possible.
- Audiometric test.

- Educating employees about noise hazard and to motivate them to use ear muffs or plugs.
- ENT physician has been appointed on regular basis.

c) POOR ILLUMINATION

Poor illumination can produce eye strain and abnormal movements of the eyeball (nystagmus) among the miners.

Measures taken-

- To provide adequate illumination at all work places.
- Annual eye refraction test for all drivers, HEM Operators in the mines along with eye refraction testing during periodical medical check-ups.
- Ophthalmologist has been appointed in the project hospital.

d) DERMATITIS

Workers handling oil and grease are prone for dermatitis.

Measures taken-

- Educating workers for use of gloves.
- Hygiene-washing of hands.
- Dermatologist has been appointed in the hospital to treat patients with dermatitis.

e) VIBRATION HAZARD

Long term vibration can affect the musculoskeletal and nervous system of the miners. Hence vibration study is important and is being regularly monitored. (**Annexure-3**)

f) STRESS

Stress at work place can cause diseases like Diabetes, hypertension and coronary artery disease.

Measures taken

- Blood tests like lipid profile, blood sugar, kidney function test, ECG have been included in PME and the health status is monitored.
- Health awareness programmes are conducted to relieve stress and bring lifestyle modification.

6) STANDARDS OF MEDICAL EXAMINATION AT OHC:-

PME is being conducted as per the standards laid in [form-P] and IME as per the standards of [form P-1] and the details are entered in form O of the Mines Rules – 1955 (Annexure 4)

- Detailed cardiovascular assessment of employees which includes 12 lead ECG and complete blood lipid profile along with clinical assessment of CVS.
- Detailed neurological examination including testing of reflexes and assessment of peripheral circulation.
- Clinical assessment of respiratory system along with Chest x-ray
- Audiometry
- Spirometry
- Vision test-distant vision, colour vision.
- Complete blood picture.

- FBS and PPBS.
- Serum urea creatinine.
- Eye refraction once a year for drivers and HEMM operators.
- For canteen workers SSSC test i.e skin, stool, sputum and chest x-ray. chest x- ray is done annually and stool and sputum test every 6 months.

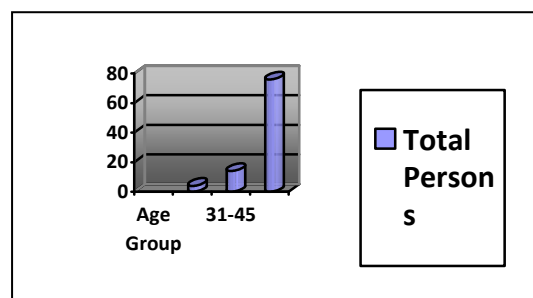
Health Statistics of employees based on PME Records for the month of February and March-2020

I. Age wise

Total number of employees examined =94

Age wise distribution of employees.

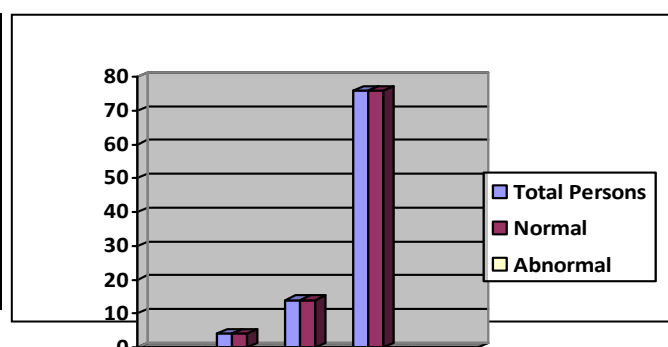
Age group	Total persons
8-30 Years	04
31-45 Years	14
46-60 Years	76
Total	94



Chest X-Ray Analysis based on age wise.

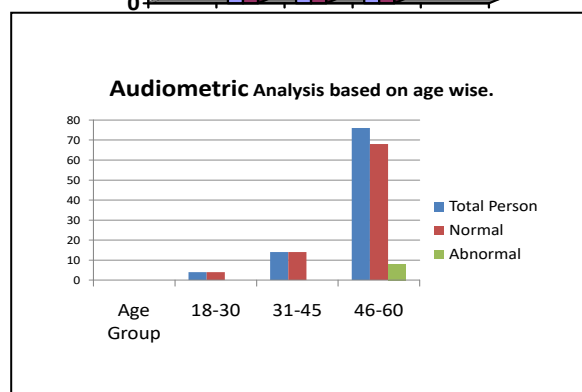
Chest X-Ray Analysis based on age wise.

Age group	Total persons	Normal	Abnormal
18-30 Years	04	04	Nil
31-45 Years	14	14	Nil
46-60 Years	76	76	Nil
Total	94	94	Nil



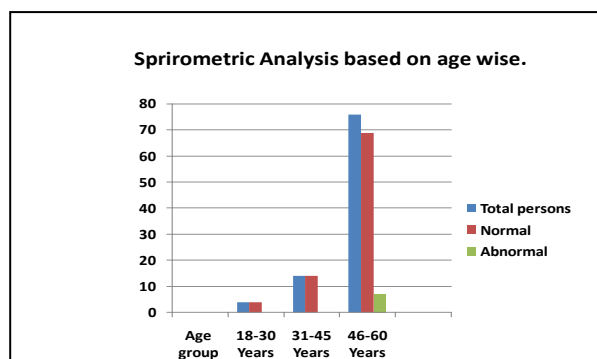
Audiometric Analysis based on age wise.

Age group	Total persons	Normal	Abnormal
18-30 Years	04	04	Nil
31-45 Years	14	14	Nil
46-60 Years	76	68	08
Total	94	86	08



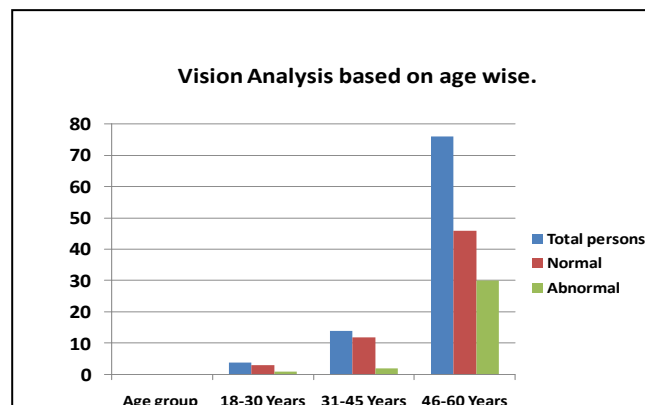
Spirometric Analysis based on age wise.

Age group	Total persons	Normal	Abnormal
18-30 Years	04	04	Nil
31-45 Years	14	14	Nil
46-60 Years	76	69	07
Total	94	87	07



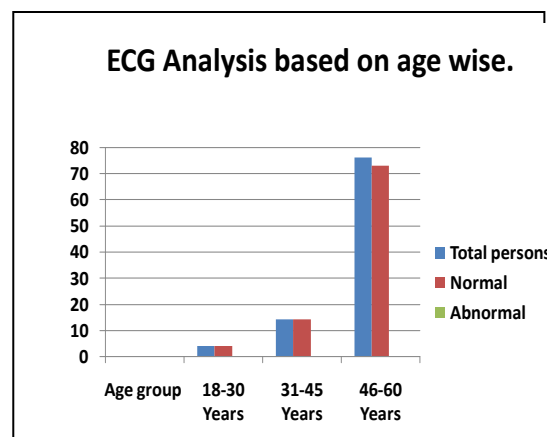
Vision Analysis based on age wise.

Age group	Total persons	Without Glasses	With Glasses
18-30 Years	04	03	01
31-45 Years	14	12	02
46-60 Years	76	46	30
Total	94	61	33



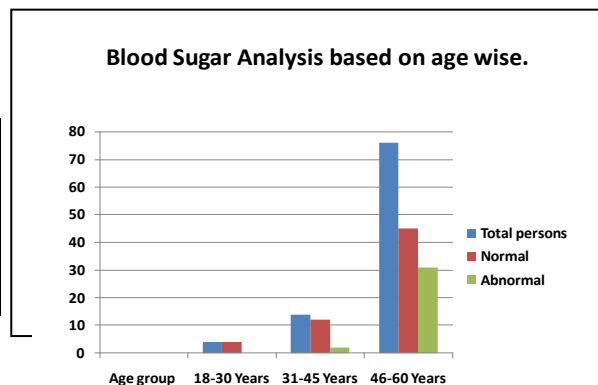
ECG Analysis based on age wise.

Age group	Total persons	Normal	Abnormal
18-30 Years	04	04	Nil
31-45 Years	14	14	Nil
46-60 Years	76	73	03 (With CAD)
Total	94	91	03



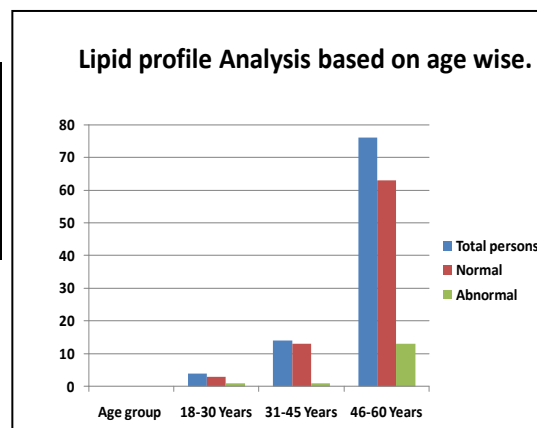
Blood Sugar Analysis based on age wise.

Age group	Total persons	Normal	Abnormal
18-30 Years	04	04	-
31-45 Years	14	12	02
46-60 Years	76	45	31
Total	94	61	33



Lipid profile Analysis based on age wise.

Age group	Total persons	Normal	Abnormal
18-30 Years	04	03	01
31-45 Years	14	13	01
46-60 Years	76	63	13
Total	94	89	15



II. Department wise

Total No. of persons: 94

Total No. of Department: 13

Department wise No. of persons

Department wise

Details	Total Persons
Mining	11
Materials	01
Pellet Plant	10
Mech plant	13
Mech Ser	14
Geology	08
Civil	09
Electrical Services	05
Electrical Plant	05
KIOM (Mining)	15
Chemical Lab	01
Production Sect	01
M&S	01
Total	94

Duration of work exposure

Years of Exposure	Total Persons	Normal	Abnormal
1-5 years	03	03	Nil
5-10 years	19	19	Nil
11-20 years	28	28	Nil
21-35 years	44	44	Nil

Department wise chest X-Ray

Details	Total Persons	Normal	Abnormal
Mining	11	Normal	-
Materials	01	Normal	-
Pellet Plant	10	Normal	-
Mech plant	13	Normal	-
Mech Ser	14	Normal	-
Geology	08	Normal	-
Civil	09	Normal	-
Ele Ser	05	Normal	-
Ele Plant	05	Normal	-
KIOM (Mining)	15	Normal	-
Chemical Lab	01	Normal	-
Production Sect	01	Normal	-
M&S	01	Normal	-

Department wise Audiometry

Details	Total Persons	Normal	Abnormal
Mining	11	08	03
Materials	01	01	00
Pellet Plant	10	10	00
Mech plant	13	11	02
Mech Ser	14	14	00
Geology	08	08	00
Civil	09	08	01
Ele Ser	05	05	00
Ele Plant	05	05	00
KIOM (Mining)	15	13	02
Chemical Lab	01	01	00
Production Sect	01	01	00
M&S	01	01	00

Department wise Spirometry

Details	Total Persons	Normal	Abnormal
Mining	11	10	01
Materials	01	01	00
Pellet Plant	10	10	00
Mech plant	13	13	00
Mech Ser	14	12	02
Geology	08	06	02
Civil	09	09	00
Ele Ser	05	05	00
Ele Plant	05	04	01
KIOM (Mining)	15	14	01
Chemical Lab	01	01	00
Production Sect	01	01	00
M&S	01	01	00

Department wise Vision

Details	Total Persons	Without glasses	With Glasses
Mining	11	06	05
Materials	01	01	00
Pellet Plant	10	04	06
Mech plant	13	07	06
Mech Ser	14	04	10
Geology	08	05	03
Civil	09	05	04
Ele Ser	05	04	01
Ele Plant	05	03	02
KIOM	15	15	00
Chemical Lab	01	01	00
Production Sect	01	00	01
M&S	01	00	01

Department wise ECG

Details	Total Persons	Normal	Abnormal
Mining	11	10	01
Materials	01	01	-
Pellet Plant	10	09	01
Mech plant	13	13	-
Mech Ser	14	14	-
Geology	08	08	-
Civil	09	09	-
Ele Ser	05	04	01
Ele Plant	05	05	-
KIOM	15	15	-
Chemical Lab	01	01	-
Production Sect	01	01	-
M&S	01	01	-

Department wise Blood Sugar

Details	Total Persons	Normal	Abnormal
Mining	11	08	03
Materials	01	00	01
Pellet Plant	10	05	05
Mech plant	13	07	06
Mech Ser	14	07	07
Geology	08	06	02
Civil	09	08	01
Ele Ser	05	03	02
Ele Plant	05	04	01
KIOM	15	08	07
Chemical Lab	01	01	00
Production Sect	01	00	01
M&S	01	01	00

Department wise Lipid Profile

Details	Total Persons	Normal	Abnormal
Mining	11	08	03
Materials	01	01	00
Pellet Plant	10	10	00
Mech plant	13	11	02
Mech Ser	14	12	02
Geology	08	07	01
Civil	09	07	02
Ele Ser	05	05	00
Ele Plant	05	03	02
KIOM	15	14	01
Chemical Lab	01	00	01
Production Sect	01	01	00
M&S	01	00	01

7) Medical Programs Carried-out at Donimalai Complex

I. Anemia Survey Program (last 3 years details)

- Anemia survey program is carried out during medical camps at nearby villages for females between 14 – 45 years and the anemic females are supplemented with Fe capsules.

Dates of Periodical camps organized during 2018 – 2020 (till date):

26.10.2018	30.01.2019	27.02.2020
27.10.2018	31.01.2019	28.02.2020
05.12.2018	27.02.2019	29.02.2020
06.12.2018	28.02.2019	13.03.2020
14.03.2020	16.03.2020	

II. Counseling of tobacco users, smokers and alcoholics

- Based on the questionnaire supplied to the worker coming for medical examination, the OHC doctor counsels the worker to abstain from the use of tobacco, smoking and alcohol.

III. All food handlers, 26 in number from canteen were vaccinated with typhoid vaccine in the year 2018. As per the vaccine schedule, the food handlers will receive the next dose in this year.

8) Health Education and Safety awareness

OHS carry out following activities on regular basis around the year for spreading health awareness. Following are the initiatives taken up by Training, Safety and OHS department of Donimalai Complex:

- Mines Vocational Training & Line of Promotion (LOP) Classes,
- LOP classes includes – First aid, industrial hygiene, health awareness on non communicable diseases particularly hypertension and diabetes,
- Training about Medical Emergencies at Work Places.

Statutory Medical examinations including Initial Medical Examinations for trainees & contractual labor, Periodical Medical Examinations (PME), PRME for employees and SSSC tests for cooks of ICH are being conducted as per Mines Rules, 1955 and Recommendations of DGMS Safety Conferences.

Health Awareness programs have been planned by OHS, in order to provide adequate knowledge to the employees and CISF personnel so as to keep themselves fit and prevent themselves from the diseases/ disorders being generated through occupation.

Further, a workshop on "Occupational Health & Safety in Mines" has been organized at NMDC - Head Office, Hyderabad In co-ordination with Dornsife School of Public Health (Philadelphia), USA from 3rd December 2017 to 4th December 2017 and has been conducted Successfully, Dr. T.K. Joshi, Director, Centre for Health and Environment, LNJP Hospital, New Delhi and Dr. Arthur L. Frank, Professor, Environmental and Occupational Health, Dornsife School of Public Health, USA are the key speakers. The topics discussed in the workshop are regarding silicosis, pneumoconiosis, toxicology etc. Delegates from Singareni Collieries Company Limited (SCCL) and Neyveli Lignite India Ltd. have participated in the workshop. NMDC and SCCL doctors have presented the OHS Status and activities being undergone in their respective areas.

In addition, **a hospital management software** has been procured and is under installation in the hospital. This software will enable digital storage of medical records of the employees.

9) **Replenishment of First aid items at the identified first aid stations in the mines.**
There are total 10 stations in KIOM.

10) **Covid 19 awareness programmes are being conducted for both employees and contract workers.**

Covid 19 screening setup has been established with 4 isolation beds in the hospital and the patients with ILI and SARI symptoms are being referred to Sandur State Government fever clinic for further evaluation.

A quarantine center with 18 beds has also been setup in the township.

STATISTICS OF MEDICAL EXAMINATION
CONDUCTED FOR THE PAST 5YRS
FROM 2016 TO July 2020

Details	2016	2017	2018	2019	2020
P M E - WORKMEN	115	93	105	230	126
JO & EXECUTIVES	30	09	27	61	44
IME JO & EXECUTIVES	-	-	-	-	-
PRME				57	35
IME WORKMEN	44	-	-	-	-
TOTAL	189	102	132	348	205
IME OF CONTRACT LABOURERS (CL)	694 (KIOM-203)	725 (KIOM-288)	438 (KIOM-149)	484 (KIOM-217) (DIOM-267)	145 (KIOM-22) (DIOM-123)
PME CL	-	-	24(18+6) (DIOM18) (KIOM-6)	27 (DIOM-25) (KIOM -2)	21 (DIOM-16 KIOM-05)
TOTAL-CL	694	725	462	511	166
TOTAL	883	827	594	859	371
APP.TRAINEE	203	194	111	92	07
CISF	76	64	75	68	-
ICH	81	43	44	59	53
YASHODA STAFF				51	-
HOUSE KEEPING (HOSPITAL)				34	-
MED. FITNESS	01	11	10	10	04
TOTAL EXAMN DONE	1244	1139	834	1,163	430
EYE REFRACTION	203	210	206	229	-

INJURY ON DUTY REPORT FOR THE LAST 5 YEARS

Year	Reportable	Serious	Fatal
2016	Nil	Nil	1
2017	1	Nil	Nil
2018	1	Nil	Nil
2019	Nil	Nil	Nil
2020 (July 31 st)	1	1	Nil

Serious injuries were given immediate initial treatment at project hospital and then shifted to higher centre for further management.

**PLAN AND FUND ALLOCATION TO ENSURE THE OCCUPATIONAL
HEALTH AND SAFETY OF WORKERS**

A. Statutory Medical examinations including Initial Medical Examinations for trainees & contractual labour, Periodical Medical Examinations for employees and Stool tests for cooks of ICH shall be conducted as per Mines Rules, 1955 and Recommendations of DGMS Safety Conferences.

Details	Number	Cost (Rs.)
Statutory Periodical Medical Examination of Employees	300	6,00,000
Statutory Pre-retirement Medical Examination of Employees	50	1,00,000
Statutory Initial Medical Examination of Trainees	100	1,00,000
Statutory Medical examination of CISF personnel	80	8,00,000
Statutory Initial Medical Examination of Contractual Labour	500	10,00,000
Cooks of Indian Coffee House	62	15,500
Hospital staff medical examination	100	2,00,000
Total Amount		28,15,500

B. Eye Refraction Test of Employees, Donimalai Complex

Eye refraction tests for the drivers and the operators involved in operating HEMM shall be conducted in compliance of the Recommendations of DGMS Safety Conferences.

Project	2020 (Numbers)	Cost (Rs.)
DIOM, Donimalai	230	25,000

C. Issue of personal protective equipments for prevention of occupational diseases.

Personal protective equipments will be issued in compliance of MMR, 1961 for prevention of employees, contractual labour and CISF personnel from occupational diseases.

Safety Equipments	Number	Cost (Rs.)
Ear Plugs	3000	21,920
Dust Respirators	3200	94,280
Total		1,16,200

D. In-house OHS programmes on health awareness by internal faculty

Health Awareness programmes have been planned by OHS, Donimalai in order to provide adequate knowledge to the employees and CISF personnel so as to keep themselves fit and prevent themselves from the diseases/ disorders being generated through occupation.

Sr. No.	Description	No. Of programs	No. of participants	cost (Rs.)
1.	Awareness Programme for employees on dengue	1	50	15,500
2.	Awareness Programme for employees on Hypertension	1	50	15,500
3.	Awareness Programme for employees on Tobacco and Nicotine	1	50	15,500
4.	Awareness Programme for employees on Heart disease	1	50	15,500
5.	Awareness Programme for employees on	1	50	15,500

Sr. No.	Description	No. Of programs	No. of participants	cost (Rs.)
	Diabetes			
6.	Awareness Programme for employees on Life style	1	50	15,500
7.	Awareness programme for CISF persons on Life style and HIV	3	60	20,000
8.	Workshop on Life style disorders	1	50	15,500
9.	Programme for Absentee employees	1	30	8,000
10.	Training Programme for chronic alcoholic employees	1	25	7,500
11.	Course on Stress free life for employees	1	50	15,000
	Total Amount			1,59,000

E.OHS Programme on life style by external faculty for 2020-21

Sr. No.	Description of course	Cost (Rs.)
1.	Course on Living Values	50,000
2.	Behavioral changes and stress free life	50,000
	Total	1,00,000

F.OHC Equipments with accessories

Sr.No.	Equipment Description	Cost
1	Digital Audiometry	600,000
2	Digital Spirometry	650,000
	Total Amount	12,50,000

G. First Aid Boxes with First Aid items, Stretchers

Cost – Rs. 3,00,000

Annual plan for fund allocation amounts to Rs 47,65,700 (A+B+C+D+E+F+G) say Rs.50.00 lakhs.

The lease is validity upto 17.10.2022. However, lease shall be extended as per Rule 3(2) of Mineral (Mining by Government Company) Rules 2015 for further period of 20 years. The extended lease period shall be valid upto 17.10.2042.

The fund allocation upto the year 2042-43 based on the above annual budget and considering escalation @ 5% every year works out Rs.2073.30 lakhs (Rs.20.733 Crores).

REPORT OF WORKPLACE MONITORING STUDIES

PRO 0245/20

NATIONAL INSTITUTE OF MINERS' HEALTH

JNARDDC CAMPUS, AMRAVATI ROAD,

KUMARASWAMY IRON ORE MINES, DONIMALAI COMPLEX

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MARCH - 2020



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CONCLUSIONS AND RECOMMENDATIONS

The purpose of the study was to carry out workplace monitoring studies involving Airborne Respirable Dust, Noise, Vibration and Noise mapping studies at the KIOM, Donimalai Complex, NMDC Ltd., so as to determine compliance with the provisions of Regulation 124 of MMR, 1961 under The Mines Act, 1952 and the Recommendations of the Safety Conferences for Mines.

Dust monitoring

Overall, it was observed that the 8 hours of Time Weighted Average permissible limit for respirable dust was within the limits prescribed by DGMS, i.e. 3 mg/m³ (as per MMR 124). It is recommended that all operators including those whose dust exposure limit is below the permissible limit should wear PPE and their cabin and windows be tightly closed to reduce dust exposure. In case of area locations continuous water sprinkling should be encouraged to reduce dust generation.

Of the samples analyzed for free silica (SiO₂) content by FTIR it was observed that all four samples reported presence of free silica. However, the same were less than 5% as prescribed by DGMS.

The positive effort on part of the mine management in controlling airborne respirable dust generation in the mine was evident from the study results and other environmental management initiatives. It is recommended that such efforts along with regular monitoring should continue in the mines.

Other recommendations for dust suppression

- All operators should wear protective equipment.
- Cabin doors and windows should be tightly closed as this would help reduce dust exposure.
- Continuous water sprinkling in the mines so as to help reduce dust generation at source.
- Water sprinkling on the haul road during dumper movement and near the HEMMs so as to maintain minimum dust levels at the mine as is currently observed.

Workplace Monitoring Studies at Kumaraswamy Iron Ore Mines, Donimalai Complex, NMDC Ltd.

National Institute of Miners` Health, Nagpur Page 82

Annexure 1 - Result of Respirable Air-Borne Dust Survey (Personal samples)

Name of the Instrument: SideKick-51MTX; Name of the Mine: KIOM, Donimalai Complex, NMDC Ltd.; Name of the District/Panel/Section: NA Balance details: Serial No. - D460020225, Type – AUW 220D, Make – Shimadzu Corporation, Accuracy- 0.001 1

Sl.	2	3	4	5	6	7	8	9
Sl.	Date	Location of Sampler	Sl. No. of filter Paper With sample ID	Initial Wt. of Filter Paper (mg)	Final Wt. of Filter Paper (mg)	Diff. In wt. (mg) (6) –(5)	Sampling Time (min)	Flow Rate of the instrument(Ltr/ min)
1.	17.03.2020	Vicinity of mine office B-Block	24 NMDC AD1	12.68	13.08	0.4	430	2.2
2.	18.03.2020	Vicinity of Control Room C-Block	5 NMDCAD2	13.25	14.03	0.78	345	2.2
3.	18.03.2020	Vicinity of C2 Weighbridge B-Block	4 NMDCAD3	13.04	13.34	0.3	365	2.2
4.	18.03.2020	1066RL Haul Road, Near View Point C-Block	48 NMDCAD4	12.16	12.87	0.71	330	2.2
5.	18.03.2020	Vicinity of Shovel BHS8, 1066MRL, C-Block	1 NMDCAD5	12.28	12.84	0.56	335	2.2

Sl.	Date	Location of Sampler	Sl. No. of filter Paper With sample ID	10	11	12	13	14
Sl.	Date	Location of Sampler	Sl. No. of filter Paper With sample ID	Vol. of air m3 (8)x(9) 1000	Dust Conc. mg/m3	8 Hrs. TWA mg/m3 (11)x(8) 480	Work Duration (min)	Remarks
1.	17.03.2020	Vicinity of mine office B-Block	24 NMDC AD1	0.95	0.42	0.38	480	OK
2.	18.03.2020	Vicinity of Control Room C-Block	5 NMDCA D2	0.76	1.03	0.74	480	OK
3.	18.03.2020	Vicinity of C2 Weighbridge B-Block	4 NMDCA D3	0.80	0.37	0.28	480	OK
4.	18.03.2020	1066RL Haul Road, Near View Point C-Block	48 NMDCA D4	0.73	0.98	0.67	480	OK
5.	18.03.2020	Vicinity of Shovel BHS8, 1066MRL, C-Block	1 NMDCA D5	0.74	0.76	0.53	480	OK

Area Noise Monitoring

Area noise monitoring studies were carried out at eleven (11) locations at the KIOM, Donimalai complex, NMDC Ltd.

Overall it was observed that all the readings taken around the excavator-1, Mining field office, dumper 2B, control room area and garage area etc. from C-block and mine office, excavator-1, transfer house-2 and wheel loader 950L etc. from B-block were found to be within the Warning Limit of 85 dB(A) prescribed by DGMS. Whereas for the Wagon drill shakti-100 (B-block) within 5 meter & 10 meter of its working zone L_{eq} value exceeded the permissible limit of 85 dB(A) but below the Danger Limit of 90 dB(A) as prescribed by the DGMS and for drill BD-8 (C-block) within 10 meter and 15 meter of its working zone L_{eq} value exceeded the permissible limit of 85 dB(A) but below the Danger Limit of 90 dB(A) as prescribed by the DGMS.

However, rest of the readings taken around these two machines from 15 meter and 20meter respectively were well within the permissible limit of 85 dB(A) as prescribed by DGMS. Employees working in the periphery of HEMMs should wear PPE to avoid noise exposure.

Personal Noise Monitoring

Personal noise monitoring studies over an entire working shift were also conducted on sixteen (16) personnel working in the KIOM, Donimalai complex, NMDC Ltd.

Though the personal noise monitoring, it was observed that for nine (09) operators i.e. operators of Tipper no 5464, Excavator-1, Tipper no. 5463, Shovel BSH-8, C2 weigh bridge, Drill BD-8, Wheel loader FEL-2 and Dumper no. 5B from C-block and operator of Wheel loader 950L from B-block, the projected time weighted average (TWA8) observed to be well within the warning limit of 85 dB(A) as prescribed by the DGMS. Similarly, for two (02) operators i.e. operator of Dumper no. 3B and Dumper no. 5B etc. from C-block, the projected time weighted average (TWA8) observed to be exceeded the warning limit value of 85 dB(A) but below the Danger Limit of 90 dB(A) as prescribed by the DGMS. The TWA8 for five (5) operators i.e. operator of Shovel BHS-8, Wheel dozer 3B and Block In-charge from C-block and operator of Excavator-1 and Excavator-2 from B-block, exceeds the danger limit value of 90 dB(A) as prescribed by the DGMS. Workplace Monitoring Studies at Kumaraswamy Iron Ore Mines, Donimalai Complex, NMDC Ltd.

- Measures such as use of Personal Protective Equipment (PPE) are recommended for the miners at KIOM.
- Provision of better isolation and sound proofing to the cabins of the HEMMs can also help to reduce noise exposure.

Noise Mapping

Wheel Loader FEL 2, WA-800, Komatsu make, C-Block

- Based on the data collected, noise map for Wheel Loader FEL-2 operating at 1018 RL in C-Block was generated using Harmonoise calculation method.
- Noise contour near the Wheel Loader influenced by the continuous movement of dumpers in addition to the workings of the wheel loader were found to be 80-75 dB (A) forming irregular contour, which is below the warning limit of 85 dB(A) as prescribed by DGMS.
- On movement away from the Wheel Loader noise levels were observed to gradually decrease to 75-70 dB(A) along the path of the dumpers on haul road.
- Other than that, noise levels on haul road were observed to be 70-65 dB (A).
- Overall noise levels near the Wheel Loader and for the moving sources were below the warning limit value of 85 dB (A).

Shovel BHS-8, Tata Hitachi make, C-Block

- Based on the data collected, noise map for Shovel BHS-8, Tata Hitachi make operating at 1066 RL in C-Block was generated using Harmonoise calculation method.
- Noise contour near the Shovel BHS-8 influenced by the continuous movement of dumpers in addition to the workings of the wheel loader were found to be 80-75 dB (A) forming irregular contour, which is below the warning limit of 85 dB(A) as prescribed by DGMS.
- On movement away from the Shovel noise levels were observed to gradually decrease to 70-65 dB(A) along the path of the dumpers.
- Overall noise levels near the Shovel and for the moving sources working in its association were below the warning limit value of 85 dB (A).

Vibration studies

Mining Equipment (n=14):

- Following the WBV study amongst the fourteen (14) HEMMs studied at KIOM it was observed that two had x-axis, five had y-axis and seven had z-axis as the dominant axis of vibration.
- Considering the r.m.s. values of acceleration and corresponding duration of exposure, minimal health risks were observed for five HEMMs viz. (JCB M2881, excavator 2026, dumper HM3B, excavator 1 and drill BD8) and moderate health risks were observed for seven HEMMs viz. (wheel loader 950L, water tanker 4, shovel BHS8, wheel loader FEL2, dumper HM8A, dumper 6A and dumper 2B). High health risk was observed for two HEMMs viz. (tipper 4487 and wheel dozer 3).
- It was also observed that vibration signals from four HEMMs in this category had Crest Factor greater than 9. Further analysis showed that operator of excavator 2026 has minimal health risk to their operator, whereas operators of water tanker 4, wheel loader FEL2 and dumper 2B were reported moderate health risk.

FORM 'O'

(See rule 29F (2) and 29 (L))

Report of Medical Examination Under Rule 29B

(To be issued in triplicate)

Certificate No.

Certified that Shri. employed as in
 Mine. Form B No. has been examined for an initial/ periodical medical
 examination. He appears to be years of age. The findings of the examining authority are given in
 the attached sheet. It is considered that Shri.

- (a)* is medically fit for any employment in mines.
- (b)* is suffering from and is medically unfit for
 (i) any employment in mine, of
 (ii) any employment below ground, or
 (iii) any employment or work.....
- (c) is suffering from should get this disability cured/controlled and should be
 again examined within a period of Months. He will appear for re-examination
 with the result of test of* and the opinion of specialist from
 He may be permitted/not permitted to carry on his duties during this period.

Space for affixing
 passport size photo
 of candidate

Signature of the examining authority
 with seal

Place :

Date :

Name and designation in Block letters

* Delete whatever is not applicable.

* One copy of the certificate shall be handed over to the person concerned and another copy shall be sent
 to the manager of the mine concerned by registered post and the examining authority shall retain the third
 copy.

FORM 'O' Contd.

(Report of the Examining Authority)

(To be filled in for every medical examination whether initial or periodical or re-examination or after cure/ control of disability. Annexure to Certificate No..... as a result of medical examination on.....)

Identification Mark

Left Thumb impressoin of the candidate

1. General development : Good/Fair/Poor
2. Height :cms
3. Weight :kgs
4. Eyes :

- (i) Visual acuity - Distant Vision (with or without glasses)
Right eye..... Left eye.....
- (ii) any organic diseases of eyes
- (iii) Night blindness
- (iv) Colour blindness
- (v) Squint (to be tested in special cases) :

5. Ears :
(i) Hearing Right ear Left ear.....
- (ii) Any organic disease :

6. Respiratory System :
Chest measurement :
(i) After full inspiration.....Cms.
- (ii) After full expiration.....Cms.

7. Circulatory System :
Blood pressure :
Pulse :

8. Abdomen :
Tenderness :
Liver :
Spleen :
Tumor :

9. Nervous System :
History of fits or epilepsy :
Paralysis :
Mental health :

10. Locomotors System
11. Skin
12. Hernia
13. Hydrocele
14. Any other abnormality
15. Urine :
Reaction :
Albumin :
Sugar :

16. Ski gram of Chest
17. Any other test considered necessary by the examining authority
18. Any opinion of specialist considered necessary

Place :

INVESTIGATION REPORTS

HB% :
WBC :
N :
L :
E :
M :
PLC :
ESR :
FBS :
PPBS :
UREA :
CREAT :
T CHOLE :
HDL :
LDL :
VLDL :
TGL :
Chole/TGL Ratio :

URIC ACID :

B20-21 :

HBsAG :

VDRL :

BLOOD GROUP :

Signature of the examining authority
with seal

**Report of Medical Examination as per the recommendations of
National Safety Conferences in Mines**
(To be used in continuation with Form O)

Certificate No :

Name :

Identification Marks :

1. Cardiological Assessment

Auscultation	S1	
	S2	
	Additional Sound	
Electrocardiograph (12 leads) findings :		Normal / Abnormal

Enclosed ECG

2. Neurological Assessment

Findings	Normal / Abnormal
Superficial Reflexes	
Deep Reflexes	
Peripheral Circulation	
Vibrational Syndromes	

3. ILO Classification of Chest Radiograph :

Profusion of Pneumoconiotic Opacities	Grades	Types
Present / Absent		

Enclosed Chest Rediograph

4. Audiometry Findings :

Conduction Type	Left Ear	Right Ear
Ear Conduction	Normal / Abnormal	Normal / Abnormal
Bone Conduction	Normal / Abnormal	Normal / Abnormal

Enclosed Audiometry Report

5. Pathological / Microbiological Investigations :

Sl. No.	Tests	Findings
1.	Blood - Tc, Dc, Hb, ESR, Platelets	WNL / Abnormal
2.	Blood Sugar - Fasting & PP	WNL / Abnormal
3.	Lipid Profile	WNL / Abnormal
4.	Blood Urea, Creatinine	WNL / Abnormal
5.	Urine Routine	WNL / Abnormal
6.	Stool Routine	WNL / Abnormal

Enclosed Investigation Reports.

6. Special Tests for Mn exposure

Behavioral Disturbances		Present / Not Present
Neurological Disturbances	Speech Defect	Present / Not Present
	Tremor	Present / Not Present
	Adiadocokinesia	Present / Not Present
	Emotional Changes	Present / Not Present

7. Any other Special Test Required :

Signature of the Examination Authority

NMDC YASHODA AROGYAVARDHINI
DONIMALAI IORN ORE MINE
DEPARTMENT OF OCCUPATIONAL HEALTH SERVICES

Report of Medical Examination under Mine Rule 29 B

(To be used in continuation with Form "O")

Certificate No. : _____

Name : _____

Identification Mark : _____

Result of Lung Function Test (Spirometry) :

Parameters	Predicted Value	Performed Value	% of Predicted
Forced Vital Capacity (FVC)			
Forced Expiratory Volume (FEV1)			
FEV1/FVC			
Peak Expiratory Flow (PEF)			

Spirometry Report Enclosed

Signature

NMDC YASHODA AROGYAVARDHINI
DONIMALAI IORN ORE MINE
DEPARTMENT OF OCCUPATIONAL HEALTH SERVICES

Respiratory Surveillance Questionnaire

Sl. No.

Name		UEC No.	
Sex/Age	Male/Female/ _____ Yrs.	Designation	
Date		Department	

Please CIRCLE the answer that applies you.

Occupational history in mines :

Yrs.

01	Do you wear Respiratory protective Equipment (RPE)?	Yes	No
02	Do you have any concerns about the RPE that you wear ?	Yes	No
03	If yes, please give details :	Yes	No
04	Are you currently taking medicines	Yes	No
	If yes, please list them : (1) _____ (2) _____		
	(3) _____ (4) _____ (5) _____		
	(6) _____ (7) _____ (8) _____		
05	Have you had, or do you have, any of the following symptoms?		
5.1	Cough	Yes	No
5.2	Phlegm	Yes	No
5.3	Breathlessness	Yes	No
5.4	Wheeziness	Yes	No
5.5	Chest tightness	Yes	No
5.6	Watering eyes	Yes	No
5.7	Running/Blocked nose	Yes	No
5.8	Prolonged/repeated sneezing	Yes	No
5.9	Skin irritation/skin disease	Yes	No
	If you answered YES to any question, please give details.		
	Do any of your symptoms get worse at night? IF YES which ones?		
06	Do any of the symptoms get better when you are away from work (Example-weekend or on holiday)?	Yes	No
	If YES, please give details :		
07	Do you smoke ?	Now	Yes
		Ever	No
	How much do you smoke per day ?		
	How long have you smoke for ?		
08	Do you drink alcohol ?	Yes	No
	IF YES->	Daily	Occasionally
09	Are you habituated to tobacco?	Yes	No
	IF YES->	Daily	Occasionally

I hereby declare that the above medical information is true & accurate to the best of my knowledge.

Employee's Signature :

Donimalai

Date : ____/____/____