PROPOSAL FOR DETAILED EXPLORATION FOR BAUXITE IN THE SENDURKHAR BLOCK, TEHSIL-PANDARIA, DISTRICT - KABIRDHAM, CHHATTISGARH

1.0.0 INTRODUCTION

1.1.0 The properties of metallic aluminium of being good conductor, light weight and amenable to get moulded in various shapes and sizes, make the metal very useful and important for various domestic and industrial consumptions. It has wide application in various areas such as transport, building, architectural sectors, food packaging, chemical industries, consumer durables, electrical sectors, machinery & equipment, solar panels, lithographic (offset) plates as required in printing technology, car industry and so on.

1.1.1 Bauxite consisting of hydrated oxides of aluminium in the form of diaspore and boehmite, Al_2O_3, H_2O (Al_2O_3-85%; Al-45%), gibbsite or hydrargillite, Al_2O_3, $3H_2O$ (Al_2O_3-65.4%; Al-34.6%) is the main source of aluminium. It is basically an aluminous rock containing the said hydrated aluminous oxides as the main constituent's alongwith iron oxides like haematite and or goethite, silica as clay and or free quartz and titania as leucoxene or rutile in various proportions.

1.1.2 Resources of bauxite in the country as on 1.4.2010 as per UNFC system stand at 3480m.t. including 593m.t. as bauxite reserves. Odisha alone accounts for 52% of the total country's bauxite resources, followed by Andhra Pradesh (18%), Gujarat (7%), Chhattisgarh & Maharashtra (5% each) and Madhya Pradesh & Jharkhand (4% each). The production of bauxite is placed at 21.666 m.t. in 2013-14, 30% more from the previous year. Out of 64, ten principal producers having 32 mines, contributed 81% of the total production. The contribution of the Panchpatmali mine of NALCO was 29% of the total. The share of public sector mines was about 31% of the total national production.

1.1.3 The Sendurkhar Block in Pandaria Tehsil of Kabirdham district of Chhattisgarh, earlier surveyed by the Directorate of Geology and Mines, Chhattisgarh (G4 level) is proposed for G2 level of exploration as per the Minerals (Evidence of Mineral Contents) Rules, 2015 to facilitate for auctioning the property, the expenditure for which is proposed to be met out of NMET fund.

1.1.4 The proposal of Sendhurkhar Block was put up for Technical Evaluation in the Ist Meeting of Technical Committee of NMET held on 01-04-2016 & 02-04-2016 at GSI, Central Region, Nagpur. The Committee discussed the proposal in detail and in view of insufficient data suggested that at present G-4 exploration should be taken up by carrying out Geological Mapping & Topographical Survey on 1: 10000 scale, collecting surface samples and drilling five scout boreholes to know the presence of Bauxite Zones and its quality. The results of above study will decide the planning of future exploration in the block.

2.0.0 LOCATION AND COMMUNICATION

2.1.0 The block is included in the Survey of India Toposheet No. 64 F/7 and marked by lines joining the cardinal points from A to J whose co-ordinates are as follows:

A : 22° 29' 11.61" – 81° 18' 3.13"
B : 22° 28' 53.87" – 81° 18' 25.81"
C : 22° 28' 58.70" – 81° 18' 58.23"
D : 22° 29' 16.45" – 81° 18' 55.46"
E : 22° 29' 10.00" – 81° 19' 14.65"
F : 22° 29' 39.03" – 81° 19' 05.90"
G : 22° 30' 00" – 81° 19' 09.04"
H : 22° 30' 00" – 81° 19' 46.04"
I : 22° 28' 21.61" – 81° 19' 46.04"
J : 22° 28' 21.61" – 81° 18' 03.13"

2.1.1 The proposed area is located in the Pandaria Tehsil of Kabirdham district of Chhattisgarh, about 6 km north of Amaniya village. It is connected to the State Capital Raipur by the National Highway no.12A and to Kawardha, the district Headquarter by the State Highway and the Pandaria-Kui-Kukdur road. Raipur is the nearest railway station of the busy Mumbai-Howrah Railway route of the South Eastern Railway.

2.2.0 PHYSIOGRAPHY

2.2.1. The area lies on top of a plateau with altitudes ranging from 900m to 947m from the Mean Sea Level (MSL). The plateau top is free from forest cover.

3.0.0. PREVIOUS WORK

3.1..0 The area has been surveyed (G-4 level) by the Directorate of Geology and Mines (DGM), Chhattisgarh during 2006-07. The rock formation of the proposed area belongs to Archaean-Cainozoic age. The rock exposures on the plateau -top comprise of basalt,

laterite and bauxite. Bauxite is reportedly of pockety nature with various dimensions. It is pisolitic to massive in nature and occurs in various colours like pale yellow, cream, brown as reported by the DGM, Chhattisgarh. It also carried out surface sampling of the area and Al_2O_3 is reported to range from 40% to 60%. Bauxite ore of the area is of metal grade as observed by the DGM during its investigation.

4.0.0. GEOLOGY OF THE AREA

The Mineral Inventory of Kabirdham district, indicates that the rocks formation of the proposed area comprises Archaean-Cainozoic age. The Basalt and Bauxite alongwith Laterite occurs at plateau top. The basalts area extensively weathered giving to wide spread occurrences of laterite and bauxite. Bauxite occurs in form of pocket with various dimensions. The plateau has an elevation of 900mts MSL. Bauxite is pisolitic to massive in nature and having various colours like pale yellow, cream to brown.

5.0.0 PROPOSED EXPLORATION PROGERAMME

5.1.0 **Objectives:** The main objectives of the proposed exploration are as follows:

1. To prove existence of bauxite both along the longer axis and the shorter axis of the plateau at right angle to each other.
2. To know the quality and the thickness of Bauxite Horizons to assess the bauxite resources in the block both quantitatively & qualitatively.
3. In case the present exploration data are encouraging it will facilitate the future exploration programme for Auctioning of Blocks by Chhattisgarh State Government.

6.0.0 EXPLORATION SCHEME

6.1.0 **Topographic Survey:** The proposed area of the prospect (2.90 sq. km Area) will be covered by triangulation network and all the DGM station will be tied up with the same. Contouring is to be carried out at 5m interval on 1:10000 scale. Reduced level of the various stations and boreholes are to be determined with reference to the same of the Survey of India “Bench Mark” available at the plateau top. On the basis of the survey network, all the boreholes, pits etc. are to be connected. Boreholes proposed are to be fixed on the cross section lines at required interval. The Block Boundary will be surveyed by DGPS & Total Station in WGS-84 datum.

6.2.0 **Detailed Geological Mapping:** As very limited geological informations about the proposed area is available, surveying and geological mapping (1:10000) are to be carried out, prior to the remaining exploration activities in great details. The available rock exposures of laterite bauxite, basalt, etc. are to be mapped carefully with details of attitude of foliation, joints etc. marked on a plan before taking up further exploration

activities like drilling of boreholes etc. A representative geological map superimposed on a topographical plan on 1:10000 scale is to be prepared for 2.90 sq.km area.

6.3.0. **Surface / Outcrop Sampling:** In view of non-availability of sufficient exploration data the Technical committee of NMET decided to take- up the work systematically by collecting surface out crop samples on systematic grid of 400m x 400m grid. Grid lines at 400m interval were drawn on the map and it is observed that maximum of 30 surface samples can be drawn from the proposed exploration block. Collection of samples will depend on the availability of out crops or exposures. In case the outcrops are not available then few mini pits shall be dug to collect the samples. These samples will be crushed to -200mesh and the after attending proper coning & quartering a total of 100gm sample will be sent for analysis of 5 radical.

6.3.0 **Drilling:**

In case the results of surface samples are encouraging, 5 (Five Scout) boreholes will be drilled covering entire exploration block. The results of the scout boreholes will be reviewed by the Technical Committee during mid-term review and will decide the future exploration strategy of the block.

6.3.1 As the bauxite column of the area is not known the boreholes need to be deepened sufficiently to confirm the floor of the bauxite zone by exposing the basement rock /the lithomarge to avoid premature closure of borehole. A total of 5 nos. of scout boreholes involving a total Meterage of 125m (@25m/borehole) have been proposed. The present exploration will be of G-4 Level.

6.4.0 **Geological core logging:** Geological core logging will be carried out to differentiate the overburden from the bauxite zones encountered in the borehole as well as to mark the floor of the ore zone at the bottom. The overburden is generally marked by presence of soil /alluvium, laterite or ferruginous rock rich in haematite/goethite, while the bottom is marked by the weathered basement rock i.e. basalt or lithomarge. While carrying out geological core logging colour, physical nature, lithology, structural details, mineralogy etc. need to be carefully recorded. Visual estimates for the ore zones encountered are to be labeled for each drill run so that primary delineation of the roof and floor of the bauxite zones can be marked for each borehole. On receipt of chemical analysis the same may be confirmed based on the specification laid down for ore at 40% or more Al_2O_3 and <5% SiO_2 and the thickness & grade of the bauxite column can also be determined.

6.5.0 **Core Sampling:** The drilled cores and cuttings of every “drilled run” need to be sampled after visually marking the different lithounits. Except the visually confirmed overburden in the form of soil or alluvium at the top as well as the basement rock or lithomarge at the bottom of the borehole, nearly the entire drilled cores/cuttings are to be crushed to (-)

120mesh initially and thereafter the crushed (-) 120 mesh materials should be reduced to a 500gm representative homogenous sample by gradual cone & quartering method. This sample will further be crushed and reduced by the said methodology to prepare three representative samples of (-) 200 mesh weighing 100gm, 100gm & 300gm respectively.

One of the two 100gm representative sample will be sent for analysis of Al_2O_3, SiO_2, Fe_2O_3, TiO_2 &| LOI. The length of the samples should be kept at 1m as far as practicable. At the top as well as in the bottom of the ore zones, length of samples needs to be adjusted according to the length of overburden in the form of soil / laterite. However, the zones of different grade as per the concentration of ore minerals like boehmite etc. may be sampled separately when the length may differ. But in no case the length of any ore sample should exceed 1m. In case of a non-bauxite zone encountered within an ore zone, similar adjustment will have to be made to sample the non-ore zone separately. The other packet of 100gm may be used for check analysis while the third part will be preserved for preparation of composite samples. The left out sample of (-) 120 mesh will be stored as duplicate sample.

6.6.0 **Check Samples:** 10 No of Check samples from Drill core primary samples (120Nos) selected randomly are to be analyzed for 5 radicals. 5 No of Check samples to be analysed through third party NABL accredited / or Department of Science & Technology (DST) / BIS recognized laboratories or government laboratories for assessing the acceptable levels of accuracy as per the Minerals (Evidence of Mineral contents) Rules, 2015.

6.7.0 **Composite Samples:** For each of the bauxite horizons of the boreholes composite sample will be prepared by combining all the constituent primary samples in proportion of their lengths they represent. A total of 15 composite samples will be subjected for analyses of 12 radicals i.e. Al_2O_3, SiO_2, K_2O, $Na_2OFe_2O_3$, TiO_2, CaO, MgO, SO3, LOI, V_2O_5 & P_2O_5.

6.8.0 **Specific Gravity and Porosity determination:** Apparent specific gravity values need to be determined for lump samples by the wax-coating method with a Walker's Steel Yard balance. The same specimens after crushing to (-) 100 mesh size will have to be used for determination of their true specific gravity by Pycnometry using Kerosene. The porosity values need to be calculated from the apparent and true specific gravity values. In all **20 Nos of samples** each are to be subjected for determinations of specific gravity & porosity respectively.

6.9.0 **Chemical Analysis:** All the primary (120Nos) and check samples (Internal & External (15Nos) from boreholes will have to be analyzed for 5 radicals viz. Al_2O_3, SiO_2, Fe_2O_3, TiO_2 & LOI. All the composite samples around 15 Nos to be prepared by combining the primary samples in their length proportions for each of the bauxite zones encountered in

boreholes are to be analyzed for 12 radicals viz. Al_2O_3, SiO_2, K_2O, $Na_2OFe_2O_3$, TiO_2, CaO, MgO, SO3, LOI, V_2O_5 & P_2O_5.

6.10.0 **Spectroscopic Studies:** Trace elements distribution in the bauxite ore needs to be studied by Emission Spectroscope for semi quantitative analysis for Cu, Pb, Zn, Ni, Co, Mo, Sn, V, As, Sb, Bi, Ga, Zr etc. The 10 nos. composite samples chosen for 14 radicals analysis as above will be subject to such analysis.

6.11.0 **Petrographic Studies:** Mineragraphic and Petrographic studies are to be carried out on 10 nos. of bauxite specimens.

6.12.0 **X-Ray Diffraction Studies:** About 10 nos. of composite samples from drill cores will represent the bauxite deposit are to be studied by X-ray diffraction techniques to know mineralogical distribution of the different minerals present in the bauxite ore of the area.

6.13.0 **Quantum of Work:** Proposed exploration work has been quantified in the table below:

TABLE- 6.1 SHOWING DETAILS OF PROPOSED QUANTUM OF WORK IN SENDURKHAR BLOCK, KABIRDHAM, and CHHATTISGARH

Sl. No.	Item of Work	Unit	Quantum of Proposed Work
I.	Topographic Survey (with contour interval of 5m.)	Sq. Km.	2.90
II.	Geological mapping on 1:10000 scale	Sq. Km	2.90
III	Surface Out Crop Samples (at 400m grid interval)	Nos	30
IV	Core drilling	m	125 (5 BHs)
V.	**Laboratory Studies**		
	A. Chemical Analysis		
	a) Surface / Out Crop Samples for 5 radicals viz. Al_2O_3, SiO_2, Fe_2O_3, TiO_2, LOI	Nos	30
	b) Drill Core Primary samples for 5 radicals viz. Al_2O_3, SiO_2, Fe_2O_3, TiO_2, LOI	Nos	120
	c) Check samples for 5 radicals viz., Al_2O_3, SiO_2, Fe_2O_3, TiO_2, LOI.	Nos	10
	d) External Check Samples from NABL Labs for 5 radicals viz Al_2O_3, SiO_2, Fe_2O_3, TiO_2, LOI	Nos	5
	e) Composite samples for 12 radicals viz. CaO, MgO, Al_2O_3, SiO_2, Fe_2O_3, TiO_2, LOI, V_2O_5, SO_3, K_2O, Na_2O & P_2O_5..	Nos	15
	B. Physical Analysis		
	a) Composite samples for Spectroscopic Studies iron. Cu, Pb, Zn, Ni, Co, Mo, Sn, V, As, Sb, Bi, Ga, Zr	Nos	10
	b) X-RD Studies on Composite samples	Nos	10
	C. Petrographic Studies	Nos	10
	D. Mineragraphic Studies	Nos	10
	E. Specific gravity determination	Nos	20
VI.	Geological Report preparation	Nos	1

7.0.0 Time Schedule and Cost Estimates:

7.1.0. Time Schedule: The proposed exploration programme is planned for the activities like, camp setting, Topographical Survey, Geological Mapping, Surface sampling & associated geological work, drilling, winding and laboratory work will be completed within 5 month's time. Report writing will take another 3 months time with overlapping of one month laboratory studies. Thus the total duration of the project shall be completed in 7 months from the date of commencement of the project.

7.2.0. Cost Estimate: Cost has been estimated based on actual and provisional escalation as per RBI indices as on 31-03-15 and provisional escalation of @ 20% points for drilling work and 25% points for Geological and Laboratory Studies for the subsequent years. The total estimated cost is **45.13 lakhs.** The details of cost estimates are given in Table 6.2 and summary is given below;

Summary of Cost Estimates

Sl. No.	Item	Total Estimated Cost (Rs.)
1	Drilling	27,24,511/-
2	Geology	10,51,440/-
3	Laboratory	6,07,920/-
4	Exploration Report	43,839/-
5	Core Preservation Charges (GI Core Boxes)	**85,120/-**
	Total	**45,12,830/-**

Say Rs 45.13Lakhs

7.0.0 Justification

i. In view of MMDR Amendment Act and Mineral Auction Rule 2015 DMG Chhattisgarh Government has requested MECL to take up the exploration in this block. MECL decided to take up the work under NMET funding.

ii The exploration work has to be carried out systematically i.e. Geological Mapping, Surface sampling, Survey and regional scout drilling at 400mX400m grid (G-4 level) and in case the results are encouraging then the data will be reviewed by the committee during mid-term review and decide for future exploration work to be taken up.

iii. The present exploration work will help in planning of future exploration programme which in turn will facilitate the Chhattisgarh State for Auctioning of Block.

SL. N0.	Table:6.2 COST ESTIMATE FOR EXPLORATION OF BAUXITE IN THE SENDURKHAR BLOCK, TEHSIL-PANDARIA, DISTRICT - KABIRDHAM, CHHATTISGARH										
	Item of Work	**Unit**	**Base**	**Escalated rates (2016-17)**			**Escalated rates (2017-18)**			**Total**	
			Rate	**Esc.Rate**	**Qty.**	**Amount**	**Esc.Rate**	**Qty.**	**Amount**	**Qty**	**Amount**
			01.04.90	**(Rs)**		**(Rs)**	**(Rs)**		**(Rs)**		**(Rs)**
A	**DRILLING**										
1	Surface Drilling (4 Rigs)	m.	1714	7891	6000	47346000	8234	4000	32936000	10000	**80282000**
2	Transportation	Km.	8.8	34	4000	136000	34		0	4000	**136000**
3	Accomodation	One time/ Drill	185925	709899	4	2839596	709899		0	4	**2839596**
4	Camp Setting / Winding	Drill/ month	68606	261951	4	1047804	261951	4	1047804	8	**2095608**
5	Road Making (Hilly Terrain)	Km	7800	29089	15	436335	29089	10	290890	25	**727225**
	Sub Total A					**51805735**			**34274694**		**86080429**
B	**GEOLOGICAL WORK**										
1	Survey Party Days (1 party)	day	1180	6231	300	1869300	6492	210	1363320	510	**3232620**
2	Geologist Party days (1 party)	day	1541	8311	300	2493300	8652	240	2076480	540	**4569780**
3	Core Sampling Party days(1 party)	day	525	2982	540	1610280	3098	480	1487040	1020	**3097320**
4	Pit Sampling (Party)	days	2566	14124	0	0	14855	120	1782600	120	**1782600**
	Sub-Total B					**5972880**	14855		**6709440**		**12682320**
C	**LABORATORY STUDIES**										
a	**Chemical Analysis**										
1	Primary + Check Samples										
	i) For 5 radicals (Al_2O_3, SiO_2, Fe_2O_3, TiO_2, LOI)	Nos	490 (76x5+110)	2304	6000	13824000	2851	4000	11404000	10000	**25228000**
	ii) External Check Samples for 5 radicals (Al_2O_3, SiO_2, Fe_2O3, TiO2, LOI)	Nos	490 (76x5+110)	2304	600	1382400	2851	400	1140400	1000	**2522800**
2	Composite Samples										
	i)For 7 radicals Al_2O_3 , SiO_2, Fe_2O_3, TiO_2, LOI, V_2O_5 & P_2O_5	Nos	566 (76x6 + 110)	3154	350	1103900	3295	150	494250	500	**1598150**
	ii) For 12 radicals (CaO, MgO, Al_2O_3, SiO_2, Fe_2O_3, SO_3, P_2O_5, Mn_2O_3, TiO_2, K_2O, Na_2O & LOI,)	Nos	946 (76x11+110)	5304	20	106080	5515	0	0	20	**106080**
	iii) Composite samples for Total available Alumina & Reactive silica.	Nos	Lumsum	2500	30	75000	2500	23	57500	53	**132500**
b	**Physical Analysis**										
1	X-RD Studies on composite	Nos	1137	5980	30	179400	6517	23	149891	53	**329291**
2	Spectroscopic Studies	Nos	1173	6358	30	190740	6911	23	158953	53	**349693**
3	Preparation of thin section	Nos	100	570	10	5700	593	0	0	10	**5700**
4	Petrographic Studies	Nos	228	1512	10	15120	1562	0	0	10	**15120**
5	Specific Gravity determination	Nos	32	200	60	12000	207	40	8280	100	**20280**
6	Transportation for Beneficiation Studies Samples	Km	8.8	34	600	20400	34	1200	40800	1800	**61200**
7	Beneficiation Studies	No	280900	280900	0	0	280900	3	842700	3	**842700**
	Sub-Total C					**16914740**			**14296774**		**31211514**
	Total A+B+C					**74693355**			**55280908**		**129974263**
D	**EXPLORATION REPORT - 1% of (A+B+C)**								**1299743**	**0**	**1299743**
	GRAND TOTAL A to D					**74693355**			**56580651**	**0**	**131274006**
						Total				**Says 1312.74 Lakhs**	

Note

1. Rates of Goel Commiitte based on actual escalation as per RBI index as on 31/3/15 and @20% provisional escalation for drilling and @25% for Geology+Lab.for subsequnet year. .
2. Phoshphorite rates have been considered as there is no rates for Bauxite in Goel Committee reportof MoM Schedule of Rates.

SL. N0.	Table:6.2 COST ESTIMATE FOR EXPLORATION OF LIMESTONE IN GHUNCHIHAI BLOCK (PHASE-II), TEHSIL - RAMPUR BAGHELAN, DISTRICT-SATNA , MADHYA PRADESH										
	Item of Work	**Unit**	**Base**	**Escalated rates (2017-18)**			**Escalated rates (2018-19)**			**Total**	
			Rate	**Esc. Rate**	**Qty.**	**Amount**	**Esc. Rate**	**Qty.**	**Amount**	**Qty**	**Amount**
			1.4.90	**(Rs)**		**(Rs)**	**(Rs)**		**(Rs)**		**(Rs)**
A	**DRILLING**										
1	Surface Drilling (2 Rigs)	m.	1714	8234	2150	17703100		0	0	2150	**17703100**

2	Transportation	Km.	8.8	34	2000	68000		0	0	2000	**68000**
3	Accomodation	One time/ Drill	185925	709899	2	1419798		0	0	2	**1419798**
4	Camp Setting / Winding	Drill/ month	68606	261951	4	1047804		0	0	4	**1047804**
5	Road Making (Hilly Terrain)	Km	7800	29089	15	436335		0	0	15	**436335**
	Sub Total A					**20675037**					**20675037**
B	**GEOLOGICAL WORK**										
1	Survey Party Days (1 party)	day	1180	6492	210	1425270	6787	0	0	210	**1425270**
2	Geologist Party days (1 party)	day	1541	8652	240	2168880	9037	0	0	240	**2168880**
3	Core Sampling Party days (1 party)	day	525	3098	420	1356600	3230	0	0	420	**1356600**
	Sub-Total B					**4950750**					**4950750**
C	**LABORATORY STUDIES**										
a	**Chemical Analysis**										
1	Primary + Check Samples										
	i) for 6 radicals ($CaO, MgO, Al_2O_3, SiO_2, Fe_2O_3$ & LOI)	Nos	490 76x5+110)	2851	990	2822490	2974	0	0	990	**2822490**
	ii) External Check Samples for 6 radicals (CaO,MgO,Al2O3,SiO2,Fe2O3 & LOI)	Nos	490 76x5+110)	2851	90	256590	2974	0	0	90	**256590**
	iii) For additional 2 Radicals SO3 & P2O5	Nos	186 (110 +76)	982	200	196400		0	0	200	**196400**
2	Composite Samples										
	i) For 12 radicals ($CaO, MgO, Al_2O_3, SiO_2, Fe_2O_3, SO_3, P_2O_5, Mn_2O_3, TiO_2, K_2O, Na_2O$ &	Nos	946 (76x11+110)	5304	160	848640		0	0	160	**848640**
b	**Physical Analysis**										
1	X-RD Studies on composite	Nos	1137	5980	30	179400	6232	0	0	30	**179400**
2	Spectroscopic Studies	Nos	1173	6358	30	190740	6618	0	0	30	**190740**
3	Preparation of thin section	Nos	100	593	25	14825	618	0	0	25	**14825**
4	Petrographic Studies	Nos	228	1562	25	39050	1619	0	0	25	**39050**
5	Specific Gravity determination	Nos	32	207	40	8280	215	0	0	40	**8280**
6	Transpotation for Beneificiation Study / Technological Sample	km		34							
7	Benificiation Studies	N0s	280900	280900	1	280900		0	0	1	**280900**
	Sub-Total C					**4837315**					**4837315**
	Total A+B+C					**30463102**					**30463102**
D	**EXPLORATION REPORT - 1% of (A+B+C)**					**155219**			**304631**	**--**	**340631**
E	**Environmental Studies**										
1	Satellite Imagery Study	Scene	99697				508006	1	508006	1	#REF!
2	Baseline data collection(10km radius area)		151273				770812	1	770812	1	#REF!
3	Chemical Analysis	Nos	257400**				659974	1	659974	1	#REF!
4	Report writing	Nos	50000				50000	1	50000	1	50000
	Sub-Total E								**1988792**		**#REF!**
	GRAND TOTAL A to D					**30618321**			**2293423**	**--**	**#REF!**
						Total				**Says 327.93 Lakhs**	
Note :											
1	Rates of Goel Commiitte based on actual escalation as per RBI index as on 31/3/15 and @20% provisional escalation for drilling and @25% for Geology+Lab.for										
2	Phoshphorite rates have been considered as there is no rates for Limestone in Goel Committee reportof MoM Schedule of Rates.										

SL. N0.	Table:6.2 COST ESTIMATE FOR EXPLORATION OF BAUXITE IN THE SENDURKHAR BLOCK, TEHSIL-PANDARIA, DISTRICT - KABIRDHAM, CHHATTISGARH							
	Item of Work	**Unit**	**Base**	**Escalated rates (2016-17)**			**Total**	
			Rate 01.04.90	**Esc.Rate (Rs)**	**Qty.**	**Amount (Rs)**	**Qty**	**Amount (Rs)**
A	**DRILLING**							
1	Drilling (1 Rigs)	m.	1714	7891	125	986375	125	**986375**
2	Transportation	Km.	8.8	34	2000	68000	2000	**68000**
3	Accomodation	One time / Drill	185925	709899	1	709899	1	**709899**
4	Camp Setting / Winding	Drill/ month	68606	261951	2	523902	2	**523902**
5	Road Making (Hilly Terrain)	Km	7800	29089	15	436335	15	**436335**
	Sub Total A					**2724511**		**2724511**
B	**GEOLOGICAL WORK**							
1	Survey Party Days (1 party)	day	1180	6231	60	373860	60	**373860**
2	Geologist Party days (1 party)	day	1541	8311	60	498660	60	**498660**
3	Core Sampling Party days(1 party)	day	525	2982	60	178920	60	**178920**
	Sub-Total B					**1051440**		**1051440**
C	**LABORATORY STUDIES**							
	a Chemical Analysis							
1	Primary + Check Samples							
	i) For 5 radicals (Al_2O_3, SiO_2, Fe_2O_3, TiO_2, LOI)	Nos	490 (76x5+110)	2304	160	368640	160	**368640**
	ii) External Check Samples for 5 radicals (Al_2O_3, SiO_2, Fe_2O3, TiO2, LOI)	Nos	490 (76x5+110)	2304	5	11520	5	**11520**
2	Composite Samples							
	i) For 12 radicals CaO,MgO, Al_2O_3 , SiO_2, Fe_2O_3,SO3,K2O,Na2O TiO_2, LOI, V_2O_5 & P_2O_5	Nos	946 (76x11 + 110)	5304	15	79560	15	**79560**
	b Physical Analysis							
1	X-RD Studies on composite	Nos	1137	5980	10	59800	10	**59800**
2	Spectroscopic Studies	Nos	1173	6358	10	63580	10	**63580**
3	Preparation of thin section	Nos	100	570	10	5700	10	**5700**
4	Petrographic Studies	Nos	228	1512	10	15120	10	**15120**
5	Specific Gravity determination	Nos	32	200	20	4000	20	**4000**
	Sub-Total C					**607920**		**607920**
	Total A+B+C					**4383871**		**4383871**
D	**EXPLORATION REPORT - 1% of A+B+C**					**43839**		**43839**
E	a) Core Preservation Charges in GI Sheets Core Boxes (@ RS 2000 Core Box GI 22 gauge)	Nos	2000	2000	35	70000	35	70000
	b) Transportation Charges of Core Boxes	Km	8.8	34	600	15120	600	15120
	Total E					**85120**		**85120**
	GRAND TOTAL A to E					**4427710**		**4512830**
						Total	**Says Rs 45.13 Lakhs**	
Note:								
1	**Rates of Goel Commiitte based on actual escalation as per RBI index as on 31/3/2015 and @ 20% provisional escalation for drilling and @25% for Geology + Lab.for subsequnet year. .**							
2	**Phoshphorite rates have been considered as there is no rates for Bauxite in Goel Committee reportof MoM Schedule of Rates.**							

TABLE N0. 6.1 COST ESTIMATE FOR EXPLORATION OF BAUXITE IN THE SENDURKHAR BLOCK, TEHSIL- PANDARIA, DISTRICT - KABIRDHAM, CHHATTISGARH

			Financial year 2016 - 17							Total
	Activities	Unit	1	2	3	4	5	6	7	
			05 /16	06 /16	07 /16	08 /16	09 /16	10 /16	11 /16	
1	Camp Setting	Month	←	→						1
2	Surface Sampling	months		←	→					
3	Survey party day (1Party)	Party days		←	→					60
4	Drilling (1 rigs)	m		←	→					125m
5	Geologist party day (1 Party)	Party days		←	→					60
5	Drill Core Sampling Party days (1 Parties)	Party days			←	→				60
7	Laboratory Studies	Nos			←	→	→			240
8	Camp Winding	Month				←	→			1
9	Report writing	Month					←	→	→	3 Months
					8					

TABLE N0. 6.1 COST ESTIMATE FOR EXPLORATION OF BAUXITE IN THE SENDURKHAR BLOCK, TEHSIL- PANDARIA, DISTRICT - KABIRDHAM, CHHATTISGARH

			Financial year 2016 - 17											Financial year 2017 - 18											
	Activities	Unit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
			05 /16	06 /16	07 /16	08 /16	09 /16	10 /16	11 /16	12 /16	01 /17	02 /17	03 /17	04 /17	05 /17	06 /17	07 /17	08 /17	09 /17	10 /17	11 /17	12 /17	01 /18	02 /18	03 /18
1	Camp Setting	Month																							
2	Drilling (4 rigs)	m																							
3	Survey party day (1Party)	Party days																							
4	Geologist party day (1 Party)	Party days																							
5	Drill Core Sampling Party days (2 Parties)	Party days																							
6	Pit Excavation	Cu m																							
7	Bulk Sampling / Pit Sampling	Party days																							
8	Laboratory Studies	Nos																							
9	Camp Winding	Month																							
10	Beneficiation Studies	Nos																							
11	Report writing	Month																							
												10													

TABLE N0. 6.1A TIME SCHEDULE / ACTION PLAN, FOR EXPLORATION WORK OF LIMESTONE IN

			MONTHS

Sl. N0.	Activities	Unit		Financial Year 2017-18												Financi		Total
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	
			04 /17	05 /17	06 /17	07 /17	08 /17	09 /17	10 /17	11 /17	12 /17	01 /18	02 /18	03 /18	04 /18	05 /18	
1	Camp Setting	Month	↔														1 month
2	Surface Drilling (2 rigs)	m.		←	—	—	—	—	→								2150 m (in 43BHs)
3	Survey Party days (1 Party)	day		←	—	—	—	—	—	→							210
4	Geologist Party days (1Party)	day		←	—	—	—	—	—	—	→						240
5	Sampling Party days, Core Sampling (2 party)	day			←	—	—	—	—	—	→						420
	ii. Bulk Sampling (1 party)	day								↔	↔						60
6	Laboratory Studies	Nos.				←	—	—	—	—	—	—	→				1475
7	Camp Winding	Months										↔	↔				1 month
8	Beneficiation Studies Samples										←	—	→				1 N0.
9	Report Writing	Months										←	—	—	—	→	5 months
										15							

Government of India
Ministry of Mines
National Mineral Exploration Trust

F.No. 6/1/NMET-2015

New Delhi, 16th August, 2016

OFFICE MEMORANDUM

Sub: - Approval of mineral exploration projects in 13 blocks

On the recommendations of the Technical Committee of NMET, the Executive Committee in its second meeting held on 9.5.2016 has approved thirteen (13) mineral exploration projects in six states at a cost of Rs. 2292.16 lakhs.

2. Consequent to dropping of one project of bauxite in Jharkhand on the request of State Government, the number of approved projects under NMET now stands at twelve (12) in five states, at a cumulative cost of Rs. 21,61.29,777.00 (Rupees twenty one crore, sixty one lakhs, twenty nine thousand, seven hundred seventy seven only).

3. The twelve exploration projects will be funded by NMET as per the list recommended by the Technical Committee and approved by the Executive Committee. MECL will undertake exploration in these twelve blocks under a Tripartite Agreement among (Ministry of Mines (NMET), MECL and the respective State Government) and complete the same as per the approved work plan and the schedule.

5. The execution of projects will be continuously monitored and periodically reviewed by the NMET Technical Committee and MECL will submit monthly progress report to NMET Secretariat.

(M. Koshy John)
DDG, NMET Secretariat
011-29053347
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To

The Chairman-cum-Managing Director, MECL, 3rd floor, Jeevanbai Ambedkar Bhawan, Seminary Hills, Nagpur – 440 006

2/-

List of Mineral Exploration Projects approved in the 2nd meeting of the Executive Committee held on 09.05.2016

Sl. No.	Name of the Block	Mineral	Area of the Block	Work already done in the block	Work proposed in the block	Estimated cost of the project in Rs. lakh
1.	Jumka-Pathriposhi Block, Distt. Sundargarh, **Odisha**	Iron	1.71 Sq. Km.	G-3	G-2	772.68
2.	Purheibahal-Chandiposhi Block, Distt. Sundargarh, **Odisha**	Iron	1.35 Sq. Km.	G-3	G-2	265.33
3.	Mandri-Panchala Block, Distt. Nagpur, **Maharashtra**	Manganese	2.50 Sq. Km.	Virgin Area	G-4	130.31
4.	Lanjera-Futala Block, Distt. Nagpur, **Maharashtra**	Manganese	8.00 Sq. Km.	Virgin Area	G-4	148.98
5.	Ranigaon-Gondaiya Block, Distt. Bilaspur, **Chhattisgarh**	Limestone	5.00 Sq. Km.	G-4	G-3	100.52
6.	Nahardih-Madhaipur Block, Distt. Raipur, **Chhattisgarh**	Limestone	5.45 Sq. Km.	Virgin Area	G-4	27.89
7.	Sendurkhar Block, Distt. Kabirdham (Kawardha), **Chhattisgarh**	Bauxite	2.90 Sq. Km.	Virgin Area	G-4	45.13
8.	Saraipani-Dadar Block, Distt. Kabirdham (Kawardha), **Chhattisgarh**	Bauxite	0.80 Sq. Km.	Virgin Area	G-4	44.66
9.	Ghumchihai Block, Distt. – Satna, **Madhya Pradesh**	Limestone	5.00 Sq. Km.	Virgin Area	G-4	57.75
10.	Naubasta-Kolard Block, Distt. Satna, **Madhya Pradesh**	Limestone	15.00 Sq. Km.	Virgin Area	G-4	59.49
11.	Jamodi-Mahanna Block, Distt. Satna, **Madhya Pradesh**	Limestone	30.00 Sq. Km.	Virgin Area	G-4	65.36
	Total cost					**1718.10**