vedanta

balco

Ref No: Balco/MPT/EC/2017/02 Date:10.07.2017

To,
The Director (Non Coal Mining- IA Division)
Ministry of Environment, Forests & Climate Change
Govt. of India, Indira Paryavaran Bhavan,
Jorbag Road, Aliganj,
New Delhi – 110 003

Subject- Environmental Clearance of Proposed Expansion in production capacity of Mainpat Bauxite Mine (ML Area 639.169 ha) from 0.75 Million TPA to 2.25 Million TPA (Dispatchable), Located at villages –Kesra, Kudaridih & Sapanadar, Tehsil - Mainpat, District – Surguja (Chhattisgarh), **Submission of additional documents reg.**

Ref: **(i) MoEF&CC File No - J-11015/166/2016-IA-II (M);**
(ii) Minutes of Meeting of MOEFCC Agenda of 19th EAC meeting scheduled on 28th June, 2017, (Agenda item no. 2.6).

Sir,

With reference to captioned subject and references, additional information has been sought by EAC as mentioned in the Minutes of the meeting published on 7th July, 2017.

In this regard, we are herewith, as desired, submitting/uploading the following documents on MoEF&CC web portal.

1. Authenticated past production details from State Government.
2. Relevant details of Wildlife Conservation Plan along with budgetary allocation.
3. Detailed plan of activities proposed under Enterprise Social Commitment (ESC) with budgetary break-up
4. Status Report on the compliance of partially/not complied conditions of earlier issued EC as per regional Office, MoEF&CC, Nagpur along with and Undertaking mentioning timeline to achieve the full compliance of conditions of earlier issued EC and also Status Report on the compliance of all conditions of earlier issued EC.

Bharat Aluminium Company Limited
Registered Office : "ALUMINIUM SADAN", Core-6, Scope Office Complex, 7, Lodhi Road, New Delhi-110003
T +91-11 4916 6200 F +91-11 2432 0177, www.balcoindia.com
Works: Balco Nagar, Korba, (Chhattisgarh), 496 684
CIN: U74899DL1965PLC004518

We request your good self to kindly consider the documents/information asked by you and grant us the Environment Clearance at the earliest.

Thanking you with Regards,

For M/s Bharat Aluminium Company Limited

Afroz Ali
Head – Mines

Authorized Signatory
Encl: as above

ADS REPLY

ADS Replyfor Proposed Expansion in production capacity of Mainpat Bauxite Mine (ML Area 639.169 ha) from 0.75 Million TPA to 2.25 Million TPA (Dispatchable), Located at villages –Kesra, Kudaridih & Sapanadar, Tehsil - Mainpat, District – Surguja (Chhattisgarh) by M/s Bharat Aluminium Company Limitedhas been organised point-wise, with corresponding enclosures as explained below

S. No.	ADS	Reply
i.	Authenticated past production details from State Government	Mainpat Bauxite Mine started production of bauxite w.e.f FY 1993-94. **Enclosure-1**provides the past production details starting from 1993 – 94 upto 2016 – 17, duly authenticated by District Mining Officer, district Surguja, Government of Chhattisgarh.
ii.	Relevant details of Wildlife Conservation Plan along with budgetary allocation.	(A) In the year 2008, a Wildlife Habitat Improvement Plan was prepared by PCCF (Wildlife), Government of Chhattisgarh, with a budgetary provision of Rs.219.33 Lakhs for Mainpat Mines (Rs 139.89 lakhs for South Surguja division and Rs 79.44 lakhs for Dharamjaigarh division). This amount of Rs 219.33 lakhs was deposited by BALCO in the years 2008-09 to 2010-11. The Plan along with correspondence regarding payments made by BALCO are attached as **Enclosure-2.** The implementation of this Wildlife Habitat Improvement Plan has been completed by the State Forest Department. (B) During the recent EIA for expansion, some fauna of Schedule 1 were detected. A Conservation plan addressing these specific species has been prepared and submitted to the DFO Surguja on 1st February 2017, with a Budgetary Provision of Rs.50.00 Lakhs. A copy of the conservation plan and its receipt by DFO office is enclosed as **Enclosure-3.**

iii.	Detailed plan of activities proposed under Enterprise Social Commitment (ESC) with budgetary break-up		BALCO is a Company incorporated under the Companies Act 2013. However, the responsibilities regarding CSR in terms of Section 135 (1) of the Companies Act are currently not applicable on BALCO since it is making losses for last three financial years. However, as a responsible corporate, BALCO continues to be committed to uplifting communities in its neighborhood. As a part of this commitment, a social needs assessment was carried out in and around Mainpat mine last year. Based on this assessment, a detailed plan of activities under our Enterprise Social Commitment (ESC), duly augmented based on Public Hearing, has been prepared and attached as **Enclosure – 4** which provides village-wise details of activities, time frame and budgetary break-up.
iv.	Submit status report on the compliance of earlier EC conditions and an undertaking mentioning the timeline to achieve full compliance		As per visit of regional Office, MoEF&CC, Nagpur some of the conditions of earlier issued EC are partially complied and one condition is not complied. We would like to inform that all conditions are complied and detailed report has been sent to Regional Office, Nagpur and MoEF&CC, New Delhi. Submission letter along with detailed status report is enclosed as **Enclosure-5** In addition to above an Undertaking mentioning timeline to achieve the full compliance of conditions of earlier issued EC is enclosed as **Enclosure-6** Status Report on compliance of all conditions of earlier issued EC is enclosed as **Enclosure-7**

ENCLOSURE -1

AUTHENTICATED PRODUCTION DETAILS BY DMO

कार्यालय कलेक्टर सरगुजा(खनिज शाखा) अम्बिकापुर (छ0ग0)

फोन एवं फैक्स नं. 07774–224332, ई–मेल mo.surguja@gov.in

क्रमांक 2490 /खनिज/खलि–1/ख.प./17 अम्बिकापुर, दिनांक 07/07/2017

प्रति,

खदान प्रमुख,
मे. भारत एल्युमिनियम कंपनी लि0
मैनपाट जिला–सरगुजा(छ0ग0)

विषयः– ग्राम सपनादर,कुदारीडीह एवं केसरा तहसील मैनपाट रकबा 639.169 में स्वीकृत खनन्पट्टा में बाक्साइट उत्पादन के संबंध में।

संदर्भः– आपका पत्र दिनांक 01.07.2017

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उपरोक्त विषयान्तर्गत आपको ग्राम केसारा, कुदारीडीह एवं सपनादर तहसील मैनपाट के रकबा 639.169 हे. क्षेत्र में बाक्साइट खनिज हेतु खनि पट्टा अवधि 09.07.1992 से 06.07.2042 तक स्वीकृत है। आपके द्वारा प्रस्तुत विवरणियों के अनुसार वर्ष 1993–94 से 2016–17 तक निम्नानुसार मात्रा में बाक्साइट का उत्पादन किया गया हैः–

क्र.	वर्ष	उत्पादन (टन में)
1	1993-94	63906.370
2	1994-95	100315.785
3	1995-96	156588.260
4	1996-97	175435.440
5	1997-98	153994.140
6	1998-99	133633.770
7	1999-2000	164918.186
8	2000-01	256360.990
9	2001-02	296165.522
10	2002-03	554343.361
11	2003-04	509197.250
12	2004-05	509751.395
13	2005-06	561311.720
14	2006-07	668244.637
15	2007-08	629033.616
16	2008-09	564516.430
17	2009-10	489536.920
18	2010-11	564607.590
19	2011-12	620193.300
20	2012-13	230137.400
21	2013-14	0.000
22	2014-15	0.000
23	2015-16	454.800
24	2016-17	68970.000

for Dalu
खनिज अधिकारी 20/7
जिला–सरगुजा(छ0ग0)

ENCLOSURE -2

APPROVED WILDLIFE HABITAT IMPROVEMENT PLAN

छत्तीसगढ़ शासन
वन विभाग
दाऊ कल्याण सिंह भवन, मंत्रालय, रायपुर

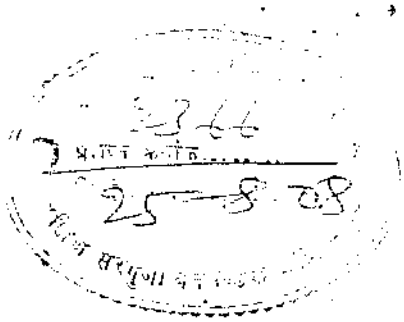
क्रमांक एफ 5-123/96/10-3 रायपुर, दिनांक 21/07/2008

प्रति,

1. वनमंडलाधिकारी
कवर्धा वनमंडल
कवर्धा छ.ग. ।

2. वनमंडलाधिकारी
धरमजयगढ़ वनमंडल
धरमजयगढ़ छ.ग. ।

3. वनमंडलाधिकारी
दक्षिण सरगुजा वनमंडल
अंबिकापुर छ.ग. ।



विषय :- भारत एल्यूमिनियम कंपनी लिमिटेड की बोदई-दलदली, कवर्धा एवं मैनपाट सरगुजा की पूर्व से प्रचलित खदानों के पर्यावरण क्लीयरेंस बाबत् ।

संदर्भ :- मु.व.सं.(वन्यप्राणी)का पत्र कमांक /व.प्रा./995/08, रायपुर दिनांक 24.04.2008 ।

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मुख्य वन संरक्षक (वन्यप्राणी) छ.ग. के संदर्भित पत्र (छायाप्रति संलग्न) के द्वारा विषयांतर्गत भारत एल्यूमिनियम कंपनी लिमिटेड की सरगुजा जिले में स्थित मैनपाट बाक्साईट खदान तथा कबीरधाम जिले में स्थित बोदई-दलदली, बोक्साईट खदान के 10 कि.मी. परिधि के अंतर्गत दक्षिण सरगुजा वनमंडल धरमजयगढ़ वनमंडल एवं कवर्धा वनमंडल में वन्यप्राणियों के रहवास क्षेत्रों के सुधार हेतु योजना प्रस्ताव वनमंडलवार निम्नानुसार प्रेषित किया गया है :-

1. दक्षिण सरगुजा वनमंडल = रूपये 139.89 लाख
2. धरमजयगढ़ वनमंडल = रूपये 79.44 लाख
3. कवर्धा वनमंडल = रूपये 81.40 लाख

उपरोक्त वर्णित योजना के अनुरूप राशि भारत एल्यूमिनियम कंपनी लिमिटेड द्वारा दी जानी है । अतः कृपया उपरोक्त राशि भारत एल्यूमिनियम कंपनी से प्राप्त कर पी.डी.खाते में जमा कर विभाग को सूचित करें । तथा राशि प्राप्त होने के उपरान्त मुख्य वन संरक्षक (वन्यप्राणी) के मार्गदर्शन में कार्य प्रारम्भ करावें ।

संलग्न :- उपरोक्तानुसार ।

(कौशलेन्द्र सिंह)
सचिव
छत्तीसगढ़ शासन, वन विभाग
रायपुर, दिनांक /07/2008

पृष्ठां.कमांक एफ 5-123/96/10-3

प्रतिलिपि :-1. प्रधान मुख्य वन संरक्षक (वन्यप्राणी) छत्तीसगढ़ को संदर्भित पत्र के तहत् सूचनार्थ एवं आवश्यक कार्यवाही हेतु अग्रेषित ।
2. वन संरक्षक दुर्ग वृत्त दुर्ग की ओर सूचनार्थ एवं आवश्यक कार्यवाही हेतु अग्रेषित ।
3. वन संरक्षक सरगुजा वृत्त सरगुजा की ओर सूचनार्थ एवं आवश्यक कार्यवाही हेतु अग्रेषित ।
4. मेंसर्स भारत एल्यूमिनियम कंपनी लिमिटेड कोरबा को उपरोक्तानुसार भुगतान की कार्यवाही हेतु अग्रेषित ।

सचिव
छत्तीसगढ़ शासन, वन विभाग

Vijay- Let & DO,Naydu Sir

11/07/2008 495

कार्यालय प्रधान मुख्य वन संरक्षक (वन्यप्राणी प्रबंधन एवं जैवविविधता)
सह मुख्य वन्यप्राणी अभिरक्षक, छत्तीसगढ़
अरण्य भवन, मेडिकल कॉलेज रोड, रायपुर
ईमेल– pccfwlcg@rediffmail.com

क्र./व.प्रा./ 995 /08

रायपुर, दिनांक 2/1/1/2008

प्रति,

सचिव,
छत्तीसगढ़ शासन, वन विभाग,
डी0 के0 एस0 भवन, मंत्रालय, रायपुर.

पंजी क्रमांक 1502/2006/10-2/वन
दिनांक 03/05/2008

विषय :– भारत एल्यूमिनियम कंपनी लिमिटेड की बोदई–दलदली, कवर्धा एवं मेनपाट सरगुजा की पूर्व से प्रचलित खदानों के पर्यावरण क्लीयरेंस बाबत्।

संदर्भ :– राज्य शासन वन विभाग का पत्र क्रमांक/एफ 5–123/96/10–3 रायपुर, दिनांक 28/03/2006.

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उक्त विषयांतर्गत भारत एल्यूमिनियम कंपनी लिमिटेड की सरगुजा जिले में स्थित मेनपाट बॉक्साइट खदान तथा कबीरधाम जिले में स्थित बोदई–दलदली बॉक्साइट खदान के 10 किमी0 परिधि के अंतर्गत दक्षिण सरगुजा वनमंडल, धरमजयगढ़ वनमंडल एवं कवर्धा वनमंडल के वनक्षेत्रों में वन्य प्राणियों के रहवास क्षेत्रों के सुधार हेतु योजना प्रस्ताव संलग्न प्रस्तुत है।

मुख्य वन संरक्षक (वन्यप्राणी)
छत्तीसगढ़ रायपुर

Vijay das

भारत एल्यूमिनियम कंपनी लिमिटेड की मैनपाट एवं बोदई दलदली बाक्साइट खनन क्षेत्रों के चारों ओर वनक्षेत्रों हेतु वन्य प्राणी प्रबंधन योजना प्रस्ताव

भारत एल्यूमिनियम कंपनी लिमिटेड की सरगुजा जिले में स्थित मैनपाट बाक्साइट खनन क्षेत्र के 10 किमी0 की परिधि में दक्षिण सरगुजा वनमंडल के सीतापुर परिक्षेत्र का 12573.6310 हेक्टेयर अंबिकापुर परिक्षेत्र का 850.1705 हेक्टेयर तथा धरमजयगढ़ वनमंडल के कापू परिक्षेत्र का 8589.7680 हेक्टेयर कुल 22013.57 हेक्टेयर वनक्षेत्र आता है। दक्षिण सरगुजा वनमंडल के क्षेत्र में मुख्यतः संरक्षित वन तथा धरमजयगढ़ वनमंडल के क्षेत्र के आरक्षित वन सम्मिलित हैं। वनमंडलों की प्रचलित कार्य आयोजना के अनुसार इन वनक्षेत्रों में मुख्यतः साल वन तथा कहीं–कहीं पर साल मिश्रित वन स्थित हैं। जो IV (a), IV (b) तथा कहीं–कहीं पर III साईट क्वालिटी के हैं।

भारत एल्यूमुनियम कंपनी लिमिटेड की कबीरधाम जिले के बोड़ला विकासखंड के बोदई दलदली 10 किमी0 की परिधि में कवर्धा वनमंडल के पंडरिया पश्चिम रेंज का 7768.751 हेक्टेयर क्षेत्र तथा तरेगांव परिक्षेत्र का 11732.1871 हेक्टेयर कुल 19500.938 हेक्टेयर क्षेत्र आता है, जो कि आरक्षित वन है। इन वनक्षेत्र में मुख्यतः साल, साल मिश्रित एवं सागौन के वन हैं। क्षेत्र की गुणवत्ता III एवं IV (a) है। दोनों माईनिंग साइट के 10 किमी0 परिधि में स्थित क्षेत्र के विवरण परिशिष्ट–1 में दिया गया है। दोनों क्षेत्रों का मानचित्र भी संलग्न है।

दक्षिण सरगुजा वनमंडल एवं कवर्धा वनमंडल की कार्य आयोजना के अनुसार इन वनक्षेत्रों को क्रमशः सुधार कार्यवृत्त, संरक्षण कार्यवृत्त एवं बिगड़े वनों का सुधार कार्यवृत्त एवं एस.सी.आई., पी. डब्लू.सी., आई.डब्लू.सी. एवं आर.डी.एफ. कार्यवृत्त में सम्मिलित करते हुये प्रबंधन निर्धारित किया गया है। कार्य आयोजना में इन समस्त क्षेत्रों को वन्य प्राणी प्रबंधन के अंतर्गत निर्धारित किये गये प्रबंध पद्धति के अनुरूप नियमित किया जाना है। कार्य आयोजना के अनुसार यद्यपि क्षेत्र विशेष में विशिष्ट वन्य प्राणी प्रजाति आदि की संख्या का आंकलन नहीं किया गया है, तथापि वनमंडल क्षेत्र में पाए जाने वाने समस्त प्रकार के वन्य प्राणी प्रजातियों के द्वारा इन वनक्षेत्रों को भी समान रूप से अपना रहवास क्षेत्र बनाया है। ये वनक्षेत्र इन वन्य प्राणियों के रहवास क्षेत्र के अतिरिक्त प्राणी एवं वनस्पति वर्ग के अन्य कई महत्वपूर्ण प्रजातियों के वास स्थल भी बनाते है।

ये वनक्षेत्र अधिकांश हल्के तीव्र ढलानों वाला पहाड़ी क्षेत्र है, इसके अतिरिक्त मैदानी एवं पठारी भाग भी है जिसमें विभिन्न प्रकार की घास एवं अन्य वनस्पतियॉ उत्पन्न होती है। ये वनक्षेत्र वन्य प्राणियों के रहवास के लिए नैसर्गिक रूप से समृद्ध होते हुए भी विभिन्न प्रकार के जैविक दबाव जिनमें माईनिंग सबसे प्रमुख है के कारण वास स्थलों का ह्रास होती जा रही है। क्षेत्रों के जल स्त्रोतों में जल की कमी के कारण विशेष तौर पर ग्रीष्म ऋतु में वन्य प्राणियों को पानी के लिये भटकना पड़ता है।

मानवीय दबाव के कारण वन्य प्राणियों के आश्रय स्थल सुरक्षित नहीं रहने के कारण आश्रय स्थल में कमी आई है।

वर्तमान में पड़ रहे विभिन्न जैविक दबावों के कारणों से वन्य जंतुओं के रहवास में गिरावट एवं वनों के संधारण क्षमता में ह्रास होने से वन्य जन्तुओं के स्तर में जहाँ एक ओर कमी हुई है और वन्य जन्तु संरक्षण एक समस्या के रूप में सामने आयी है वहीं दूसरी ओर जैव विविधता भी प्रभावित हुई है। अतः आवश्यकता इस बात की है कि स्थानीय परिस्थितियों को ध्यान में रखकर रहवास सुधार एवं संरक्षणवादी उपचार इस प्रकार किये जावें कि वनों में जैवविविधता एवं वन्य जन्तुओं के संरक्षण एवं संवर्धन का मार्ग प्रशस्त हो सकें।

इन वनक्षेत्रों में कार्य आयोजना में वन्य प्राणी प्रबंधन हेतु प्रावधानित सामान्य नियमों के पालन के अतिरिक्त माईनिंग एवं अन्य जैविक दबावों की कुछ हद तक प्रतिपूर्ति हेतु वन्य प्राणियों के वास स्थलों को विकसित किया जाना अति आवश्यक है। इस हेतु इन क्षेत्रों में वन्य प्राणी प्रबंधन की दृष्टि से निम्नानुसार कार्य किया जाना आवश्यक होगा :–

1. वन्य जंतुओं के लिए पेयजल व्यवस्था हेतु आवश्यकतानुसार स्टाप डैम का निर्माण।
2. वन्य जंतुओं के भोजन हेतु विभिन्न प्रकार के वृक्षारोपण।
3. वन्य प्राणी से संबंधित अपराधों में नियंत्रण रखने हेतु चेक पोस्ट का निर्माण।
4. क्षेत्र में वन्य प्राणियों के गतिविधियों के नियमित मॉनिटरिंग हेतु पृथक से कार्यदल का गठन।
5. क्षेत्र के ग्रामों में इकोडेवलपमेंट के कार्य ।
6. क्षेत्रीय कर्मचारियों एवं वन समिति के सदस्यों को समय–समय पर आवश्यक प्रशिक्षण।
7. प्रचार–प्रसार आदि।

वनमंडल अधिकारी दक्षिण सरगुजा, वनमंडल अधिकारी धरमजयगढ़ एवं वनमंडल अधिकारी कवर्धा द्वारा उक्त कार्यों हेतु वर्ष 2008–09 से 2010–11, 3 वर्षों के लिये क्रमशः 139.89, 79.44 एवं 81.40 लाख रूपये कुल 300.73 लाख रूपये का योजना प्रस्ताव (परिशिष्ट–2) प्रस्तुत किया गया, जिसके क्रियान्वयन होने से वन्य प्राणियों के रहवास क्षेत्रों का सुधार होगा।

मुख्य वन संरक्षक (वन्य प्राणी)
छत्तीसगढ़ रायपुर

Vijay das

वन्य प्राणी रहवास विकास हेतु प्रस्तावित कार्य

(दर राशि लाख में)

प्रस्तावित कार्य का नाम	स्थल	वर्ष	संख्या	दर	कुल राशि
2	3	4	5	6	7
दक्षिण सरगुजा वनमंडल					
वृक्षारोपण कार्य रखरखाव सहित	वनक्षेत्र में	2008-09	100 हे.	0.20 प्रति हे.	13.48
		योग	100 हे.		13.48
वृक्षारोपण कार्य रखरखाव सहित	वनक्षेत्र में.	2008-09	150 हे.	0.2118 प्रति हे.	31.77
		योग	**150 हे.**		**31.77**
वाच टॉवर निर्माण कार्य	सपनादर, कसेर, ग्राम में	2008-09	2 नग	4.00 प्रति नग	8.00
	आमगाव ग्राम में	2009-10	1 नग	4.00 प्रति नग	4.00
	समनिया ग्राम में	20010-11	1 नग	4.00 प्रति नग	4.00
		योग	**4 नग**		**16.00**
चेक पोस्ट निर्माण कार्य	नवानगर,बदना ग्राम में	2008-09	2 नग	3.50 प्रति नग	7.00
	मेहता, प्वाईट ग्राम में	2009-10	1 नग	3.50 प्रति नग	3.50
	दमाली ग्राम में	20010-11	1 नग	3.50 प्रति नग	3.50
		योग	**4 नग**		**14.00**
जल स्त्रोतों का विकास कार्य तालाब निर्माण कार्य	वनक्षेत्र में	2008-09	2 नग	3.00 प्रति नग	6.00
		2009-10	2 नग	3.00 प्रति नग	6.00
		2010-11	2 नग	3.00 प्रति नग	6.00
		योग	**6 नग**		**18.00**
वायना कुलर एवं अग्नि रोधी उपकरण कय	–	2008-09	2 नग	1.50 प्रति नग	3.00
		2009-10	1नग	1.50 प्रति नग	1.50
		2010-11	1 नग	1.50 प्रति नग	1.50
		योग	**4 नग**		**6.00**
स्टाप डेम निर्माण कार्य	अमगांव, ग्राम में	2008-09	1नग	8.00 प्रति नग	8.00
	कमलेश्वरपुर ग्राम में	2009-10	1 नग	8.00 प्रति नग	8.00
		योग	**4 नग**		**16.00**
इन्ट्री प्वाईंट एक्टिविटी कार्य	–	2008-09	2 ग्राम	4.00 प्रति ग्राम	8.00
	–	2009-10	1 ग्राम	4.00 प्रति ग्राम	4.00
	–	20010-11	1 ग्राम	4.00 प्रति ग्राम	4.00
		योग	**4 ग्राम**		**16.00**
वन्यप्राणी वाचर प्रत्येक वाच टावर हेतु 2 श्रमिक	–	2008-09	8 श्रमिक	30000X 12	2.88
	–	2009-10	8 श्रमिक	30000X 12	2.88
	–	20010-11	8 श्रमिक	30000X 12	2.88
		योग	**24 श्रमिक**		**8.64**
		कुलयोग			**139.89**
धरमजयगढ़ वनमंडल					
बांस वृक्षारोपण कार्य		2008-09	100 हे.	0.1348 प्रति हे.	13.48
		2009-10	100 हे.	0.1348 प्रति हे.	13.48
		2010-11	100 हे.	0.1348 प्रति हे.	13.48
		योग	**300 हे**		**40.44**
स्टाप डेम निर्माण कार्य		2008-09	1 नग	–	8.00
		2009-10	1 नग	–	8.00
		योग	**2 नग**		**16.00**
एनीकट निर्माण		2008-09	1 नग	–	10.00
		2009-10	1 नग	–	10.00

वित्त कार्य कानाम	स्थल	वर्ष	संख्या	दर	कुल राशि
			2 नग		20.00
			1 नग		
			1 नग		3.00
					79.44
कवर्धा वनमंडल					
वन्य प्राणियों के वास स्थल विकास हेतु, तालाब विकास	R.F./21 दलदली	2008-09	8 हे.	0.20 प्रति हे.	1.60
	R.F./21 दलदली		8 हे.	0.20 प्रति हे.	1.60
	R.F./27आमानारा	2009-10	8 हे.	0.20 प्रति हे.	1.60
	R.F./27आमानारा	2010-11	8 हे.	0.20 प्रति हे.	1.60
		योग	**32 हे.**		**6.40**
स्टापडेम निर्माण कार्य	दलदली RF/21	2009-10	1 नग		25.00
	कुटकी PF/389,394	2010-11	1 नग		22.00
		योग			**47.00**
तालाब निर्माण कार्य	RF/21	2008-09	—		4.00
	मुरसीपकरी	2009-10	—		5.00
		योग			**9.00**
वॉच टावर निर्माण	दलदली RF/21	2008-09	1 नग		5.00
	बंजारी के पासRF/14	2009-10	1 नग		4.00
		योग	**2 नग**		**9.00**
इंटरप्रिटेशनप सेंटर, चेकपोस्ट	दलदली	2008-09	1 नग		5.00
	तरेगांव	2009-10	1 नग		5.00
		योग	**2 नग**		**10.00**
		कुलयोग			**81.40**
		महायोग			**300.73**

मुख्य वन संरक्षक (वन्य प्राणी)
छत्तीसगढ़, रायपुर

कार्यालय वनमण्डलाधिकारी, सरगुजा वनमण्डल, अम्बिकापुर (छ.ग.)
(प्रतापपुर रोड़, फारेस्ट कैम्पस, अम्बिकापुर, जिला-सरगुजा)
☎ 07774-240238 (0), 240236 (R), 240238 (F) E-Mail :- dfosouthsurguja_200@rediffmail.com

क्रमांक/तक.अधि./ 411 अम्बिकापुर, दिनांक/ 4 / 4 /2014

प्रति,

अपर प्रधान मुख्य वन संरक्षक,
(भू–प्रबंध)
छत्तीसगढ़ रायपुर

विषय :– **भारत एल्युमिनियम कंपनी लिमिटेड की मैनपाट सरगुजा की पूर्व से प्रचलित खदानों की पर्यावरण क्लीयरेन्स के लिए अनुमोदित कार्यो को कराये जाने हेतु पी.डी. खाते से आहरण की अनुमति प्रदान करने बाबत्।**

संदर्भ :– **1. सचिव, छत्तीसगढ़ शासन वन विभाग रायपुर का पत्र क्रमांक/एफ 5–123/96/10–3 दिनांक 31.07.2008.**
2. कार्यालयीन पत्र क्रमांक/तक.अधि./398 दिनांक 20.11.2013.
3. कार्यालयीन पत्र क्रमांक/तक.अधि./299 दिनांक 12.03.2014.

—00—

विषयांतर्गत प्रधान मुख्य वन संरक्षक (वन्यप्राणी) छत्तीसगढ़ रायपुर के द्वारा अनुमोदित मैनपाट बाक्साईड खदान के 10 कि.मी. परिधि के वनक्षेत्रों में वन्यप्राणियों के रहवास क्षेत्रों के सुधार हेतु प्रस्तुत योजना प्रस्ताव के अनुसार रूपये 139.89 लाख के कार्य कराये जाने हेतु निर्देशित किया गया।

प्रकरण अंतर्गत बाल्को कंपनी मैनपाट के द्वारा कुल राशि 139.89 लाख निम्नानुसार जमा किया गया है :–

क्र.	वर्ष	बैंक ड्राफ्ट नम्बर/दिनांक	राशि (लाख में)
1	2008-09	204219/ 01-11-2008	42.75
2	2008-09	220768/ 18-08-2009	42.75
3	2009-10	608689/ 06-01-2010	29.70
4	2010-11	915072/ 21-02-2011	24.69
योग :–			**139.89**

प्रकरण अंतर्गत उक्त राशि रूपये 139.89 लाख वनमण्डल के पी.डी. खाते में जमा किया गया है।

उपरोक्तानुसार राशि से कराये गये कार्य का भुगतान करने बावत् कृपया राशि रूपये 139.89 लाख के पी.डी. खाते से आहरण की अनुमति प्रदान करने का कष्ट करें।

वनमण्डलाधिकारी
सरगुजा वनमण्डल अम्बिकापुर

पृ.क्रमांक/तक.अधि./ 412 अम्बिकापुर, दिनांक/ 4 / 4 /2014

प्रतिलिपि :– मुख्य वन संरक्षक, सरगुजा वन वृत्त, अम्बिकापुर को सूचनार्थ एवं आवश्यक कार्यवाही हेतु सम्प्रेषित।

वनमण्डलाधिकारी
सरगुजा वनमण्डल अम्बिकापुर

[illegible]
Pr. H.&M. (C. P. & Berar Bill)

Subsidiary Rule 19 & 22 Under Treasury Rule (10)

Challan of money paid into the ....S. B. I. Dharamjaigarh..................Treasury
(to be presented at the treasury singal or in duplicate or in triplicate as the case may be)

By whom Brought	On what account	Under Rs. (in words)	Amount Rs.	P.
Divisional Forest Officer Dharamjaigarh	भारत ऐल्युमिनियम कंपनी लिमिटेड पो. आ. बालको नगर कोरबा (छ.ग.) के पत्र क्र. /बाल्को/391/दिनांक 17.12.2010 द्वारा हेतु रू. 13,48,000/– (तेरह लाख अंडतालीस हजार रू. मात्र) का डिमांड ड्राफट कमांक 198840 दिनांक 15.12.2010 द्वारा भारतीय स्टेट बैंक धरमजयगढ़ के नाम से देय राशि को खजाना दाखिल किया गया। Rupees ..1348000.00 Thirteen lac forty eight hundred Rs. Only	Rupees Thirteen lac forty eight hundred one Rs Only	13,48,000	00
		Total	1348000	00

Head of Revenue :- 8443 –सिविल जमा	Details :- बैंक ड्राप्ट क्र. 198840
Major Head 0106 – व्यक्तिगत (P.D. Account)	Notes - दि. 15.12.2010
Detailed Head वन मंडल अधिकारी धरमजयगढ़	Cash - 1348000/— मात्र
	Total

Certified that amount shown above has been entred in the departmental register of the head of revenue deposit

Dated 23.12.2010 Departmental Officer

D.F.O. Dharamjaigarh
Signature of Tenderer

	For Use in Treasury	
Examined Initials of Accountant	Received (Rs.in figures) ....13,48,000/–........ (Rs. in words) .... Signature of Tenderer	Entered Signature of Accountant

F:\FOREST\Expenditure-2\Subsidiary Rule.doc

Original Duplicate [illegible]

[illegible] | [illegible] Rules 19 & 23 Under Treasury Rule 16

Challan only paid into | Bank of India S.B.I. Dharamjaigarh /Treasury

[illegible]

[illegible]

By Whom brought / [illegible]	On what account / किस बाबत		Amount / रकम
D.F.O. DHARAMJAIGARH	[illegible] [illegible] दिनांक 3/03/2009 द्वारा implementation of wild life Conservation plan at Dharamjaigarh Forest Division reg. हेतु रू. 3448000/- (चौतीस लाख अडतालीस हजार मात्र) का बैक ड्राफ्ट क्रमांक 220608 दिनांक 02.03.2009 द्वारा भारतीय स्टेट बेंक धरमजयगढ़ के नाम से देय राशि को खजाना दाखिल किया गया ।	Under Rs. - चौतीस लाख अडतालीस हजार	3448000.00
		Total मीजान	3448000.00

In Words: - रू. - चौतीस लाख अडतालीस हजार मात्र

HEAD OF REVENUE MAJOR HEAD DETAILED HEAD		
	8443 – सिविल जमा 106 – व्यक्तिगत् जमा (P.D. Account)	Detail तफसील बैक ड्राफ्ट क्र. 220608 /02.03.09 Note जोड़ .... Cash नगदी .... Total मीजान Rs. 3448000.00

Certified that amount above has been entered in the department Register the head of Revenue indicated above space.

Date :-

Signature of Tenderer

D.F.O. Dharamjaigarh

	For use in Treasury खजाने के इस्तेमाल के लिये	
Examined Signature of the Accountant	Received Rs. (In Figures) .... Rs. (In Words) .... Signature of Treasurer	Entered No. Signature of the Accountant

Date | Treasury officer | Seal

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[illegible] Treasury Rule [illegible]

[illegible] duly paid into the State bank of India S.B.I. Dharamjaigarh / Treasury

[illegible]

By Whom brought	On what account		Amount
D.F.O. DHARA [redacted] AIGARH	[illegible] दिनांक 25/08/2009 द्वारा **implementation of wild life Conservation plan at Dharamjaigarh Forest Division Regular.** हेतु रू 3148000/ (एक्कतीस लाख अडतालीस हजार रू मात्र) का डिमाक ड्राफ्ट क्रमांक 220767 दिनांक 18.8.2009 द्वारा भारतीय स्टेट बैक धरमजयगढ के नाम से देय राशि को खजाना दाखिल किया गया।	Under Rs. - एक्कतीस लाख अडतालीस हजार रू. मात्र	3148000.00
		Total मोजान	**3148000.00**

In Words: - रू. - एक्कतीस लाख अडतालीस हजार रू मात्र

HEAD OF REVENUE MAJOR HEAD DETAILED HEAD	8443 – सिविल जमा 106 – व्यक्तिगत जमा (P.D. Account)	Detail तफसील डिमांड ड्राफ्ट क्र.220767 /18.8.09 Note जोड .... Cash नगदी .... Total मीजान Rs. **3148000.00**

[redacted]

Certified that amount above has been entered in the department **Register** the head of Revenue indicated above space.

Date :- 16/9/09

012285479

Ch.No. 362

Signature of Tenderer

D.F.O. Dharamjaigarh

Examined Signature of the Accountant	For use in Treasury खजाने के इस्तेमाल के लिये Received Rs. (In Figures) 3148000 ..... Rs. (In Word) .... Signature of Treasurer	Entered No. Signature of the Accountant

भारतीय स्टेट बैंक
शाखा – धरमजयगढ़ – 285
जे. एस. एदवाल
17 SEP 2009
सिविल जमा | कर्ज भुगतान | अग्रिम

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ENCLOSURE-3

WILDLIFE CONSERVATION SUBMITTED TO OFFICE OF DFO, AMBIKAPUR

vedanta
transforming elements

balco | BHARAT ALUMINIUM COMPANY LIMITED
P.O. - BALCO Nagar, Korba, CG
India- 495684

Balco/Mines/Forest/2017/01

Date: 01-02-2017

To,
The Divisional Forest Officer
Surguja Forest Division
Ambikapur (Chhattisgarh)

Sub: Mainpat Bauxite Mine (ML Area 639.169 ha), Expansion in Production Capacity from 0.75 Million TPA to2.25Million TPA (Despatchable) Located at Villages- Kesra, Kudaridih & Sapnadar, Tehsil- Mainpat, District-Surguja (Chhattisgarh)– Wildlife Conservation Plan for Schedule-I Species

Ref: ToR Letter No. J-11015/166/2016-IA.II (M) dated 17.08.2016.

Sir,

With reference to aforesaid subject & reference, we would like to inform you that we are hereby submitting theWildlife Conservation Plan of Schedule-I species for your kind consideration.

We earnestly request you to kindly authenticate the Wildlife Conservation Plan for Schedule-I, as per ToR Point No. 18 issued byMoEF&CC, New Delhi.

Thanking you,
Yours faithfully

For M/s Bharat Aluminium Company Limited
Authorized Signatory

कार्यालय वन मण्डलाधिकारी
प्राप्ति क्रमांक
दिनांक 03/2/17
सरगुजा वनमण्डल, अम्बिकापुर (छ.ग.)

Encl:

1. ToR Letter No J-11015/166/2016-IA.II (M) dated 17.08.2016
2. Wildlife Conservation Plan for Schedule-I Species

WILDLIFE CONSERVATION PLAN

FOR

INDIAN MONITOR LIZARD,

INDIAN PEAFOWL, SLOTH BEAR

&

ELEPHANT MOVING HERDS

For

Mainpat Bauxite Mine

(ML Area: 639.169 ha)








At Village - Kesra, Kudaridih and Sapnadar,

Post: Kamleshwarpur, Tehsil: Mainpat,

District : Surguja` (Chhattisgarh)

PROJECT PROPONENT

M/s Bharat Alluminium Company Ltd.

Registered Address:
Aluminium Sadan, Core -6, 2nd Floor,
Scope Office Complex, 7 Lodi Road, New Delhi - 110003.
Contact Person : Afroz Ali
E-mail : afroz.ali@vedanta.co.in
TEL No.: 07759 - 242015, Tele/Fax No.: 07759-241633

PREPARED BY

J.M. EnviroNet Pvt. Ltd.

(Registered EIA Consultant Organization from NABET-Q.C.I. and Approved Environmental Laboratory)
S.C.O. 16, SECTOR 10-A, GURGAON- 122 001 (HARYANA)
Phone No.: 0124-3206559, 4873400, Fax No.: 0124-4141029
E-mail: jmenviron@hotmail.com

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CONTENTS

ABBREVIATIONS

ABBREVIATIONS

MoEF &CC	:	Ministry of Environment, Forest & Climate Change
BALCO	:	Bharat Aluminum Company Limited
JMEPL	:	J M EnviroNet Pvt. Ltd.
ToR	:	Terms of Reference
IUCN	:	International Union for Conservation of Nature and Natural Resources
IWPA	:	Indian Wildlife Protection Act
EX	:	Extint
EW	:	Extinct in the wild
CR	:	Critically endangered
EN	:	Endangered
VU	:	Vulnerable
NT	:	Near threatened
LC	:	Least concern
VES	:	Visual Encounter Survey
GPS	:	Global Positioning System
Kg	:	Kilogram
FGD	:	Focused Group Discussion

CONSERVATION PLAN

1. INDIAN MONITOR LIZARD

(*VARANUS BENGALENSIS*)

1. Indian Monitor lizard (*Varanus bengalensis*)

1.0. Aim: -

- To prepare the conservation plan for Indian Monitor lizard (*Varanus bengalensis*), as per ToR letter issued by MoEF &CC, New Delhi dated 17.08.2016; Indian Monitor lizard found in buffer area of mine site.
- Protect and restore natural vegetation and terrestrial ecosystems.
- Minimize impacts of climate change on biodiversity.
- To achieve ecologically sustainable management of the study area.
- To protect& restore the significant habitats for Indian Monitor lizard (*Varanus bengalensis*).
- To Maintain and record the ethno biological knowledge.
- To spread the knowledge for conservation of Indian Monitor lizard (*Varanus bengalensis*).

1.1. Introduction: -

The Bengal monitor lizard (Varanus bengalensis) or bis-cobra is known by various names in the local dialects, viz., Godha in Sanskrit, Goh in Hindi and Punjabi, guishaap or goshaap in Bengal, goyra in Rajasthan, ghorpad in Maharashtra, belonging to Varanidae family, is sliding fast towards extinction, due to consistent persecution for its precious skin, yummy meat, and various body parts for folk remedies, besides freak accidents on road, while the farmers in some parts of India are engaged in the conservation of this species, due to agro-friendly characteristics, like feeding on insects and common pests, inimical to crops.

Plate- 1.0 -Photographs of Indian Monitor Lizard (*Varanus bengalensis*)

- Bengal Monitor (Varanus bengalensis or Common Indian Monitor, is a monitor lizard found widely distributed over Indian Subcontinent, as well as parts of Southeast Asia and West Asia. (http://maps.iucnredlist.org/map.html?id=164579)

Figure 1.0- Distribution of the *Varanus bengalensis*

- This large lizard is mainly terrestrial and grows to about 175 cm from the tip of the snout to the end of the tail.
- Young monitors may be more arboreal but adults mainly hunt on the ground preying mainly on arthropods but also taking small terrestrial vertebrates, ground birds, eggs and fish.
- It is basically omnivorous and often engaged in scavenging, hence playing a key role in cleaning the environment.

1.2. Reason for Conservation: -

- The Varanus bengalensis (Indian Monitor Lizard) is least concern species in the IUCN Red list of the species within the country, the species is protected under Schedule-I of the Wildlife Protection Act (1972) of India.

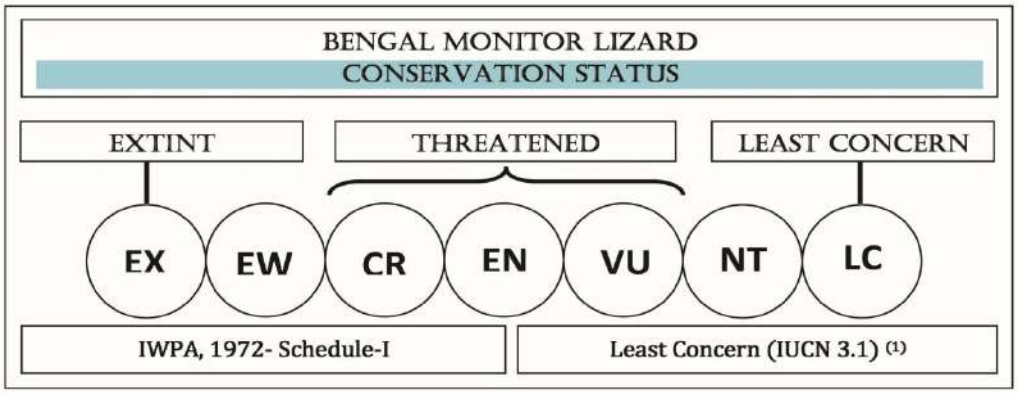

Figure 1.1 - Conservation status of the *Varanus bengalensis*

- The Varanidae are the only family of lizards which uses its long, highly flexible, and forked tongue for chemoreception, in relation to food foraging, predator detection, and attracting

opposite sex for reproduction, and is a valuable bio-indicator for detection of pesticides and other environmental contaminants.

- ❖ It has taxonomical significance for researchers, as the structure of the tongue is very different from that of other lizards, and is considered as an important character in squamate classification.
- ❖ The survival and multiplication of this species is important to our ecosystem. This induced us to explore the morphology of tongue of Bengal monitor lizard (*Varanus bengalensis*).
- ❖ Protection of critical habitats for wild populations.
- ❖ Prevention of illegal hunting and trade.
- ❖ Awareness programmes to revive support for monitor lizard conservation.

1.3. Classification

Table 1.0

Classification of *Varanus bengalensis*

Kingdom	Phylum	Class	Order	Family	Genus	Species
Animalia	Chordata	Reptilia	Squamata	Varanidae	*Varanus*	*bengalensis*

1.4. Used Methodology

- ❖ The survey was undertaken throughout the 10 km study area in selected localities for the period from December, 2016 to January, 2017.
- ❖ The surveys were conducted at different habitat types including the protected areas.
- ❖ The observations on monitor lizards were made using visual encounter surveys method(VES) to gather data on population of Varanus and general areas.
- ❖ Surveys were carried out in different aquatic and terrestrial habitats using a binocular.
- ❖ Thorough investigation was conducted in different habitat types including forest, grassland, human settlements, wetlands and agricultural lands the time of sighting, number of individuals, size and the habitat types were noted with GPS coordinates.
- ❖ Morphological measurements were taken using 1 m measuring tapes.
- ❖ After recording the measurements, the animals were released into their original habitats.
- ❖ The representative habitats were surveyed by foot between 10.00 hr to 16.00hr.
- ❖ The animals were identified and verified by the help of field guide.

1.5. Equipment used

- ❖ One meter measuring tapes for size measurement.
- ❖ Binocular for VES.
- ❖ Global Positioning System (GPS) for coordinates.

- A Sony Telephoto shooting Camera of 50 x zoom for photography.
- Compass for direction measurement.
- Trap Light of Nocturnal Survey.
- Field Guide for identification.
- Map of the 10 km study area along with demarcation of Core zone& Buffer Zone.
- Wrist watch for time estimation.

1.6. Study Area:-

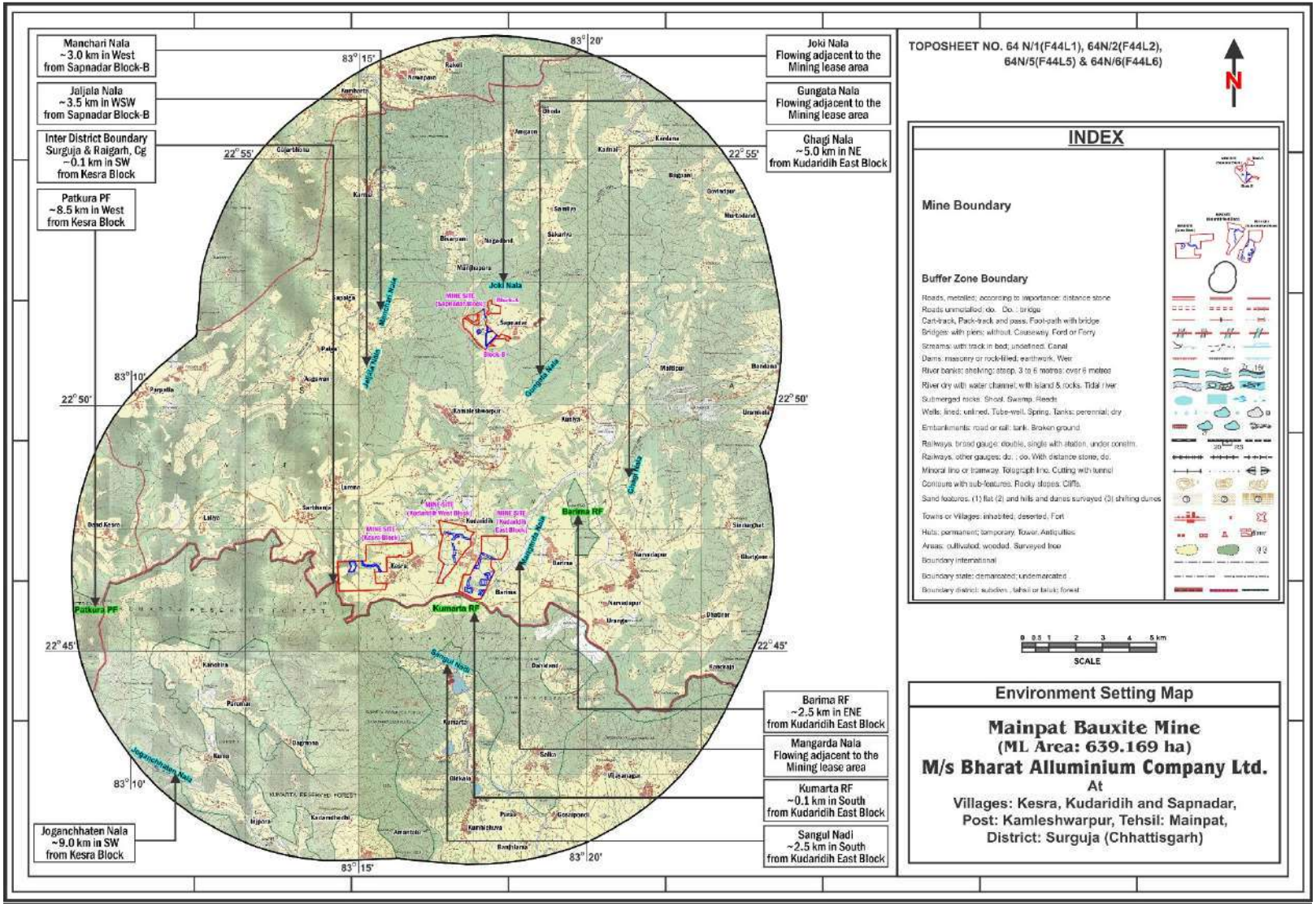

Figure 1.2 Map showing 10 km study Area

1.7. Ecology and Behavior

Monitor lizards are usually solitary and usually found on the ground, although the young are often seen on trees. *V. b. nebulosus* has a greater propensity for tree climbing. Bengal monitors shelter in burrows, they dig or crevices in rocks and buildings, whilst clouded monitors prefer tree hollows. Both races will make use of abandoned termite mounds. Bengal monitors, like other varanids, show true sleep at night and are diurnal, becoming active around 6 AM and bask in the morning sun. During winter, in the colder parts of their distribution range, they may take shelter and go through a period of reduced metabolic activity. They are not territorial, and may change their range seasonally in response to food availability.

They are usually shy and avoid humans. They have keen eyesight and can detect human movement nearly 250 m away. When caught, a few individuals may bite, but rarely do so.

Captives have been known to live for nearly 22 years. Predators of adults include pythons, mammalian predators and birds. A number of ectoparasites and endoparasites are recorded.

1.8. Habit & Habitat

The Indian monitor is diurnal in habits. It inhabits forest, desert, river banks, by the side of nallah, marshy land, and tidal creeks. It occupies burrows, dense vegetation, hollows of trees, creeks and cervices. It is a god climber, runner and also a good swimmer.

The species is distributed mainly in the lower elevations, and is found both in dry semiarid desert habitats to moist forest. They are often found in agricultural areas, and are mainly found below 1500m altitude. Indian Monitor lizard is widely disturbed and lives in all biotopes from evergreen forests to the fringes of the desert. A diurnal lizard is more active in the morning & evening. It lives in cracks and crevices in the ground and it is also said to occupy the space between the roof and the ceiling of the less frequented forest rest house.

1.9. Food & Feeding habit

This is a carnivorous animal. It eats any animals it can overcome. Young monitors may be more arboreal, but adults mainly hunt on the ground, preying mainly on arthropods, but also taking small terrestrial vertebrates, ground birds, eggs and fish, small turtle and snakes also. It probably seeks its prey both by smell & sight.

1.10. Breeding Pattern

The main breeding season is June to September. Eggs are laid from mid-April to October. Females may be able to retain sperm, and held in confinement have been able to lay fertile eggs. Males, however, begin to show combat behaviour in April. Females dig a nest hole in level ground or a

vertical bank and lay the eggs inside, filling it up and using their snouts to compact the soil. The females often dig false nests nearby and shovel soil around the area. They sometimes make use of a termite mound to nest. A single clutch of about 20 eggs are laid. The eggs hatch in 168 to nearly as long as 254 days. About 40 to 80% of the eggs may hatch. The larger females, as among other reptiles, lay more eggs. Incubation period is 8 to 9 months. The newly hatched young's are common at the beginning of the monsoon.

1.11. Observations

During survey, Monitor lizard was found in buffer area close to the crevices, cracks and abandoned site. The movement of the species was found to be mostly in and around the agriculture field.

1.12. Threats

Monitor lizards are hunted for skin and their body fat. Its eggs are considered a delicacy and the entire animal is also eaten.

- Unani, the Greco-Arabian system of medicine, recommends the use of various body parts of monitors to cure numerous ailments.
- The population of the Common Indian Monitor, *Varanus bengalensis* has alarmingly dwindled throughout the Indian sub-continent mainly due to excessive exploitation of the adults for their commercially valuable skins, as food and in traditional medicines.
- Habitat loss due to large-scale deforestation, urbanization, industrial activities and other biotic factors are also responsible for the population decline of the species.
- The population of the species of monitor lizards has drastically declined throughout their range due to illegal and extensive exploitations and adults for their commercially valuable skin, food purposes by local fisherman community and traditional medicinal values.
- The skin is used in manufacture of luxury items, which were traded in India and abroad.
- Locally the species were exploited for meat, eggs and traditional values. Habitat loss and human settlements nearby rivers and loss of virgin habitat of theses reptiles.
- This species is possibly threatened by habitat destruction, however, as it can utilize a wide range of habitat types this is not considered a major threat at this time.
- This species is indirectly affected by pesticides; which reduce the food resource availability in agricultural areas.

- However, perhaps the greatest threat to this species is hunting as it is hunted commercially for its skin, and its meat is commonly eaten. The fat of this species is also used in traditional medicine.
- All monitor lizards are least concern by the trade in reptile skins and having some medicinal value so they are sold too in the market.
- Deforestation- affects the food availability.
- Human- Monitor lizard conflict- The people generally kill these species when it is entering the habitation of people due to lack of awareness in local people about this reptile.

1.13. Conservation and Management Plan for Indian Monitor Lizard

- The company will organize seminars etc to create awareness among people so that they stop killing this Schedule- I species.
- There is no scarcity of food or habitat to the animal. Preventing poaching will be the single most important factor in the conservation of the species, for which awareness programmes should be run frequently.
- Further, research into the harvest levels, threats, trends and habitat status of this species is needed.
- The establishment and management of new protected areas where it is illegal to hunt this species should be carried out to provide a refuge from persecution.
- The company will carry on an afforestation programme.
- Probable habitat boundaries need to determine for all areas that are likely to possess viable populations so that protection measures can be initiated.
- All appropriate landowners within these protection boundaries should be identified. Each should be contacted in the manner that will ensure co-operation. Land owners should be made aware of the sensitivity of this species and of the value of maintain natural habitat. They should be made aware of the available conservation options.
- A conservation awareness program that involves local people in the conservation of this species is vital to ensure long-term success of any management plan. Plans should include educational materials, signs, and instill pride amongst the locals as caretakers of the last populations of this species in their habitation. There is an equally compelling need for a concerted human/monitor lizard conflict mitigation program.

- Public awareness is an important priority within the scope of overall management plans for the species. Public awareness often yields new locality information and could reduce the frequency with which this species are killed.
- Poaching should be restricted and poachers should be punished.
- Poaching and hunting of this reptile would continuous monitor and take action against it according to wildlife protection act-1972. Aware local people and built effective information system against hunting and poaching activities.
- Effective communication network would be developed between local people, forest officers and conservation experts to reduce the risk of the human conflict with monitor lizard, hunting and poaching activities.
- Training programme would be conducted to conservation expert team and local people for safe handling of this reptile.
- The most useful recommendations to protect the species are as follows: -
    1. At present there is no special management of these species in respect of the population monitoring, habitat conservation and control measures. Introduction of strict legislation to conservation and protection and initiation of severe action against those violating wildlife laws and policies.
    2. Creation of awareness among the public to protect of these species in the wild.
    3. Prevention of poaching, illegal killing and trading products of these species and
    4. Initiation of captive breeding programmes to increase the populations of this species in the wild.

-@-@-@-

2. INDIAN PEAFOWL
(*PAVO CRISTATUS*)

2. Indian Peafowl (*Pavo cristatus*)

2.0. Aim

- To prepare the conservation plan for Indian Peafowl (*Pavo cristatus*), as per ToR letter issued by MoEF &CC, New Delhi dated 17.08.2016; Indian Peafowl (*Pavo cristatus*) found in buffer area of mine site.
- Protect and restore natural vegetation and terrestrial ecosystems.
- Minimize impacts of climate change on biodiversity.
- To achieve ecologically sustainable management of the study area.
- To protect & restore the significant habitats for Indian Peafowl (*Pavo cristatus*).
- To Maintain and record the ethno biological knowledge.
- To spread the knowledge for conservation of Indian Peafowl (*Pavo cristatus*).

2.1. Introduction

- Peafowl is the largest gallinaceous birds. Peafowl is common word for male and female. The male is known as Peacock while female is known as Peahen and the immature offspring are sometimes called peachicks. The male bird is having a beautiful crest consisting of a row of small feathers on the crown, the colour of the crown feathers is bright blue known as Peacock blue, the same colour also appears on the head, neck and breast, a white patch under the eyes is a distinctive characteristic of this bird, the upper parts found barred. Lower breast, abdomen and flanks were found black and green, wings brownish black with blue tinge. Legs dust-grey or blackish with a spur in the male. Train formed by the upper tail coverts, colour of the tail feathers is metallic green with bronze and purple, sub terminal ocellus formed by a blue patch surrounded by green and purple colour. It is known as eye spot. Fish tail feather is the longest feather of the train; the end is bifurcated like the tail of fish. Female and sub-adult youngs are more or less alike, the crest lores, and upper neck brownish, each feather bordered bronze green, sides of bead and throat are white; lower neck, upper breast and upper back are metallic green; abdomen pale buff; wing blackish brown with spots.

Plate- 2.0-Photographs of Indian Peafowl

- Peafowl is very ancient Indian bird. The Greek philosopher, Aristotle (384-322 B.C.) could describe its physical features and food habits. Writers of ancient Greece, Rome and Egypt have referred this bird in their script. Alexander carried 200 Peafowls along with him to Greece, and from them had spreaded all over Europe during 326 B.C. There are references of Peafowls in Rigaveds, Ramayana and Mahabharata.
- The Peacock is known by many names: In Hindi, Urdu, Punjabi, Gujarati and Marathi the Peacock is called 'Mor', in Kannad 'Navilu', in Talugu 'Nemali', in Tamil and Malayalam 'Mayil', in Sinhali 'Monara', in Persian 'Taus', in French it is called 'Peon', it is 'Pavo' in Latin and Greek; in Nepali 'Majur', in Bengali and Oodia 'Mayura', in Manipuri 'Bahaod', in Bhutia 'Manja' or 'Meja', in Rajasthani 'Morla' and in Sindhi 'Mur'. There are many names of Peafowl in Sanskrit viz. Mayura, Bhujangabhuk or Bhujangabjogin, Neelkantha, Kekin, Meghananda, Sikhavala, Candrakin, Barhina, Silapanga, Sikhandin, Kalapin, Citrupicchaka.
- The term 'Mayura' means a killer. It is a killer of the killer-the Snakes. The term bhujangabhuk and Bhujangabhogin means Snake-eater, peafowl has habit of eating the Snake. The name 'Neelakantha' means blue-necked, it suggests that the Peafowl is habitual eating venomous serpents hence its neck became blue by virtue of the terrible poison like Lord Shivam. The Kekin

is believed to be in the Sadja, the first of the seven primary musical notes. The term 'Meghananda' means happy to see clouds. The word Sikhin and Sikhavala means possessing the crest on head. The crest considerably adds to the beauty of the bird and suggest its dignity. The term 'Candrakin' means possessing the eyes in the tail. It points to the significance of the brilliant variegated circular spots in the feathers. The terms Barhina and Barhin suggest the most charming feather of Peacock- the pretty feathers. The name 'Silapanga' means having white-outer-corners of the eyes, which is a sign of purity. The terms 'Sikhandin' is used for having a long beautiful tail. The term 'Kalapin' means many tail covering feathers found with tail. Chitrapicchaka term indicate that the tail which is the most attractive part of the Peacock's body having variegated nature in feathers.

- The Indian Peafowl (Pavo cristatus) has been an integral part of Indians and their culture, religion and mythology for centuries. In addition to this, the Indian Peafowl is well recognized for its ecological and aesthetical values, and hence aptly declared as the 'National Bird' of India in the year 1963.
- Since the early 1990's, there have been reports of increasing illegal trade in Peafowl feathers, large-scale mortalities due to increased use of insecticides/pesticides in agricultural lands, poaching, and retaliatory killings by people due to alleged crop depredation by Peafowl. Several Peafowl stronghold areas in the country are now concerned about the current declining status.
- Indian Peafowl (Pavo cristatus), is found widely distributed over Indian Subcontinent. The Indian Peafowl Pavo cristatus is resident bird formerly widely distributed in India {from Indus in the west to Assam in the East and from foothills of Himalayas (up to 2000m) in the North to Kerala in the south. At present found in parts of West Bengal, Bihar, Orissa and peninsular India but these are abundant in Gujarat and Rajasthan only.
- The Indian Peafowls (*Pavo cristatus*) mainly are found in India, Bangladesh and Shri Lanka. The Green Peafowls (*Pavo muticus*) are found in Burma, Thailand, Vietnam, Malaysia and Java. The Congo Peafowls (*Afropavo Congensis*) are found in Zaire (Africa) (http://maps.iucnredlist.org/map.html?id=22679435)

Figure 2.0- Distribution of the Indian Peafowl (*Pavo cristatus*)

- The peafowl include two Asiatic bird species (the blue or Indian peafowl originally of India and Sri Lanka and the green peafowl of Myanmar, Indochina, and Java) and one African species (the Congo peafowl native only to the Congo Basin) of birds in the genera Pavo and Afropavo of the Phasianidae family, the pheasants and their allies, known for the male's piercing call and, among the Asiatic species, his extravagant eye-spotted tail covert feathers which he displays as part of a courtship ritual.
- The Common Indian Peafowl or the Blue Indian Peafowl belongs to the family Phasianidae and order Galliformes. There are three species of Peafowl found in the world, out of them two species belong to genus Pavo of sub-family Pavoninae.

1. The Indian Peafowl (*Pavo cristatus*) is short-legged with a marked sexual-dimorphism.
2. The Green Peafowl (*Pavo muticus*) has a longer and slimmer neck and longer legs, sexual-dimorphism is slight.
3. (3). The Congo Peacock (Atropavo Congensis) is the third species of Peafowl.

   It belongs to Genus Aflopavo to sub-family, Afropavoninae. They are distinguished by not having typical stripes and ocellate spots in their plumage. The Peacock is probably the oldest ornamental bird, in the course of time man has raised various Peacock breeds like White Peacock, Mottled Peacock and Black Winged Peacock (Grzimeck, 1984).

2.2. Characteristics

- Total Body Length: male = 7.5 feet, including the tail; female = 2-3 feet Length of male's train = 4.5-5 feet (60% of total body length) Wingspan = 4.5-5 feet, Weight: male = 3.5 kg to 6.0 kg; female = 2.5 kg to 3.7 kg

Table: - 2.0

Common Body Characteristics of *Pavo Cristatus*

Gender	Length (feet)*	Weight (Kg)	Feathers(feet)	Age (Years)
Male	7.5	3.5 to 6.0	4.5 to 5.0	20-24
Female	2-3	2.5 to 3.7	1.0 to 1.5	
*= Length is Including Tail				

- Both the male and the female have a fan-shaped set, known as the crest, of spatula tipped wire-like feathers on top of their head. Their eyes are a dark, hazel brown. The facial skin is white. The beak and legs are brown.
- The female is mottled brown and dull looking, has a white belly, and lacks a train. She has green neck feathers.
- The male has a radiant blue neck and breast. They also have a metallic bronze green train, spotted with purplish-black markings also known as eyespots or ocelli. The train on the male is used for display to entice the female to mate with him.
- Lifespan: In the Wild 20-24 years; In Captivity same.

2.3. Reason for Conservation

- This bird recognized under Schedule- I (Section- III) species of Indian Wild Life Protection Act, 1972.
- The survival and multiplication of this species is important to our ecosystem.
- Protection of critical habitats for Indian Peafowls (*Pavo cristatus*) populations.
- Predators: foxes, raccoons, dogs, crested hawk eagle, eagle owl, jackals.
- Prevention of illegal hunting and trade.
- Awareness programmes to revive support for Indian Peafowls (*Pavo cristatus*) conservation.
- 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.
- Although the train feathers of the Indian Peafowl are traded for various reasons, it is not included on any Appendix of the Conversation 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.

2.4. Classification

Table 2.1
Classification of Indian Peafowl (*Pavo cristatus*)

Kingdom	Phylum	Class	Order	Family	Genus	Species
Animalia	Chordata	Aves	Galliformes	Phasianidae	Pavo	Pavo cristatus

2.5. Used Methodology

- The survey was undertaken throughout the 10 km study area in selected localities for the period from December, 2016 to January, 2017.
- The surveys were conducted at different habitat types including the protected areas.
- The observations on *Pavo cristatus* was made using visual encounter surveys method (VES) to gather data on population of *Pavo cristatus* and general areas.
- Surveys were carried out in different aquatic and terrestrial habitats using a binocular.
- Thorough investigation was conducted in different habitat types including forest, grassland, human settlements, wetlands and agricultural lands the time of sighting, number of individuals, size and the habitat types were noted with GPS coordinates.
- Morphological measurements were taken using 1 m measuring tapes.
- After recording the measurements, the animals were released into their original habitats.
- The representative habitats were surveyed by foot.
- The animals were identified and verified by the help of field guide.

2.6. Equipment used

- One-meter measuring tapes for size measurement.
- Binocular for VES (visual encounter survey).
- Global Positioning System (GPS) for coordinates.
- A Sony Telephoto shooting Camera of 50 x zoom for photography.
- Compass for direction measurement.
- Field Guide for identification.
- Map of the 10 km study area along with demarcation of Core zone & Buffer Zone.
- Wrist watch for time estimation.

2.7. Study Area: -

The study area given in figure no. 1.2 page no. 9.

2.8. Observations

During survey, Peafowl was found in an agriculture field close to the project site. The movement of the species was found to be mostly in and around the agriculture field.

2.9. Ecology and Behavior

- The bird is found in scrub-jungles and forest edges; it shows affinity to moist and dry deciduous and semi-arid biomes. It is also found in agriculture fields, along streams with good vegetation. It generally prefers a habitat mosaic of scrub and open areas, with adequate sites for dust bathing and lekking. The Peafowl was spotted in an agricultural farm, close to the proposed project site.
- Indian peafowl stay in small flocks (harems) of 1 peacock (male) and 3-5 peahens (females).
- Peafowl run more than they fly. The only time they fly is when they have to cross a river or ravine, when trying to escape predators, and to roost up in trees.
- They forage in the early morning and shortly before sunset. In the morning they will bask on rock heaps or haystacks. They retreat to the shade and security of the forest for the hottest part of the day.
- Peafowl physically interact with each other usually during territorial disputes. They will attack each other with their beaks and claws, chasing and pecking at each other.
- Peafowl warn each other when danger approaches with loud, shrieking cries and honks. They also call during mating season.
- They usually roost in the same tree every night. They fly to the top branches of dead trees just a little after sunset and leave just before sunrise.
- Enrichments at the Zoo: various insects, fruit

2.10. Habit & Habitat

The habitat used by Indian peafowl was categorized as follows:

(i) 'Riverbed', which was rocky and dry throughout the period of study, with only a few scattered waterholes;

(ii) Open flat areas supporting short or tall grass with scattered trees termed 'grassland'. Occasionally, such areas had profuse growth of *Cassia tora*, an herb. The grassland bordered the course of the riverbed;

(iii) 'Lantana thickets' bordered the grassland and were especially prominent on the base of steep slopes. This area was dominated by the exotic weed *Lantana camara*;

(iv) 'Miscellaneous forest' surrounded the slopes around the valley and it had trees such as *Terminalia tomentosa, Anogeissus latifolia, Mallotus philippensis* and *Cassia fistula*.

Adult males more frequently used riverbeds and grasslands for displaying than Lantana thickets or miscellaneous forests.

We attribute this to; (1) presence of water holes (2) increased visibility of adult males in open habitats such as the riverbeds and the grasslands (3) increased visibility combined with aggregation of females and sub-adult males resulting in reduced risk of predation.

2.11. Food & Feeding habit

- Peafowl is an opportunistic feeder and an omnivore. Peafowl are mainly granivores as they chiefly feed on paddy in the agricultural ecosystem. They are considered pests in the agricultural ecosystem. peafowl feed on a wide range of crops such as groundnut, tomato, paddy, chilly and bananas in the cultivated areas.
- Droppings contained chiefly vegetable components (leaves, twigs, seeds, shoots, and fruits), hard undigested remains of insects, and grit. In order to get minerals and grind the food, peafowl consume grit in small quantities. The dropping contained a large proportion of Ziziphus oenoplia fruits.
- In all, in the natural habitat, Indian Peafowl mainly feeds on grass seeds, tender leaves and shoots of herbaceous species, various flowers, and *Ziziphus spp*., fruits; and in the agricultural landscape it consumes paddy, finger millet, ground nut, and other vegetable crops such as tomatoes.

2.12. Reproduction

- Peafowl reach sexual maturity at approximately 2-3 years of age.
- Indian peafowl males pair with 2 or more females. Courtship displays happen in leks, which are breeding territories in close proximity to others. Females wander through several territories before choosing a male.
- During courtship, the male displays his train by fully fanning and lifting it above his head and performing various body movements. After mating, the male has no other involvement with the female or the chicks.
- Nests are a shallow depression dug in the ground concealed in scrub vegetation.
- Females lay a clutch size of 3-6 eggs. Incubation lasts 28-30 days.
- About 2 hours after hatching, the chicks are able to move around and follow the mother. They stay with her for about 9 months.

2.13. Activity pattern

- ‘Moving’ was the most frequently observed activity, recorded in all the habitats. The probable reason for such a high mobility could be due to the dry vegetation, and low levels of food availability, forcing peafowl to move a lot to forage, and meet out their food requirements. ‘Resting’ was also found to be one of the major activities. Peafowl use undergrowth thickets of shrubby bushes during midday to avoid the heat of the sun. ‘Calling’ was more at dawn and dusk. Peafowl utter alarm calls, when predators approach them. ‘Preening’ was observed mostly in the early mornings before foraging started, whereas ‘flight’ occurred mainly before moving to a roosting site, or from the roosting site, when disturbed by predators.

2.14. Threats

- No direct impact on the Peafowl due to the mining activity because of no movement found in the mine site area; it is only found in buffer area in an agriculture field.
- The Indian Peafowl is under threat from various quarters that include the demand for feathers and wild meat, conflict with farmers during cropping season, increased use of chemical fertilizers and pesticides, and habitat degradation.
- Habitat degradation and loss –more significantly from conversion of their habitat to agriculture, habitation and industrial growth, poisoning to counter crop damage, consumption of eggs and fat extracts for alleged medicinal values, and killing for wild meat.
- The Indian Peafowl is under threat from various quarters that include the demand for feathers and wild meat, conflict with farmers during cropping season, increased use of chemical fertilizers and pesticides, and habitat degradation. An adult peacock has about 200 tail feathers, which it sheds from August on wards; fully- developed new feathers appear in February.
- The fallen feathers are collected and sold in local markets and the birds are also reportedly killed to increase revenue return.
- Other threats include habitat degradation and loss- more significantly from conversation of their habitat to agriculture, habitation and industrial growth, poisoning to counter crop damage, consumption of eggs and fat extracts for alleged medicinal values, and killing for wild meat.
- Although these threats are believed to be causing an alarming decline in populations, the magnitude and pattern of the effects in different parts of the country are yet to be quantified.
- Habitat loss due to large-scale deforestation, urbanization, industrial activities and other biotic factors are also responsible for the population decline of the species.

- The population of the species of Indian Peafowl has drastically declined throughout their range due to illegal and extensive exploitations.
- This species is possibly threatened by habitat destruction, however, as it can utilize a wide range of habitat types this is not considered a major threat at this time.
- This species is indirectly affected by pesticides; which reduce the food resource availability in agricultural areas.
- Deforestation- affects the food availability.
- Although these threats are believed to be causing an alarming decline in population, the magnitude and pattern of the effects in project study area are yet to be quantified.

2.15. Action plan for Conservation of Peafowl

- Mapping of habitat and distribution status of the species across the 10 km radius from project site.
- Time series analysis of habitat change, to quantify the rate of change and identify high risk areas and potential sites for further affirmative action.
- Estimation of population size by different counting methods such as line transect, call counts and roost counts.
- Intensive ecological investigation in reprehensive sites in major biogeography zone with focus on the effects of threats in relation to breeding success and survival probability.
- Quantification of trade, with details on source and people involved.

2.16. Conservation Measures

- Encourage afforestation activities around the Peafowl habitation. The selection of plant species should be based on requirements of Peafowl roosting, food, shelter.
- Fruit and shade plants should be grown near to the Peafowl habitation like Mango, Amla, Guava, Imli, Banyan, Neem, Pipal, Jack fruit etc.
- Small grooves should be constructed on wasteland in Peafowl habitation area. Grooves are small patches of vegetation that are protected by traditional manner. The grooves should have a fencing of about 7-10 ft high, & provided with one hole for water & food for the bird.
- The company will organize seminars etc. to create awareness among people so that they stop killing this Schedule- I species.
- There is no scarcity of food or habitat to the animal. Preventing poaching will be the single most important factor in the conservation of the species, for which awareness programmes should be run frequently.

- Further, research into the harvest levels, threats, trends and habitat status of this species is needed.
- The establishment and management of new protected areas where it is illegal to hunt this species should be carried out to provide a refuge from persecution.
- The company will carry on an afforestation programme.
- Probable habitat boundaries need to determine for all areas that are likely to possess viable populations so that protection measures can be initiated.
- All appropriate landowners within these protection boundaries should be identified. Each should be contacted in the manner that will ensure co-operation. Land owners should be made aware of the sensitivity of this species and of the value of maintain natural habitat. They should be made aware of the available conservation options.
- A conservation awareness program that involves local people in the conservation of this species is vital to ensure long-term success of any management plan. Plans should include educational materials, signs, and instill pride amongst the locals as caretakers of the last populations of this species in their habitation. There is an equally compelling need for a concerted human/ Indian Peafowl conflict mitigation program.
- Public awareness is an important priority within the scope of overall management plans for the species. Public awareness often yields new locality information and could reduce the frequency with which this species is killed.
- Poaching should be restricted and poachers should be punished.
- Poaching and hunting of this bird would continuous monitor and take action against it according to wildlife protection act-1972. Aware local people and built effective information system against hunting and poaching activities.
- Effective communication network would be developed between local people, forest officers and conservation experts to reduce the risk of the human conflict with Indian Pea fowl, hunting and poaching activities.
- Training programme would be conducted to conservation expert team and local people for safe handling of this bird.
- The most useful recommendations to protect the species are as follows: -

5. At present there is no special management of these species in respect of the population monitoring, habitat conservation and control measures. Introduction of strict legislation to

conservation and protection and initiation of severe action against those violating wildlife laws and policies.

6. Creation of awareness among the public to protect of these species in the wild.
7. Prevention of poaching, illegal killing and trading products of these species and
8. Initiation of captive breeding programmes to increase the populations of this species in the wild.

- Small holes containing water should be constructed in habitation zone of Peafowl and its water quality should be maintained.
- Seminars, Focus Group Discussion (FGD), Nukar Natak, poster presentation should be organized at school and Gram Panchayat level to spread awareness to the local people. Group discussions should be held indicating how to protect this bird from killings, predators, poaching for game meat, eggs & feathers, etc.
- Encourage local farmer to use bio-pesticide, bio-fertilizer and vermi-composting in agriculture practices.
- It is critical that urgent efforts are made to understand the habitat and population status of the species through field based research and in situ consecration projects.
- As per the present scenario underlined the need for such efforts. The actions required are:

1. Mapping of habitat and distribution status of the species across the country, inside and outside protected areas.
2. Time 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 zones with focus on the effects of threats in relation to breeding success and survival probability;
5. Quantification of trade, with details on source and people involved; and
6. Undertaking outreach activities to sensitize local communities, which may be carried out by a network of student clubs' (e.g. National Green Crops throughout the country. These people could be trained to collect population data and undertake monitoring within their localities, and the reliability of the results could be ensured by adopting rigorous protocols. These ambitions initiatives should be executed through consultative processes involving various research and conservation agencies in the country.

- The reason for the precarious status of many species including peafowl is the consistent bias towards endangered species and conservation intervention that are based on restrictive models (protected area- centric conservation). This approach overlooks common species when planning and implementing research and conservation schemes. Though this policy was essentially triggered by limited resources and a desire to safeguard a few charismatic species through to be highly threatened, it has remained the major conservation policy even through our understanding of biodiversity conservation issues has increased substantially.
- In practice, this does not encourage imaginative thinking about alternative options and mobilizing resources for a broader plan. This myopic approach often results in common species becoming threatened, and thus requiring greater human and fiscal resources than would have been the case if some thought had been given to broader conservation issues.
- Therefore, while concentrating on threatened species management, efforts should simultaneously be made to mobilize resources and develop strategies for keeping the common species common'.

-@-@-@-

3. SLOTH BEAR
(*MELURSUS URSINUS*)

3. Sloth bear (*Melursus ursinus*)

3.0. Aim

- To prepare the conservation plan for sloth bear (*Melursus ursinus*), as per ToR letter issued by MoEF &CC, New Delhi dated 17.08.2016; sloth bear (*Melursus ursinus*) found in buffer area of mine site.
- Protect and restore natural vegetation and terrestrial ecosystems.
- Minimize impacts of climate change on biodiversity.
- To achieve ecologically sustainable management of the study area.
- To protect & restore the significant habitats for sloth bear (*Melursus ursinus*).
- To Maintain and record the ethno biological knowledge.
- To spread the knowledge for conservation of sloth bear (*Melursus ursinus*).

3.1. Introduction

- The sloth bear (*Melursus ursinus*), also known as the labiated bear, is a nocturnal insectivorous bear species native to the Indian subcontinent. The Sloth Bear also has a variety of "common" names in the different countries:
  - North India and Nepal: Bhalu
  - India: Rincch, reachi, richwa, asval, karadi, Jouni karadi, chigu bunti.
  - Sri Lanka: walaha(male), waelahinna(female), Karadi.
  - Bhutan: doni
  - Bangladesh: bhaluk
- The bear is, however, usually known as the Sloth Bear. For some years, the Sloth Bear was known as the Bear Sloth, because hunters in India though it was a relative of the South American Sloth.
- Both animals have arboreal habits and both have long, curved claws. At the end of the 18th Century, the Sloth Bear was called the Ursine bradypus or Ursiform Sloth and given the name Bradypus ursinus. It was only at the beginning of the 19th Century, when a Sloth Bear was shipped to a zoo in France, that scientists realized the animal was a bear and changed its name from Bear Sloth to Sloth Bear.

Plate 3.0 -Photographs of Sloth Bear

- The sloth bear (*Melursus ursinus*) mainly are found in India, Nepal, Bangladesh and Shri Lanka. (http://maps.iucnredlist.org/map.html?id=13143)(figure-3.0)

Figure-3.0 - Distribution of the sloth bear (*Melursus ursinus*)

- Sloth bears are restricted to the Indian subcontinent: India, Sri Lanka, Nepal, Bhutan, and Bangladesh. At the turn of the century, sloth bears were found throughout Sri Lanka, but due to

wide scale conversion of upland forests to coffee and tea, they are now found only in the northern and eastern lowlands.

- The most current range map shown in **Figure 3.0**, however, includes areas where forests are highly degraded or absent, and where bears probably no longer occur.
- In India, sloth bears have a patchy distribution corresponding with remaining forest cover; they are absent in the high mountains of Himachal Pradesh and Jammu and Kashmir, the northwestern deserts of Rajasthan, and a broad non-forested swath in the south.
- Northward they extend through the lowlands of Nepal and into the Siwalik Hills; the population in Nepal is no longer continuous with that of India.
- Eastward, the range stretches through southern Bhutan, and into the Indian states of Assam, Manipur, and Arunachal Pradesh.
- Some sloth bears may still exist in remnant, mixed evergreen forests of the Chittagong and Sylhet regions of eastern Bangladesh, but by the early 1970s they had been extirpated from the sal forests of central Bangladesh.
- There is no data indicating that sloth bears ever occurred as far east as present day Myanmar, although it is not clear what would have prevented their spread there from the adjoining portion of southeastern Bangladesh.

3.2. Common Characteristics

- The **sloth bear** has thick shaggy fur that is black to brown colored. Its ears are lined with long fur and it has a long snout, a long tongue, round eyes, and a large nose. Its head resembles a domesticated dog. The area around it's muzzle and eyes are cream colored. The sloth bear has a **distinct 'V' or 'U'-shaped pattern** displayed on its chest that is white or gold colored. (Plate-1).
- At one time this curious species was classified as a sloth. It does have long claws, it is an excellent tree climber, and it moves slow. However, it is definitely a member of the bear family Ursidae. Its classification is *Melursus Ursinus*.
- Common habitats include grasslands, forests, and dense brush lands. They are found in India, Bangladesh, Sri Lanka, Bhutan, and Nepal.
- Their favorite food is **termites**, other insects, and grubs. In their habitat these are abundant and available all year long. They will also eat leafy plants, fruits, nuts, root vegetables, honey, and rodents.

- Specialized adaptations help them find their food. They have a long muzzle and nostrils that can close at will. Combined with their long tongue and lips they can penetrate termite holes and operate like a powerful vacuum cleaner to suck up the tasty insects.
- They also have long curved claws. They use their claws to detach and uncover vegetation to locate insects and prey. Their claws are larger than most bear species. Long claws are especially useful when looking for insects. They aid in prying off bark, penetrating termite and bee nests, and turning over logs and stones.
- Males weigh around 225 to 300 pounds. Females are about 125 to 200 pounds and are 4 to 5 feet long. Height is 3 to 4 feet high, length is 5 to 6 feet long.
- Sloth bears do not hibernate due to their warmer climates and the availability of food sources throughout the year.
- Life span is estimated to be 20 to 30 years in the wild. Precise figures are unknown. Estimates are partially based on those in captivity, which can live to be up to 35 to 40 years old. In the wild many sloth bears succumb to survival hardships and conflicts with mankind.
- Breeding season is dependent on region. In most areas mating takes place during the summer and cubs are born in the spring. However, in some areas such as Sri Lanka, mating can take place most of the spring and summer, if not all year.
- Litter size is usually 1 to 3. Although there have been rare sightings of up to four cubs being nurtured by a single mother, this is extremely uncommon and an extra challenge for her.
- Cubs stay with their mother for 2 to 3 years and like to hitch a ride on her back.
- Sloth bears like to escape from the heat of the day and forage for food at night. They will start to become active as the sun starts to set. This is also the time when many insects such as termites are more active.
- The sloth bear will use its **excellent sense of smell** to locate food. It will return to well-known feeding areas and work its way around to find insects, fruits, and other favorite foods. Often a fresh supply of bugs will replenish the ones that were sucked up during a previous raid. The sloth bear will return the next day or so to check for "second helpings".

3.3. Reason for Conservation

- 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 their legal protection.

- International trade of the sloth bear is prohibited as it is listed in Appendix I of the Convention on International Trade in Endangered Species.
- The survival and multiplication of this species is important to our ecosystem.
- Protection of critical habitats for sloth bear (*Melursus ursinus*) populations.
- Prevention of illegal hunting and trade.
- Awareness programmes to revive support for sloth bear (*Melursus ursinus*) conservation.
- The sloth bear is listed as Vulnerable species in the Red List of International Union for Conservation of Nature (IUCN) (Figure 3.1).

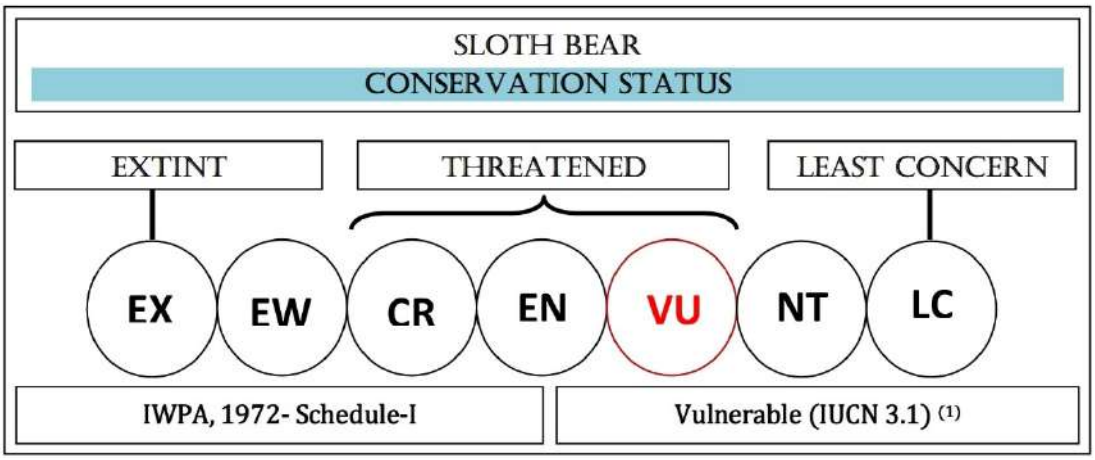

Figure-3.1 Conservation Status of the sloth bear (*Melursus ursinus*)

3.4. Classification

Table 3.0

Classification of sloth bear (*Melursus ursinus*)

Kingdom	Phylum	Class	Order	Family	Genus	Species
Animalia	Chordata	Mammalia	Carnivora	Ursidae	**Melursus**	*M. ursinus*

3.5. Used Methodology

- The survey was undertaken throughout the 10 km study area in selected localities for the period from December, 2016 to January, 2017.
- The surveys were conducted at different habitat types including the protected areas.
- The observations on sloth bear (*Melursus ursinus*) was made using visual encounter surveys method (VES) to gather data on population of sloth bear (*Melursus ursinus*) and general areas.
- Surveys were carried out in different aquatic and terrestrial habitats using a binocular.

- Thorough investigation was conducted in different habitat types including forest, grassland, human settlements and agricultural lands the time of sighting, number of individuals, size and the habitat types were noted with GPS coordinates.
- Morphological measurements were taken using 1 m measuring tapes.
- After recording the measurements, the animals were released into their original habitats.
- The representative habitats were surveyed by foot.
- The animals were identified and verified by the help of field guide.

3.6. Equipment used

- One-meter measuring tapes for size measurement.
- Binocular for VES (visual encounter survey).
- Global Positioning System (GPS) for coordinates.
- A Sony Telephoto shooting Camera of 50 x zoom for photography.
- Compass for direction measurement.
- Field Guide for identification.
- Map of the 10 km study area along with demarcation of Core zone & Buffer Zone.
- Wrist watch for time estimation.

3.7. Study Area: -

The study area given in figure no. 1.2 page no. 9.

3.8. Observations

During survey, sloth bear (*Melursus ursinus*) was found in grasslands, forests, and dense brush lands and water bodies close to the project site. The movement of the species was found to be mostly in forest area, village pond, and around the agriculture field.

3.9. Ecology and Behavior

- Sloth bears do have predators, notably wild dogs, leopards, tigers and humans, while elephants and rhinos also command respect. When threatened, Sloth bears may flee or make a "bluff" charge, stopping at the last minute and rising up on their hind legs to threaten. The charge rarely ends in a full-on confrontation.
- Like all bears, the Sloth bear prefers to avoid conflict with its own species, with other bear species and with other animals. It will avoid situations where it is likely to put itself in danger, but will fight if it has to, especially if the bear is a female with cubs.
- Although the Sloth bear is an agile climber, in threat situations it is likely to avoid trees as a means of escape, since predators may be lying in wait. Leopards, in particular, pose a danger, since they are also agile climbers.
- On the whole, Sloth bears are non-aggressive towards other bears and any marking behavior would appear to be linked to social spacing rather than acting as a serious warning to other bears.
- The fact that Sloth bears, Asiatic Black bears and Sun bears can co-exist in the same ranges, indicates nonaggressive behavior on the part of all three species.
- Fighting between males is rare. Should it happen, injuries can be severe and sometimes fatal. Flight is considered a better alternative.
- Generally speaking, the bears live in harmony and, although they are reputed to be solitary animals, both Sloth Bears and Brown Bears (in Canada) do congregate together when there are ample food supplies. Unlike Brown Bears, however, Sloth Bears will also gather together even in the absence of food. Siblings will sometimes stay together for a period ranging from a few weeks to a year, and even unrelated bears have been found to pair up for varying periods of time.
- Major aggression is reserved for enemies such as tigers, leopards, wild dogs, elephants and rhinos, or when a conflict occurs because of confrontation with humans.

- A "huffing" sound is used as a warning and a "chuffing" sound is used as a non-aggressive "voice" when the bear is distressed. High intensity threats include roars, squeals and screams. Cubs yelp when distressed and a female with cubs uses a grunting "whickering" sound to communicate with them. This can be an alarm contact sound, although it may also be a reassuring communication.
- The loud, 11 staccato sound made when the bear has located termites or ants may be one of excitement or pleasure. Sloth Bears will also suck their paws and hum, as do other bears, particularly the cubs. This may be a sign of contentment or of self-consolation, much as a baby sucks a dummy.
- Bears hibernate when food is unobtainable or in short supply, hence the need for Canadian Brown bears to build up their weight by feasting on salmon in the autumn.
- The warmer the climate, the less the need for hibernation, since there are food supplies available, such as fruit and berries. Where the Sloth Bear is concerned, there are also crops grown by humans, an easy way of finding food supplies, especially when the natural habitat has been destroyed.
- The Sloth Bear is shy and elusive, so comparatively little is known about its specific habits. More studies need to be carried out to discover more about its natural behaviors, for example, how much of its time it spends in trees, the meaning of its communication sounds, etc.
- 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 scrape trees with their forepaws, and rub against them with their flanks.
- Sloth bears have a great vocal range. Gary Brown, in his Great Bear Almanac, lists over 25 different sounds in 16 different contexts. 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. When feeding, sloth bears make loud huffing and sucking noises, which can be heard over 100 m away. Sounds such as gurgling or humming are made by bears resting or sucking their paws. Sows 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.
- Sloth bears are the most nocturnal of bears, though sows become more active in daytime when with cubs.

3.10. Habit & Habitat

- Common sloth bears are found in forests, scrub areas and, during the dry season, grasslands. Sloth bears are mainly found in tropical forests, scrub areas and in grasslands during the dry season. They prefer areas which are remote from human beings.

3.11. Food & Feeding habit

- The Sloth Bear is mymrcophagous, that is to say that it eats ants and termites. 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 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 3 ft below ground. Unlike other bears, they do not congregate in feeding groups.
- They rarely prey on other mammals.
- Sloth bears may supplement their diets with fruit and plant matter; in March and April, they eat the fallen petals of mowha trees and are partial to mangoes, sugar cane, jackfruit, and the pods of the golden shower 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 a 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.
- In fact, the bear's diet is much more varied. The Sloth Bear feeds over wide areas, sniffing the air and ground to locate food.

- Periodically, the bear will emit a loud, staccato sound, when it locates a termite mound or ants' nest. It uses its long claws to break the nest open, then it blows away any dust or dirt, extends its long tongue and sucks the insects into its specially adapted mouth, making a noise that may be heard up to 100m (or even further) away.
- The short hair on the muzzle is thought to be an adaptation to help the bear deal with the unpleasant excretions made by the termites. Long hair or fur on the muzzle would make this difficult. The bear's ability to close its nostrils protects the animal from inhaling dust, dirt and angry termites.
- The missing incisor teeth, together with the mobile lips and long tongue, make the ingestion process easy. The bear's strong claws not only smash open termite mounds, but are useful in tearing logs apart and act as digging tools when the bear is looking for food.
- The Sloth Bear may travel distances of between 10–15km every night in search of food. The bears usually feed at night, though may also be seen foraging during daylight hours.
- A female with cubs will eat during the day to avoid night-time predators such as the leopard. Although specially adapted to fee on ants, termites and other insects, the Sloth Bear needs a more varied diet.
- Ants and termites provide only a low metabolic rate diet, which is inadequate, so the bear needs supplemental food.
- The bear's long, shaggy coat is thought to help the animal to overcome problems associated with a low metabolic rate diet. Apart from ants and termites, Sloth Bears also eat longicorn beetles and dung beetles. They will also take carrion and the occasional small mammal, amphibian or reptile.
- Like all bears, the Sloth Bear is an opportunist. It also loves honey and will climb trees to raid wild hives. It climbs trees, too, in its search for fruit. Bears have been seen to shake branches to make the fruit fall. On occasions, a bear will shake the branches while another bear feeds on the fallen fruit. Between March and June 50% of the bear's diet is fruit and the other 50% consists of termites and other insects, termites being a dietary mainstay for the remainder of the year. The Sloth Bear regularly drinks water, especially in the hottest months of the year.

3.12. 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, while in Sri Lanka, it occurs all year. 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.

- Courtship is brief and is marked by play-fighting and hugging, while mating is a noisy affair.
- During the breeding season, groups of three or four males may be found near receptive females and all may breed, apparently in rank order. Females begin to breed when they reach four years of age. After a pregnancy of 5 – 7 months, the cubs are born in a den.
- Cubs are born blind, and open their eyes after four weeks. Sloth bear cubs develop quickly compared to most other bear species: they start walking a month after birth, become independent at 24–36 months, and become sexually mature at the age of three years.
- Young cubs 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.
- The mother bear suckles her young and may not leave them to get food for herself in the early days after the birth. When she does leave them, she stays near to the den and is only absent for very brief periods.
- The cubs vary in how quickly they achieve independence, but generally stay with their mother for at least two years and more often for two and a half years, learning from her the skills they need to survive.
- As a result, the mother bear can only reproduce every two to three years. The female raises her cubs by herself, as the male leaves after mating.
- The cubs stay in the den for between two and three months. When they emerge, they ride on their mother's back, travelling in this way until they are a third of their adult size, when they are about 9 months old.
- The cubs scramble for position on her back, the strongest cub taking the prime position on her shoulders. There are usually two cubs in a litter, although there may, occasionally, be three. Carrying two cubs on her back is relatively easy for the mother bear, whereas carrying three is more difficult.
- The cubs get a good grip on her back as the fur is longer there. Travelling in this way protects the cubs from possible predators as the mother does not have to worry about the cubs being able to keep up with her. It also conserves their energy.

- Although cubs of other bear species will sometimes climb on their mothers' backs, the Sloth Bear is the only bear to carry her young on a regular basis. Sloth Bear mothers, like other female bears, are very possessive and protective of their cubs.
- They will go right up to hunters and trappers, regardless of the danger, in order to protect their young. Like all bear mothers, they are also very loving and affectionate with their offspring, although they will cuff one round the ear for any dismeanour or sign of disobedience.
- It is important for the mother to discipline the cubs because they need to learn about danger and how important it is to obey her if they are threatened by predators.
- Adult males, and females with cubs will share the same territories, simply marking trees and logs to warn other bears of their presence. They make grooves in tree trunks and logs with their claws, use urine for scent-marking 9 and rub their bodies on trees to produce a similar effect.
- Marking may also help with avoidance tactics by males or act as an incentive to bring males and females together. Males rarely kill cubs, since Sloth Bears are the most sociable of the bear species.

3.13. Threats

- Threats against the sloth bear include loss of habitat, destroyed termite and ant nests due to various development projects, widespread poaching, and persecution from crop farmers.
- Sloth bear cubs are often snatched from the wild and become **unwilling victims** as dancing bears.
- As we have seen, the numbers of Sloth Bears are difficult to assess. What is certain is that the Sloth Bear, like so many bears, is on the endangered list, though the threats to its existence remain and, as human populations expand, become even greater.
- Continuing habitat loss and degradation of habitat in India, pose major problems and, outside protected areas, numbers are declining not only in India, but also in Nepal and Sri Lanka.
- If there are still Sloth Bears in Bangladesh, their future is doubtful, since protected areas there are heavily encroached upon by human activities. The situation is not helped by the underfunding of forest departments, with staff and facilities totally inadequate to protect any remaining bear populations.
- The most promising outlook for Sloth Bears is in Bhutan, where the Royal Government is committed to protecting them. The result is that, along the southern border and in the nearby forests, Sloth Bears are fairly common.

- Sloth Bears are completely protected under Schedule 1 of the Indian Wildlife Protection Act of 1972, amended in 1986.
- The bears cannot be hunted, but can be killed in self-defense, or in special circumstances where they have caused damage.
- In India, there are three sanctuaries in Gujarat. Bears are also protected in parks and reserves which were established as part of Project Tiger in 1972. Corbett, Kahna, Buxa, Manas, Ranthambore, Bandipur and Periyar parks and reserves All have Sloth Bears.
- Apart from these reserves, however, there is little direct management or protection of Sloth Bears.
- Ironically, protected areas with Sloth Bears exist today because of their former status as hunting reserves.
- Until all poaching is stopped, the bears will continue to suffer and die and their existence will be increasingly threatened.

3.14. Action plan for Conservation of Sloth Bear

- The Sloth Bear is seriously endangered because of human activities: deforestation, habitat degradation, poaching and persecution.
- It has a unique place in the world's ecosystem because of its specialized adaptations for a specific diet. Its demise could upset the balance of the ecosystem in which it lives.
- The demise of any species alters the balance of nature to some extent, since species are interdependent.
- Nature has a way of balancing itself, it is humans who interfere and upset the status quo. In addition, this gentle and peace-loving bear deserves to be protected so that present and future generations can appreciate its uniqueness and its place in the diversity of nature.
- The Sloth Bear is only regarded as a nuisance because it encroaches on human activities. Humans conveniently forget that it is people who first encroached on the animals' habitat. Ways have to be found to enable humans and bears to live alongside each other in harmony.
- It is possible, but can only be achieved by involving the indigenous people in all projects and in finding compromises, enabling both to have enough space in which to live.
- Land management is essential, to maximize the efficient use of agricultural land while, at the same time, replanting depleted forests.
- People in many parts of the world have learnt, to their cost, that wholesale deforestation leads to soil erosion, landslides and divesting floods.

- It is therefore important to educate the indigenous people how to use land sensibly and to repair the environment where necessary.
- It is undertaken by major contractors.
- Understandably, local people have been upset when forcibly evicted from protected areas and it is essential to show them why such areas are vital to the conservation of animal, bird and plant species and how the people themselves can be involved in projects, so that they learn to value the animals and plants.
- In this way, they can learn to take pride in the environment and feel that they have an important role to play in its development and conservation. Inculcating this sense of pride is essential if the animals and plants are to survive.
- At the same time, it is important to compensate people for any loss of livelihood, so that they will not resent conservation measures. Education about the Sloth Bear and its way of life is also important.
- It is said that we only fear what we do not understand, so the people need to know that the Sloth Bear is a shy and elusive bear, that a mother bear only becomes aggressive towards humans if she feels that her cubs are being threatened, that bears raid crops only because their natural food supplies have been destroyed, and that, left in peace, the bear offers no threat.
- Basically, they need to know what makes bears "tick" and how, through understanding the bears' needs, they can learn to live with them. The same applies to relationships with other wild creatures on the planet.
- There needs to be a major crackdown on poaching. The trade in bears and bear parts is thriving. Despite legislation, bears are threatened because of a flourishing black market. Until the demand for bear parts, and those of other animals, is curbed the trade will remain. Until the use of bears for "dancing" and bear-baiting is eliminated, the poaching of cubs from the wild and the shooting of their mothers will remain.
- Some measures are being taken to stop the trade in bears but only when the trade no longer exists will those measures have been effective. It is important to show the indigenous people that the bears are sentient beings and can feel pain, and that both mother bears and cubs are deeply traumatized when they are parted. Attitudes towards animals are changing, but there is still a long way to go.
- Mapping of habitat and distribution status of the species across the 10 km radius from project site.

- Time series analysis of habitat change, to quantify the rate of change and identify high risk areas and potential sites for further affirmative action.
- Estimation of population size by different counting methods such as line transect, call counts and roost counts.
- Intensive ecological investigation in reprehensive sites in major biogeography zone with focus on the effects of threats in relation to breeding success and survival probability.
- Quantification of trade, with details on source and people involved.
- Animal sanctuaries have an important role to play, for captive bears cannot always be returned to the wild.
- Sloth Bears which have lost teeth and claws would be helpless in the wild, unable to eat properly, to dig, climb, or defend themselves against predators. Some people claim that animals raised in captivity can never be returned to the wild, but this is not always the case and some animals have been successfully reared and returned to their original habitat.
- Careful preparation and a thorough understanding both animal and habitat are essential. It is also of paramount importance that the animals are returned to a safe area.
- Sanctuaries provide a very necessary lifeline to those animals which will need a safe haven for life.
- At present, Sloth Bears are classified as endangered in India. They are protected in Sri Lanka and partially protected in Nepal, but laws already on the statute books need to be enforced and, unless further legislation is passed and upheld, it will be impossible to halt the decline in the Sloth Bear population.
- The plight of the Sloth Bears has only been highlighted more recently and it is now important to keep the bears in the public eye so that they are not forgotten. Balancing the needs of the local people and the bears is a very delicate operation, but is vital in the interests of both. They cannot be treated as independent of each other and this balancing act is the key to the survival of the Sloth Bear.

3.15. Conservation Measures

- Encourage afforestation activities around the Sloth bear habitation.
- The company will organize seminars etc. to create awareness among people so that they stop killing this Schedule- I species.
- Preventing poaching will be the single most important factor in the conservation of the species, for which awareness programmes should be run frequently.

- Further, research into the harvest levels, threats, trends and habitat status of this species is needed.
- The establishment and management of new protected areas where it is illegal to hunt this species should be carried out to provide a refuge from persecution.
- The company will carry on an afforestation programme.
- Probable habitat boundaries need to determine for all areas that are likely to possess viable populations so that protection measures can be initiated.
- All appropriate landowners within these protection boundaries should be identified. Each should be contacted in the manner that will ensure co-operation. Land owners should be made aware of the sensitivity of this species and of the value of maintain natural habitat. They should be made aware of the available conservation options.
- A conservation awareness program that involves local people in the conservation of this species is vital to ensure long-term success of any management plan. Plans should include educational materials, signs, and instill pride amongst the locals as caretakers of the last populations of this species in their habitation. There is an equally compelling need for a concerted human/ sloth bear conflict mitigation program.
- Public awareness is an important priority within the scope of overall management plans for the species. Public awareness often yields new locality information and could reduce the frequency with which this species is killed.
- Poaching should be restricted and poachers should be punished.
- Poaching and hunting of this mammal would continuous monitor and take action against it according to wildlife protection act-1972. Aware local people and built effective information system against hunting and poaching activities.
- Effective communication network would be developed between local people, forest officers and conservation experts to reduce the risk of the human conflict with sloth bear, hunting and poaching activities.
- Training programme would be conducted to conservation expert team and local people for safe handling of this mammal.
- The most useful recommendations to protect the species are as follows: -
    - At present, there is no special management of these species in respect of the population monitoring, habitat conservation and control measures. Introduction of strict legislation to

conservation and protection and initiation of severe action against those violating wildlife laws and policies.

- Creation of awareness among the public to protect of these species in the wild.
- Prevention of poaching, illegal killing and trading products of these species and
- Initiation of captive breeding programmes to increase the populations of this species in the wild.

❖ Small holes containing water should be constructed in habitation zone of sloth bear and its water quality should be maintained.

❖ Seminars, Focus Group Discussion (FGD), Nukar Natak, poster presentation should be organized at school and Gram Panchayat level to spread awareness to the local people. Group discussions should be held indicating how to protect this mammal from killings, poaching for dancing, etc.

❖ It is critical that urgent efforts are made to understand the habitat and population status of the species through field based research and in situ consecration projects.

❖ As per the present scenario underlined the need for such efforts. The actions required are:

- Mapping of habitat and distribution status of the species across the country, inside and outside protected areas.
- Time series analysis of habitat change to quantify the rate of change and identify high-risk areas and potential sites for further affirmative action;
- Estimation of population size by established count methods such as line transect, call counts and roost counts;
- Intensive ecological investigations in representative sites in major biogeography zones with focus on the effects of threats in relation to breeding success and survival probability;
- Quantification of trade, with details on source and people involved; and
- Undertaking outreach activities to sensitize local communities, which may be carried out by a network of student clubs throughout the country. These people could be trained to collect population data and undertake monitoring within their localities, and the reliability of the results could be ensured by adopting rigorous protocols. These ambitions initiatives should be executed through consultative processes involving various research and conservation agencies in the country.

❖ The reason for the precarious status of many species including sloth bear is the consistent bias towards endangered species and conservation intervention that are based on restrictive models (protected area- centric conservation). This approach overlooks common species when planning

and implementing research and conservation schemes. Though this policy was essentially triggered by limited resources and a desire to safeguard a few charismatic species through to be highly threatened, it has remained the major conservation policy even through our understanding of biodiversity conservation issues has increased substantially.

- In practice, this does not encourage imaginative thinking about alternative options and mobilizing resources for a broader plan. This myopic approach often results in common species becoming threatened, and thus requiring greater human and fiscal resources than would have been the case if some thought had been given to broader conservation issues.
- Therefore, while concentrating on threatened species management, efforts should simultaneously be made to mobilize resources and develop strategies for keeping the common species common.

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4. ELEPHANT MOVING HERDS

4. Elephants Moving Herds

4.0. Introduction

- Elephants live in family groups called HERDS. Herds are made up of all the mother elephants and their babies.
- The oldest mother is called the MATRIARCH who is the leader of the herd.
- Female elephants stay in their herds for life, but the male elephants leave between the ages of 7 and 12.
- The matriarch knows everything the herd needs to know to survive. Elephants love and support their families just as we do.
- A baby elephant is called a calf. They only stand about 3 feet tall when they are born and stay very close to their mothers for the first few months.
- The basic unit of the herd is the immediate family. The herd is made up of the oldest and largest matriarch who leads her daughters and their offspring. A family can consist of anywhere between 2 and 50 elephants. Occasionally, other non-related females may be included in a herd, but this is rare.
- The matriarch is the head of the family and the herd, regardless of whether the herd is made up of more members than her own family. The social structure and habits of females differ dramatically from those of males. Females adhere to the herd structure, while males tend to follow far more fluid regulations.
- They start to eat fodder from about four months but still drink their mother's milk for at least another 2 years or more.

4.1. Area of Moving Herds of Elephants: -

- No habitation was found of Elephants within the 10-kmstudy area from the mine site, only 2-3 herds consisting around 8-12 elephant's movement have been observed.
- The Elephant herds movement observed from South East to West Direction of the study area during the visit.

4.2. Reason of Moving: -

- The elephants move from their natural habitat to fulfill certain biological requirements (e.g. food, water, investigation of better habitat, natural instinct of movement during mating period etc.)

- However, majority of water bodies dried up during summer months. This is one of the reasons for resident elephants frequently visiting the where water is available.

4.3. Habitat Development: -

- As a part of habitat improvement programs will be taken up through plantation of variousfood & fodder plants liked by elephants will be planted.
- Traditional water resources will be conserved near the moving elephant herds corridors.
- Fodder & fruits plants liked by elephants will be grown in near the moving elephant herds corridors.
- Soil &Moisture conservation programs will be undertaken in the study area.
- It is observed that fruit &Fodder plantations have succeeded in attracting elephant herd in the plantation area.

4.4. Conservation Measures

- The company will organize various awareness program.
- The company will organize various awareness programmes for different groups of the people in the study area.
- The company will carry on an afforestation programme company's land & village panchayat land permitted within the study area.
- A conservation awareness program that involves local people in the conservation of this species is vital to ensure long-term success of any management plan.
- The wildlife of the are continuous monitor for better management.
- Effective communication network will be developed between all stake holders to reduce the risk of the human wildlife conflict.
- The most useful recommendations to protect the species are as follows: -
  - At present, there is special management of wildlife in respect of the population monitoring, habitat conservation and control measures.
  - Creation of awareness among the public to protect the movement of wildlife in corridors.
- Water resources containing water throughout the year would be constructed in corridors of elephant's herds movement.
- Various awareness program will be organized for various groups of people to spread awareness.
- It is critical that efforts are made to keep the habitat and population status growing steadily.

❖ As per the present scenario underlined the need for such efforts. The actions required are:

- Mapping of habitat corridors and conserving the same &distribution status of the elephant herds.
- Continuous monitoring of habitat change to quantify the rate of change and identify risk areas and potential sites for further affirmative action.

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5. BUDGET PROVISION FOR WILDLIFE CONSERVATION

5. Budget Provision for Wildlife Conservation

The Bharat Aluminum Company Limited is working in two Phase under budgetprovision for wildlife conservation. The Phase-I is completed and Phase-II will be taken under future proposal. The Details of Phase-I mentioned below given table-5.0

Table-5.0

Budget Provision for Wildlife Conservation under Phase-I

S. No.	Activities	Year	Amount
Particulars of Project of Wildlife habitat at around 10KM of Mainpat Bauxite Mine			
1	Bamboo plantation and maintenance work for 100 Ha. for the year	2008-09	13.48
2	Mixed Plantation and maintenance work for 150 Ha. for the year	2008-09	31.77
3	construction of watch tower		
	1. 2 nos of watch tower at Sapnadadar for the year	2008-09	8.00
	2. 1 nos of watch tower at aamgowan for the year	2009-10	4.00
	3. 1 nos of watch tower at Samniya for the year	2009-10	4.00
4	Construction of Check post		
	1. 2 nos at Nawanagar, bandana village for the year	2008-09	7.00
	2. 1 nos at Mehta Point village for the year	2009-10	3.50
	3. 1 nos at Damali village for the year	2010-11	3.50
5	Development of Water Resource and construction of pond at forest area for 2 nos each year @ of ` 6.00 Lakh per year for the year of		
	1	2008-09	6.00
	2	2009-10	6.00
	3	2010-11	6.00
6	Procurement of Fire resistant equipment		
	1. 2 nos	2008-09	3.00
	2. 2 nos	2009-10	1.50
	3. 2 nos	2010-11	1.50
7	Construction of check dam		
	1. 1 nos of check damat aamgowan for the year	2008-09	8.00
	2. 1 nos of of check damat Samniya for the year	2009-10	8.00
8	Entry point activities work as suggested by village panchayat		
	1. At 2 Villages	2008-09	8.00
	2. At 1 Village	2009-10	4.00

	3. At 2 Village	2010-11	4.00
9	2 person for each watch tower for watching wild life (wildlife watcher) for 3 year @ 8 Person		
	1. 8 Persons	2008-09	2.88
	2. 8 Persons	2009-10	2.88
	3. 8 Persons	2010-11	2.88
Details of Wildlife habitat project at around 10KM of Dharamjaigarh van Mandal			
10	Bamboo plantation and maintenance work for 100 Ha. for the year		
		2008-09	13.48
		2009-10	13.48
		2010-11	13.48
11	Construction of Check dam		
	1. 1 nos of Check damfor the year	2008-09	8.00
	2. 1 nos of of Check damfor t he year	2009-10	8.00
12	Construction of anicut dam:		
	1	2008-09	10.00
	2	2009-10	10.00
13	Construction of Pond		
	1	2008-09	3.00
	Grand Total		**219.33**

The total budget for biodiversity conservation have been Rs. **219.33** Lakhs which that already spend in various activities under Phase-I (Table no. 5.0).

M/s Bharat Aluminum Company Limited has been proposed Rs. 50.0 Lakhs budget under future proposal for biodiversity conservation. The proposal has been taken under Phase-II (Table-5.1).

Table 5.1

Budget Provision for Wildlife Conservation under Phase-II

Proposed Budget for Conservation of Wild life		**Year Wise Expenditure (Unit Lakh)**				
S. No.	**Activity**	**2017-18**	**2018-19**	**2019-20**	**2020-21**	**2021-22**
1	Various programme for wildlife awareness along with consultation of Forest Department, Safety Banner, Siganages for Elephants Corridors and Wildlife	2.00	2.00	2.00	2.00	2.00
2	Training Programme, Awareness Work Shop/ Urban-Rural Wildlife Conservation Programme/ School Level, Village Level, District Level	2.00	2.00	2.00	2.00	2.00

	Competition for Conservation of Wildlife					
3	fruit Seed Distribution to farmers for raisingvarious plant species beneficial for wildlife, Rescue management Programme for wildlife, Habitat assessment & Restoration Activities/ Equipment& Vehicle Management	1.80	1.80	1.80	1.80	1.80
4	Support to stop wildlife offences (Making local group for conservation of wildlife)	1.70	1.70	1.70	1.70	1.70
5	Line safety barrier Construction around the mining Lease area for no disturbance to wildlife and specially for Elephant corridors	2.50	2.50	2.50	2.50	2.50
	Total	10.00	10.00	10.00	10.00	10.00

The total budget for biodiversity conservation have been Rs. **219.33** Lakhs which that already spend in various activities under Phase- Iand Rs. **50.0**lakh under Phase-II. The details mentioned Below table 5.2: -

Table 5.2

Total Budget Provision for Wildlife Conservation

S. No.	Particulate	Amount (In Lakh)
1.	Phase-I	219.33
2.	Phase-II	50.0
Total		269.33

The total budget for biodiversity conservation will be Rs. 269.33 Lakhs in various activities for .

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ENCLOSURE-4

DETAILED ESC PLAN WITH BUDGET

Detailed plan of activities proposed under Enterprise Social Commitment (ESC) with budgetary breakup.

SN	Activity	Proposed budget (in Rs. Lakhs) as per need assessment	Budget (in Rs. Lakhs) proposed after Public consultation	Time frame/ remarks
1.	Sustainable livelihood activities in 14 villages including agricultural extension activities	Rs. 153 Lakhs		Annexure-1
2.	**Village roads -** Construction of approach road to Kudaridih village Construction and maintenance of other village road through PMGSY	- Total Rs 242 lakhs.	- -	Already completed at the cost of Rs 135 Lakhs in 2017-18. In addition, Rs. 243 Lakhs has been deposited with PMGSY FY-2016-17. The road construction will start in 2017-18
3.	Health and Medical facilities covering 14 villages	Rs. 102 Lakhs		Next 5 years, Annexure-2
4.	Repair of 84 old hand pumps and construction of 56 new hand pumps covering 13 villages	Rs. 2.40 Lakhs	 Rs 19.6 Lakhs	5 years Annexure-3
5.	Water reservoir for pisciculture, 5 villages	Rs. 38.00 Lakhs	-	5 years, Annexure-4 Deepening of existing village ponds
6.	Education support in 14 village schools	Rs 46 Lakhs	-	5 years, Annexure-5
7.	Solar powered pumps at Kesra, Kudaridih and Sapnadar villages	-	Rs 25 Lakhs	One year
8.	Promotion of sports in 14 villages schools	Rs. 14.00 Lakhs	-	Nest 5 years, Annexure-6
9.	Provision of solar lights in the village squares in 14 villages	Rs. 34.15 Lakhs	-	Annexure-7
	Grand Total	**Rs. 631.55 lakhs**	**Rs 44.6 lakhs**	In next 5 years

Grand Total : 676.15 L

Annexure-1

SN	Village	Sector	Programme	FY-18		FY-19		FY-20		FY-21		FY-2	
				No	Amount (Rs)	No	Amount (Rs)	No	Amount (Rs)	No	Amount (Rs)	No	Amount (Rs)
1	Narmadapur	Livelihood Promotion	Capacity Building of farmers interested in organic ginger cultivation, vegetables, wheat, gram and rice	2	60,000.00	4	1,20,000.00	2	60,000.00	4	1,20,000.00	4	1,20,000.00
1	Narmadapur	Livelihood Promotion	Training and value addition can be done in the area of dairy, poultry, goat rearing and potato farming.	4	68,000.00	5	85,000.00	4	68,000.00	5	85,000.00	5	85,000.00
1	Narmadapur	Livelihood Promotion	Formation and Strengthening of SHG s and Farmers Club	6	72,000.00	6	72,000.00	6	72,000.00	6	72,000.00	6	72,000.00
2	Sapnadar	Livelihood Promotion	Capacity Building of farmers interested in organic ginger cultivation, vegetables, wheat, gram and rice	2	60,000.00	4	1,20,000.00	2	60,000.00	4	1,20,000.00	4	1,20,000.00
2	Sapnadar	Livelihood Promotion	Training and value addition can be done in the area of dairy, poultry, goat rearing and potato farming.	4	68,000.00	5	85,000.00	4	68,000.00	5	85,000.00	5	85,000.00
2	Sapnadar	Livelihood Promotion	Formation and Strengthening of SHG s and Farmers Club	6	72,000.00	6	72,000.00	6	72,000.00	6	72,000.00	6	72,000.00
3	Kudaridih	Livelihood Promotion	Capacity Building of farmers interested in organic ginger cultivation, vegetables, wheat, gram and rice	2	60,000.00	2	60,000.00	2	60,000.00	3	90,000.00	2	60,000.00
3	Kudaridih	Livelihood Promotion	Training and value addition can be done in the area of dairy, poultry, goat rearing and potato farming.	4	68,000.00	4	1,20,000.00	4	68,000.00	4	1,20,000.00	4	1,20,000.00
3	Kudaridih	Livelihood Promotion	Formation and Strengthening of SHG s and Farmers Club	6	72,000.00	5	85,000.00	6	72,000.00	6	1,02,000.00	5	85,000.00
4	Kesra	Livelihood Promotion	Capacity Building of farmers interested in organic ginger cultivation, vegetables, wheat, gram and rice	2	60,000.00	4	1,20,000.00	2	60,000.00	4	1,20,000.00	4	1,20,000.00

4	Kesra	Livelihood Promotion	Training and value addition can be done in the area of dairy, poultry, goat rearing and potato farming.	4	68,000.00	5	85,000.00	4	68,000.00	5	85,000.00	5	85,000.00
4	Kesra	Livelihood Promotion	Formation and Strengthening of SHG s and Farmers Club	6	72,000.00	6	72,000.00	6	72,000.00	8	96,000.00	6	72,000.00
5	Kamleshwarpur	Livelihood Promotion	Capacity Building of farmers interested in organic ginger cultivation, vegetables, wheat, gram and rice	2	60,000.00	4	1,20,000.00	2	60,000.00	4	1,20,000.00	4	1,20,000.00
5	Kamleshwarpur	Livelihood Promotion	Training and value addition can be done in the area of dairy, poultry, goat rearing and potato farming.	4	68,000.00	5	85,000.00	4	68,000.00	5	85,000.00	5	85,000.00
5	Kamleshwarpur	Livelihood Promotion	Formation and Strengthening of SHG s and Farmers Club	6	72,000.00	6	72,000.00	6	72,000.00	6	72,000.00	6	72,000.00
6	Ropakhar	Livelihood Promotion	Capacity Building of farmers interested in organic ginger cultivation, vegetables, wheat, gram and rice	2	60,000.00	2	60,000.00	2	60,000.00	2	60,000.00	2	60,000.00
6	Ropakhar	Livelihood Promotion	Training and value addition can be done in the area of dairy, poultry, goat rearing and potato farming.	4	68,000.00	4	68,000.00	4	68,000.00	4	68,000.00	4	68,000.00
6	Ropakhar	Livelihood Promotion	Formation and Strengthening of SHG s and Farmers Club	6	72,000.00	6	72,000.00	6	72,000.00	8	96,000.00	6	72,000.00
7	Pathrai	Livelihood Promotion	Capacity Building of farmers interested in organic ginger cultivation, vegetables, wheat, gram and rice	2	60,000.00	2	60,000.00	2	60,000.00	2	60,000.00	2	60,000.00
7	Pathrai	Livelihood Promotion	Training and value addition can be done in the area of dairy, poultry, goat rearing and potato farming.	4	68,000.00	5	85,000.00	4	68,000.00	5	85,000.00	5	85,000.00
7	Pathrai	Livelihood Promotion	Formation and Strengthening of SHG s and Farmers Club	6	72,000.00	6	72,000.00	6	72,000.00	6	72,000.00	6	72,000.00
8	Kuniya	Livelihood Promotion	Capacity Building of farmers interested in organic ginger cultivation, vegetables, wheat, gram and rice	2	60,000.00	2	60,000.00	2	60,000.00	2	60,000.00	2	60,000.00

8	Kuniya	Livelihood Promotion	Training and value addition can be done in the area of dairy, poultry, goat rearing and potato farming.	4	68,000.00	4	68,000.00	4	68,000.00	4	68,000.00	4	68,000.00
8	Kuniya	Livelihood Promotion	Formation and Strengthening of SHG s and Farmers Club	6	72,000.00	6	72,000.00	6	72,000.00	6	72,000.00	6	72,000.00
9	Uranga	Livelihood Promotion	Capacity Building of farmers interested in organic ginger cultivation, vegetables, wheat, gram and rice	2	60,000.00	2	60,000.00	2	60,000.00	2	60,000.00	2	60,000.00
9	Uranga	Livelihood Promotion	Training and value addition can be done in the area of dairy, poultry, goat rearing and potato farming.	4	68,000.00	4	68,000.00	4	68,000.00	4	68,000.00	4	68,000.00
9	Uranga	Livelihood Promotion	Formation and Strengthening of SHG s and Farmers Club	6	72,000.00	6	72,000.00	6	72,000.00	6	72,000.00	6	72,000.00
10	Barima	Livelihood Promotion	Capacity Building of farmers interested in organic ginger cultivation, vegetables, wheat, gram and rice	2	60,000.00	2	60,000.00	2	60,000.00	2	60,000.00	2	60,000.00
10	Barima	Livelihood Promotion	Training and value addition can be done in the area of dairy, poultry, goat rearing and potato farming.	4	68,000.00	4	68,000.00	4	68,000.00	4	68,000.00	4	68,000.00
10	Barima	Livelihood Promotion	Formation and Strengthening of SHG s and Farmers Club	6	72,000.00	6	72,000.00	6	72,000.00	6	72,000.00	6	72,000.00
11	Sarbhanja	Livelihood Promotion	Capacity Building of farmers interested in organic ginger cultivation, vegetables, wheat, gram and rice	2	60,000.00	2	60,000.00	2	60,000.00	2	60,000.00	2	60,000.00
11	Sarbhanja	Livelihood Promotion	Training and value addition can be done in the area of dairy, poultry, goat rearing and potato farming.	4	68,000.00	4	68,000.00	4	68,000.00	4	68,000.00	4	68,000.00
11	Sarbhanja	Livelihood Promotion	Formation and Strengthening of SHG s and Farmers Club	6	72,000.00	6	72,000.00	6	72,000.00	6	72,000.00	6	72,000.00
12	Lurena	Livelihood Promotion	Capacity Building of farmers interested in organic ginger cultivation, vegetables, wheat, gram and rice	2	85,000.00	2	85,000.00	2	85,000.00	2	85,000.00	2	85,000.00

12	Lurena	Livelihood Promotion	Training and value addition can be done in the area of dairy, poultry, goat rearing and potato farming.	4	68,000.00	4	68,000.00	4	68,000.00	4	68,000.00	4	68,000.00
12	Lurena	Livelihood Promotion	Formation and Strengthening of SHG s and Farmers Club	6	72,000.00	6	72,000.00	6	72,000.00	6	72,000.00	6	72,000.00
13	Bisarpani	Livelihood Promotion	Capacity Building of farmers interested in organic ginger cultivation, vegetables, wheat, gram and rice	2	60,000.00	2	60,000.00	2	60,000.00	2	60,000.00	2	60,000.00
13	Bisarpani	Livelihood Promotion	Training and value addition can be done in the area of dairy, poultry, goat rearing and potato farming.	4	85,000.00	4	85,000.00	4	85,000.00	4	85,000.00	4	85,000.00
13	Bisarpani	Livelihood Promotion	Formation and Strengthening of SHG s and Farmers Club	6	72,000.00	6	72,000.00	6	72,000.00	6	72,000.00	6	72,000.00
14	Maltipur	Livelihood Promotion	Capacity Building of farmers interested in organic ginger cultivation, vegetables, wheat, gram and rice	2	60,000.00	2	60,000.00	2	60,000.00	2	60,000.00	2	60,000.00
14	Maltipur	Livelihood Promotion	Training and value addition can be done in the area of dairy, poultry, goat rearing and potato farming.	4	85,000.00	4	85,000.00	4	85,000.00	4	85,000.00	4	85,000.00
14	Maltipur	Livelihood Promotion	Formation and Strengthening of SHG s and Farmers Club	6	13,000.00	12	23,000.00	6	13,000.00	13	28,000.00	12	23,000.00

Annexure-2

SN	Village	Sector	Programme	FY-18		FY-19		FY-20		FY-21		FY-22	
				No	Amount (Rs)	No	Amount (Rs)	No	Amount (Rs)	No	Amount (Rs)	No	Amount (Rs)
1	Narmadapur	Health	Organisation of Medical Camps	1	50,000.00	1	45,000.00	1	50,000.00	1	50,000.00	1	50,000.00
1	Narmadapur	Health	Organisation of Yoga Sessions	1	12,000.00	1	12,000.00	2	24,000.00	2	24,000.00	1	12,000.00
1	Narmadapur	Health	Drug De-Addiction Awareness Camp	1	15,000.00	1	15,000.00	2	30,000.00	2	30,000.00	1	15,000.00
1	Narmadapur	Health	AIDs Awareness Camp	1	12,000.00	1	12,000.00	1	12,000.00	1	12,000.00	1	12,000.00
1	Narmadapur	Health	Malaria Sensitization Programme	1	20,000.00	1	20,000.00	1	20,000.00	1	20,000.00	1	20,000.00
1	Narmadapur	Health	TB Awareness Programme	1	18,000.00	1	18,000.00	1	18,000.00	1	18,000.00	1	18,000.00
1	Narmadapur	Health	Reproductive Child Health Care Programmes	1	17,500.00	1	17,500.00	1	17,500.00	1	17,500.00	1	17,500.00
2	Sapnadar	Health	Organisation of Medical Camps	1	50,000.00	1	40,000.00	1	50,000.00	1	50,000.00	1	50,000.00
2	Sapnadar	Health	Organisation of Yoga Sessions	1	12,000.00	1	12,000.00	2	30,000.00	2	30,000.00	1	12,000.00
2	Sapnadar	Health	Drug De-Addiction Awareness Camp	1	15,000.00	1	15,000.00	1	15,000.00	1	15,000.00	1	15,000.00
2	Sapnadar	Health	AIDs Awareness Camp	1	12,000.00	1	12,000.00	1	12,000.00	1	12,000.00	1	12,000.00
2	Sapnadar	Health	Malaria Sensitization Programme	1	20,000.00	1	20,000.00	1	20,000.00	1	20,000.00	1	20,000.00
2	Sapnadar	Health	TB Awareness Programme	1	18,000.00	1	18,000.00	1	18,000.00	1	18,000.00	1	18,000.00
2	Sapnadar	Health	Reproductive Child Health Care Programmes	1	17,500.00	1	17,500.00	1	17,500.00	1	17,500.00	1	17,500.00
3	Kudaridih	Health	Organisation of Medical Camps	1	50,000.00	1	50,000.00	1	50,000.00	1	50,000.00	1	50,000.00
3	Kudaridih	Health	Organisation of Yoga Sessions	1	12,000.00	1	12,000.00	2	24,000.00	2	24,000.00	1	12,000.00
3	Kudaridih	Health	Drug De-Addiction Awareness Camp	1	15,000.00	1	15,000.00	2	30,000.00	2	30,000.00	1	15,000.00
3	Kudaridih	Health	AIDs Awareness Camp	1	12,000.00	1	12,000.00	1	12,000.00	1	12,000.00	1	12,000.00
3	Kudaridih	Health	Malaria Sensitization Programme	1	20,000.00	1	20,000.00	1	20,000.00	1	20,000.00	1	20,000.00
3	Kudaridih	Health	TB Awareness Programme	1	18,000.00	1	18,000.00	1	18,000.00	1	18,000.00	1	18,000.00

3	Kudaridih	Health	Reproductive Child Health Care Programmes	1	17,500.00	1	17,500.00	1	17,500.00	1	17,500.00	1	17,500.00
4	Kesra	Health	Organisation of Medical Camps	1	50,000.00	1	50,000.00	1	50,000.00	1	50,000.00	1	50,000.00
4	Kesra	Health	Organisation of Yoga Sessions	1	12,000.00	1	12,000.00	2	24,000.00	2	24,000.00	1	12,000.00
4	Kesra	Health	Drug De-Addiction Awareness Camp	1	15,000.00	1	15,000.00	2	30,000.00	2	30,000.00	1	15,000.00
4	Kesra	Health	AIDs Awareness Camp	1	12,000.00	1	12,000.00	1	12,000.00	1	12,000.00	1	12,000.00
4	Kesra	Health	Malaria Sensitization Programme	1	20,000.00	1	20,000.00	1	20,000.00	1	20,000.00	1	20,000.00
4	Kesra	Health	TB Awareness Programme	1	18,000.00	1	18,000.00	1	18,000.00	1	18,000.00	1	18,000.00
4	Kesra	Health	Reproductive Child Health Care Programmes	1	17,500.00	1	17,500.00	1	17,500.00	1	17,500.00	1	17,500.00
5	Kamleshwar pur	Health	Organisation of Medical Camps	1	50,000.00	1	40,000.00	1	50,000.00	1	50,000.00	1	50,000.00
5	Kamleshwar pur	Health	Organisation of Yoga Sessions	1	12,000.00	1	12,000.00	2	24,000.00	2	24,000.00	1	12,000.00
5	Kamleshwar pur	Health	Drug De-Addiction Awareness Camp	1	15,000.00	1	15,000.00	2	30,000.00	2	30,000.00	1	15,000.00
5	Kamleshwar pur	Health	AIDs Awareness Camp	1	12,000.00	1	12,000.00	1	12,000.00	1	12,000.00	1	12,000.00
5	Kamleshwar pur	Health	Malaria Sensitization Programme	1	20,000.00	1	20,000.00	1	20,000.00	1	20,000.00	1	20,000.00
5	Kamleshwar pur	Health	TB Awareness Programme	1	18,000.00	1	18,000.00	1	18,000.00	1	18,000.00	1	18,000.00
5	Kamleshwar pur	Health	Reproductive Child Health Care Programmes	1	17,500.00	1	17,500.00	1	17,500.00	1	17,500.00	1	17,500.00
6	Ropakhar	Health	Organisation of Medical Camps	1	50,000.00	1	40,000.00	1	50,000.00	1	50,000.00	1	50,000.00
6	Ropakhar	Health	Organisation of Yoga Sessions	1	12,000.00	1	12,000.00	2	24,000.00	2	24,000.00	1	12,000.00
6	Ropakhar	Health	Drug De-Addiction Awareness Camp	1	15,000.00	1	15,000.00	1	15,000.00	1	15,000.00	1	15,000.00
6	Ropakhar	Health	AIDs Awareness Camp	1	12,000.00	1	12,000.00	1	12,000.00	1	12,000.00	1	12,000.00
6	Ropakhar	Health	Malaria Sensitization Programme	1	20,000.00	1	20,000.00	1	20,000.00	1	20,000.00	1	20,000.00

6	Ropakhar	Health	TB Awareness Programme	1	18,000.00	1	18,000.00	1	18,000.00	1	18,000.00	1	18,000.00
6	Ropakhar	Health	Reproductive Child Health Care Programmes	1	17,500.00	1	17,500.00	1	17,500.00	1	17,500.00	1	17,500.00
7	Pathrai	Health	Organisation of Medical Camps	1	50,000.00	1	50,000.00	1	50,000.00	1	50,000.00	1	50,000.00
7	Pathrai	Health	Organisation of Yoga Sessions	1	12,000.00	1	12,000.00	2	24,000.00	2	24,000.00	1	12,000.00
7	Pathrai	Health	Drug De-Addiction Awareness Camp	1	15,000.00	1	15,000.00	1	15,000.00	1	15,000.00	1	15,000.00
7	Pathrai	Health	AIDs Awareness Camp	1	12,000.00	1	12,000.00	1	12,000.00	1	12,000.00	1	12,000.00
7	Pathrai	Health	Malaria Sensitization Programme	1	20,000.00	1	20,000.00	1	20,000.00	1	20,000.00	1	20,000.00
7	Pathrai	Health	TB Awareness Programme	1	18,000.00	1	18,000.00	1	18,000.00	1	18,000.00	1	18,000.00
7	Pathrai	Health	Reproductive Child Health Care Programmes	1	17,500.00	1	17,500.00	1	17,500.00	1	17,500.00	1	17,500.00
8	Kuniya	Health	Organisation of Medical Camps	1	50,000.00	1	30,000.00	1	50,000.00	1	50,000.00	1	50,000.00
8	Kuniya	Health	Organisation of Yoga Sessions	1	12,000.00	1	12,000.00	1	12,000.00	1	12,000.00	1	12,000.00
8	Kuniya	Health	Drug De-Addiction Awareness Camp	1	15,000.00	1	15,000.00	1	15,000.00	1	15,000.00	1	15,000.00
8	Kuniya	Health	AIDs Awareness Camp	1	12,000.00	1	12,000.00	1	12,000.00	1	12,000.00	1	12,000.00
8	Kuniya	Health	Malaria Sensitization Programme	1	20,000.00	1	20,000.00	1	20,000.00	1	20,000.00	1	20,000.00
8	Kuniya	Health	TB Awareness Programme	1	18,000.00	1	18,000.00	1	18,000.00	1	18,000.00	1	18,000.00
8	Kuniya	Health	Reproductive Child Health Care Programmes	1	17,500.00	1	17,500.00	1	17,500.00	1	17,500.00	1	17,500.00
9	Uranga	Health	Organisation of Medical Camps	1	50,000.00	1	30,000.00	1	50,000.00	1	50,000.00	1	50,000.00
9	Uranga	Health	Organisation of Yoga Sessions	1	12,000.00	1	12,000.00	2	24,000.00	2	24,000.00	1	12,000.00
9	Uranga	Health	Drug De-Addiction Awareness Camp	1	15,000.00	1	15,000.00	1	15,000.00	1	15,000.00	1	15,000.00
9	Uranga	Health	AIDs Awareness Camp	1	12,000.00	1	12,000.00	1	14,000.00	1	14,000.00	1	12,000.00
9	Uranga	Health	Malaria Sensitization Programme	1	20,000.00	1	15,000.00	1	20,000.00	1	20,000.00	1	20,000.00
9	Uranga	Health	TB Awareness Programme	1	18,000.00	1	18,000.00	1	18,000.00	1	18,000.00	1	18,000.00
9	Uranga	Health	Reproductive Child Health Care Programmes	1	17,500.00	1	17,500.00	1	17,500.00	1	17,500.00	1	17,500.00

10	Barima	Health	Organisation of Medical Camps	1	50,000.00	1	30,000.00	1	50,000.00	1	50,000.00	1	50,000.00
10	Barima	Health	Organisation of Yoga Sessions	1	12,000.00	1	12,000.00	2	24,000.00	2	24,000.00	1	12,000.00
10	Barima	Health	Drug De-Addiction Awareness Camp	1	15,000.00	1	15,000.00	1	15,000.00	1	15,000.00	1	15,000.00
10	Barima	Health	AIDs Awareness Camp	1	12,000.00	1	12,000.00	1	12,000.00	1	12,000.00	1	12,000.00
10	Barima	Health	Malaria Sensitization Programme	1	20,000.00	1	15,000.00	1	20,000.00	1	20,000.00	1	20,000.00
10	Barima	Health	TB Awareness Programme	1	18,000.00	1	18,000.00	1	18,000.00	1	18,000.00	1	18,000.00
10	Barima	Health	Reproductive Child Health Care Programmes	1	17,500.00	1	17,500.00	1	17,500.00	1	17,500.00	1	17,500.00
11	Sarbhanja	Health	Organisation of Medical Camps	1	50,000.00	1	30,000.00	1	50,000.00	1	50,000.00	1	50,000.00
11	Sarbhanja	Health	Organisation of Yoga Sessions	1	12,000.00	1	12,000.00	1	12,000.00	1	12,000.00	1	12,000.00
11	Sarbhanja	Health	Drug De-Addiction Awareness Camp	1	15,000.00	1	15,000.00	1	15,000.00	1	15,000.00	1	15,000.00
11	Sarbhanja	Health	AIDs Awareness Camp	1	12,000.00	1	12,000.00	1	12,000.00	1	12,000.00	1	12,000.00
11	Sarbhanja	Health	Malaria Sensitization Programme	1	20,000.00	1	20,000.00	1	20,000.00	1	20,000.00	1	20,000.00
11	Sarbhanja	Health	TB Awareness Programme	1	18,000.00	1	18,000.00	1	18,000.00	1	18,000.00	1	18,000.00
11	Sarbhanja	Health	Reproductive Child Health Care Programmes	1	17,500.00	1	17,500.00	1	17,500.00	1	17,500.00	1	17,500.00
12	Lurena	Health	Organisation of Medical Camps	1	50,000.00	1	30,000.00	1	50,000.00	1	50,000.00	1	50,000.00
12	Lurena	Health	Organisation of Yoga Sessions	1	12,000.00	1	12,000.00	2	24,000.00	2	24,000.00	1	12,000.00
12	Lurena	Health	Drug De-Addiction Awareness Camp	1	15,000.00	1	15,000.00	1	15,000.00	1	15,000.00	1	15,000.00
12	Lurena	Health	AIDs Awareness Camp	1	12,000.00	1	12,000.00	1	12,000.00	1	12,000.00	1	12,000.00
12	Lurena	Health	Malaria Sensitization Programme	1	20,000.00	1	20,000.00	1	20,000.00	1	20,000.00	1	20,000.00
12	Lurena	Health	TB Awareness Programme	1	18,000.00	1	18,000.00	1	18,000.00	1	18,000.00	1	18,000.00
12	Lurena	Health	Reproductive Child Health Care Programmes	1	17,500.00	1	17,500.00	1	17,500.00	1	17,500.00	1	17,500.00
13	Bisarpani	Health	Organisation of Medical Camps	1	50,000.00	1	30,000.00	1	50,000.00	1	50,000.00	1	50,000.00
13	Bisarpani	Health	Organisation of Yoga Sessions	1	12,000.00	1	12,000.00	2	24,000.00	2	24,000.00	1	12,000.00

13	Bisarpani	Health	Drug De-Addiction Awareness Camp	1	15,000.00	1	15,000.00	1	15,000.00	1	15,000.00	1	15,000.00
13	Bisarpani	Health	AIDs Awareness Camp	1	12,000.00	1	12,000.00	1	12,000.00	1	12,000.00	1	12,000.00
13	Bisarpani	Health	Malaria Sensitization Programme	1	20,000.00	1	20,000.00	1	20,000.00	1	20,000.00	1	20,000.00
13	Bisarpani	Health	TB Awareness Programme	1	10,000.00	1	10,000.00	1	10,000.00	1	10,000.00	1	10,000.00
13	Bisarpani	Health	Reproductive Child Health Care Programmes	1	10,000.00	1	10,000.00	1	10,000.00	1	10,000.00	1	10,000.00
14	Maltipur	Health	Organisation of Medical Camps	1	50,000.00	1	30,000.00	1	50,000.00	1	50,000.00	1	50,000.00
14	Maltipur	Health	Organisation of Yoga Sessions	1	12,000.00	1	10,000.00	1	12,000.00	1	12,000.00	1	12,000.00
14	Maltipur	Health	Drug De-Addiction Awareness Camp	1	15,000.00	1	10,000.00	1	15,000.00	1	15,000.00	1	15,000.00
14	Maltipur	Health	AIDs Awareness Camp	1	12,000.00	1	12,000.00	1	12,000.00	1	12,000.00	1	12,000.00
14	Maltipur	Health	Malaria Sensitization Programme	1	20,000.00	1	20,000.00	1	20,000.00	1	20,000.00	1	20,000.00
14	Maltipur	Health	TB Awareness Programme	1	18,000.00	1	12,000.00	1	18,000.00	1	18,000.00	1	18,000.00
14	Maltipur	Health	Reproductive Child Health Care Programmes	1	10,000.00	1	8,000.00	1	10,000.00	1	10,000.00	1	10,000.00

Annexure-3

SN	Village	Sector	Programme	FY-18		FY-19		FY-20		FY-21		FY-22	
				No	Amount (Rs)	No	Amount (Rs)	No	Amount (Rs)	No	Amount (Rs)	No	Amount (Rs)
1	Narmadapur	Infrastructure	Repair of hand Pumps	5	15,000.00	3	10,000.00	2	5,000.00	2	5,000.00	2	5,000.00
2	Sapnadar	Infrastructure	Repair of hand Pumps	5	15,000.00	3	10,000.00	2	5,000.00	2	5,000.00	2	5,000.00
3	Kudaridih	Infrastructure	Repair of hand Pumps	5	15,000.00	3	10,000.00	2	5,000.00	2	5,000.00	2	5,000.00
4	Kesra	Infrastructure	Repair of hand Pumps	5	15,000.00	3	10,000.00	2	5,000.00	2	5,000.00	2	5,000.00
5	Kamleshwarpur	Infrastructure	Repair of hand Pumps	5	15,000.00	3	10,000.00	2	5,000.00	2	5,000.00	2	5,000.00
6	Ropakhar	Infrastructure	Repair of hand Pumps	5	15,000.00	3	10,000.00	2	5,000.00	2	5,000.00	2	5,000.00
7	Pathrai	Infrastructure	Construction of new hand pumps	2	70,000.00	2	70,000.00	1	35,000.00	1	35,000.00	1	35,000.00
8	Kuniya	Infrastructure	Construction of new hand pumps	2	70,000.00	2	70,000.00	1	35,000.00	1	35,000.00	1	35,000.00
9	Uranga	Infrastructure	Construction of new hand pumps	2	70,000.00	2	70,000.00	1	35,000.00	1	35,000.00	1	35,000.00
10	Barima	Infrastructure	Construction of new hand pumps	2	70,000.00	2	70,000.00	1	35,000.00	1	35,000.00	1	35,000.00
11	Sarbhanja	Infrastructure	Construction of new hand pumps	2	70,000.00	2	70,000.00	1	35,000.00	1	35,000.00	1	35,000.00
12	Lurena	Infrastructure	Construction of new hand pumps	2	70,000.00	2	70,000.00	1	35,000.00	1	35,000.00	1	35,000.00
13	Bisarpani	Infrastructure	Construction of new hand pumps	2	70,000.00	2	70,000.00	1	35,000.00	1	35,000.00	1	35,000.00
14	Maltipur	Infrastructure	Construction of new hand pumps	2	70,000.00	2	70,000.00	1	35,000.00	1	35,000.00	1	35,000.00

Annexure-4

SN	Village	Sector	Programme	FY-18		FY-19		FY-20		FY-21		FY-22	
				No	Amount (Rs)	No	Amount (Rs)	No	Amount (Rs)	No	Amount (Rs)	No	Amount (Rs)
1	Narmadapur	Infrastructure	deepening of ponds	1	1,55,000.00	1	1,55,000.00	1	1,55,000.00	1	1,55,000.00	1	1,55,000.00
2	Sapnadar	Infrastructure	deepening of ponds	1	1,55,000.00	1	1,55,000.00	1	1,55,000.00	1	1,55,000.00	1	1,55,000.00
3	Kudaridih	Infrastructure	deepening of ponds	1	1,55,000.00	1	1,55,000.00	1	1,55,000.00	1	1,55,000.00	1	1,55,000.00
4	Kesra	Infrastructure	deepening of ponds	1	1,55,000.00	1	1,55,000.00	1	1,55,000.00	1	1,30,000.00	1	1,30,000.00
5	Kamleshwarpur	Infrastructure	deepening of ponds	1	1,50,000.00	1	1,50,000.00	1	1,50,000.00	1	1,50,000.00	1	1,50,000.00

Annexure-5

SN	Village	Sector	Programme	FY-18		FY-19		FY-20		FY-21		FY-22	
				No	Amount (Rs)	No	Amount (Rs)	No	Amount (Rs)	No	Amount (Rs)	No	Amount (Rs)
1	Narmadapur	Education	To Support school by providing school uniforms and books	1	50,000.00	1	55,000.00	1	50,000.00	1	55,000.00	1	50,000.00
1	Narmadapur	Education	Promotion of Rural Sports among children in the schools and colleges by sponsoring prizes for sports	1	10,000.00	1	10,000.00	1	10,000.00	1	10,000.00	1	10,000.00
1	Narmadapur	Education	Provision of Water Filters in Schools	1	5,000.00	1	5,000.00	1	5,000.00	1	5,000.00	1	5,000.00
2	Sapnadar	Education	To Support school by providing school uniforms and books	1	50,000.00	1	55,000.00	1	50,000.00	1	55,000.00	1	50,000.00
2	Sapnadar	Education	Promotion of Rural Sports among children in the schools and colleges by sponsoring prizes for sports	1	10,000.00	1	15,000.00	1	10,000.00	1	15,000.00	1	10,000.00
2	Sapnadar	Education	Provision of Water Filters in Schools	1	5,000.00	1	8,000.00	1	5,000.00	1	8,000.00	1	5,000.00
3	Kudaridih	Education	To Support school by providing school uniforms and books	1	50,000.00	1	55,000.00	1	50,000.00	1	55,000.00	1	50,000.00
3	Kudaridih	Education	Promotion of Rural Sports among children in the schools and colleges by sponsoring prizes for sports	1	10,000.00	1	10,000.00	1	10,000.00	1	10,000.00	1	10,000.00
3	Kudaridih	Education	Provision of Water Filters in Schools	1	5,000.00	1	5,000.00	1	5,000.00	1	5,000.00	1	5,000.00
4	Kesra	Education	To Support school by providing school uniforms and books	1	50,000.00	1	55,000.00	1	50,000.00	1	55,000.00	1	50,000.00
4	Kesra	Education	Promotion of Rural Sports among children in the schools and colleges by sponsoring prizes for sports	1	10,000.00	1	10,000.00	1	10,000.00	1	10,000.00	1	10,000.00
4	Kesra	Education	Provision of Water Filters in Schools	1	5,000.00	1	5,000.00	1	5,000.00	1	5,000.00	1	5,000.00
5	Kamleshwarpur	Education	To Support school by providing school uniforms and books	1	50,000.00	1	55,000.00	1	40,000.00	1	55,000.00	1	50,000.00
5	Kamleshwarpur	Education	Promotion of Rural Sports among children in the schools and colleges	1	10,000.00	1	10,000.00	1	10,000.00	1	10,000.00	1	10,000.00

			by sponsoring prizes for sports										
5	Kamleshwarpur	Education	Provision of Water Filters in Schools	1	5,000.00	1	5,000.00	1	5,000.00	1	5,000.00	1	5,000.00
6	Ropakhar	Education	To Support school by providing school uniforms and books	1	50,000.00	1	55,000.00	1	40,000.00	1	55,000.00	1	50,000.00
6	Ropakhar	Education	Promotion of Rural Sports among children in the schools and colleges by sponsoring prizes for sports	1	10,000.00	1	10,000.00	1	10,000.00	1	10,000.00	1	10,000.00
6	Ropakhar	Education	Provision of Water Filters in Schools	1	5,000.00	1	5,000.00	1	5,000.00	1	5,000.00	1	5,000.00
7	Pathrai	Education	To Support school by providing school uniforms and books	1	50,000.00	1	55,000.00	1	40,000.00	1	55,000.00	1	50,000.00
7	Pathrai	Education	Promotion of Rural Sports among children in the schools and colleges by sponsoring prizes for sports	1	10,000.00	1	10,000.00	1	10,000.00	1	10,000.00	1	10,000.00
7	Pathrai	Education	Provision of Water Filters in Schools	1	5,000.00	1	5,000.00	1	5,000.00	1	5,000.00	1	5,000.00
8	Kuniya	Education	To Support school by providing school uniforms and books	1	50,000.00	1	55,000.00	1	40,000.00	1	55,000.00	1	50,000.00
8	Kuniya	Education	Promotion of Rural Sports among children in the schools and colleges by sponsoring prizes for sports	1	10,000.00	1	10,000.00	1	10,000.00	1	10,000.00	1	10,000.00
8	Kuniya	Education	Provision of Water Filters in Schools	1	5,000.00	1	5,000.00	1	5,000.00	1	5,000.00	1	5,000.00
9	Uranga	Education	To Support school by providing school uniforms and books	1	50,000.00	1	55,000.00	1	40,000.00	1	55,000.00	1	50,000.00
9	Uranga	Education	Promotion of Rural Sports among children in the schools and colleges by sponsoring prizes for sports	1	10,000.00	1	15,000.00	1	10,000.00	1	15,000.00	1	10,000.00
9	Uranga	Education	Provision of Water Filters in Schools	1	5,000.00	1	5,000.00	1	5,000.00	1	5,000.00	1	5,000.00
10	Barima	Education	To Support school by providing school uniforms and books	1	50,000.00	1	55,000.00	1	40,000.00	1	55,000.00	1	50,000.00
10	Barima	Education	Promotion of Rural Sports among children in the schools and colleges by sponsoring prizes for sports	1	10,000.00	1	10,000.00	1	10,000.00	1	10,000.00	1	10,000.00

10	Barima	Education	Provision of Water Filters in Schools	1	5,000.00	1	5,000.00	1	5,000.00	1	5,000.00	1	5,000.00
11	Sarbhanja	Education	To Support school by providing school uniforms and books	1	50,000.00	1	55,000.00	1	40,000.00	1	55,000.00	1	50,000.00
11	Sarbhanja	Education	Promotion of Rural Sports among children in the schools and colleges by sponsoring prizes for sports	1	10,000.00	1	10,000.00	1	10,000.00	1	10,000.00	1	10,000.00
11	Sarbhanja	Education	Provision of Water Filters in Schools	1	5,000.00	1	5,000.00	1	5,000.00	1	5,000.00	1	5,000.00
12	Lurena	Education	To Support school by providing school uniforms and books	1	50,000.00	1	55,000.00	1	40,000.00	1	55,000.00	1	50,000.00
12	Lurena	Education	Promotion of Rural Sports among children in the schools and colleges by sponsoring prizes for sports	1	10,000.00	1	10,000.00	1	10,000.00	1	10,000.00	1	10,000.00
12	Lurena	Education	Provision of Water Filters in Schools	1	5,000.00	1	8,000.00	1	5,000.00	1	8,000.00	1	5,000.00
13	Bisarpani	Education	To Support school by providing school uniforms and books	1	50,000.00	1	55,000.00	1	40,000.00	1	55,000.00	1	50,000.00
13	Bisarpani	Education	Promotion of Rural Sports among children in the schools and colleges by sponsoring prizes for sports	1	10,000.00	1	10,000.00	1	10,000.00	1	10,000.00	1	10,000.00
13	Bisarpani	Education	Provision of Water Filters in Schools	1	5,000.00	1	3,500.00	1	5,000.00	1	3,500.00	1	5,000.00
14	Maltipur	Education	To Support school by providing school uniforms and books	1	50,000.00	1	55,000.00	1	40,000.00	1	55,000.00	1	50,000.00
14	Maltipur	Education	Promotion of Rural Sports among children in the schools and colleges by sponsoring prizes for sports	1	10,000.00	1	5,000.00	1	10,000.00	1	5,000.00	1	10,000.00
14	Maltipur	Education	Provision of Water Filters in Schools	1	4,000.00	1	4,000.00	1	4,000.00	1	4,000.00	1	4,000.00

Annexure-6

SN	Village	Sector	Programme	FY-18		FY-19		FY-20		FY-21		FY-22	
				No	Amount (Rs)	No	Amount (Rs)	No	Amount (Rs)	No	Amount (Rs)	No	Amount (Rs)
1	Narmadapur	Education	Donating Sports equipment to schools and colleges like football, cricket bat etc	1	10,000.00	1	10,000.00	1	10,000.00	1	10,000.00	1	10,000.00
2	Sapnadar	Education	Donating Sports equipment to schools and colleges like football, cricket bat etc	1	10,000.00	1	15,000.00	1	10,000.00	1	15,000.00	1	10,000.00
3	Kudaridih	Education	Donating Sports equipment to schools and colleges like football, cricket bat etc	1	10,000.00	1	10,000.00	1	10,000.00	1	10,000.00	1	10,000.00
4	Kesra	Education	Donating Sports equipment to schools and colleges like football, cricket bat etc	1	10,000.00	1	12,000.00	1	10,000.00	1	12,000.00	1	10,000.00
5	Kamleshwarpur	Education	Donating Sports equipment to schools and colleges like football, cricket bat etc	1	10,000.00	1	10,000.00	1	10,000.00	1	10,000.00	1	10,000.00
6	Ropakhar	Education	Donating Sports equipment to schools and colleges like football, cricket bat etc	1	10,000.00	1	10,000.00	1	10,000.00	1	10,000.00	1	10,000.00
7	Pathrai	Education	Donating Sports equipment to schools and colleges like football, cricket bat etc	1	10,000.00	1	10,000.00	1	10,000.00	1	10,000.00	1	10,000.00
8	Kuniya	Education	Donating Sports equipment to schools and colleges like football, cricket bat etc	1	10,000.00	1	10,000.00	1	10,000.00	1	10,000.00	1	10,000.00
9	Uranga	Education	Donating Sports equipment to schools and colleges like football, cricket bat etc	1	10,000.00	1	10,000.00	1	10,000.00	1	10,000.00	1	10,000.00
10	Barima	Education	Donating Sports equipment to schools and colleges like football, cricket bat etc	1	10,000.00	1	10,000.00	1	10,000.00	1	10,000.00	1	10,000.00
11	Sarbhanja	Education	Donating Sports equipment to schools and colleges like	1	10,000.00	1	10,000.00	1	10,000.00	1	10,000.00	1	10,000.00

			football, cricket bat etc										
12	Lurena	Education	Donating Sports equipment to schools and colleges like football, cricket bat etc	1	10,000.00	1	10,000.00	1	10,000.00	1	10,000.00	1	10,000.00
13	Bisarpani	Education	Donating Sports equipment to schools and colleges like football, cricket bat etc	1	10,000.00	1	10,000.00	1	10,000.00	1	10,000.00	1	10,000.00
14	Maltipur	Education	Donating Sports equipment to schools and colleges like football, cricket bat etc	1	10,000.00	1	5,000.00	1	10,000.00	1	5,000.00	1	10,000.00

Annexure-7

SN	Village	Sector	Programme	FY-18		FY-19		FY-20		FY-21		FY-22	
				No	Amount (Rs)	No	Amount (Rs)	No	Amount (Rs)	No	Amount (Rs)	No	Amount (Rs)
1	Narmadapur	Infrastructure	Provision of solar lights in the village squares	4	60,000.00	4	60,000.00	4	60,000.00	4	60,000.00	4	60,000.00
2	Sapnadar	Infrastructure	Provision of solar lights in the village squares	4	60,000.00	4	60,000.00	4	60,000.00	4	60,000.00	4	60,000.00
3	Kudaridih	Infrastructure	Provision of solar lights in the village squares	4	60,000.00	4	60,000.00	4	60,000.00	4	60,000.00	4	60,000.00
4	Kesra	Infrastructure	Provision of solar lights in the village squares	4	60,000.00	4	60,000.00	4	60,000.00	1	15,000.00	1	15,000.00
5	Kamleshwarpur	Infrastructure	Provision of solar lights in the village squares	4	60,000.00	4	60,000.00	4	60,000.00	4	60,000.00	4	60,000.00
6	Ropakhar	Infrastructure	Provision of solar lights in the village squares	4	60,000.00	1	15,000.00	4	60,000.00	1	15,000.00	1	15,000.00
7	Pathrai	Infrastructure	Provision of solar lights in the village squares	4	60,000.00	4	60,000.00	4	60,000.00	1	15,000.00	1	15,000.00
8	Kuniya	Infrastructure	Provision of solar lights in the village squares	4	60,000.00	4	60,000.00	4	60,000.00	1	15,000.00	1	15,000.00
9	Uranga	Infrastructure	Provision of solar lights in the village squares	4	60,000.00	1	15,000.00	4	60,000.00	4	60,000.00	4	60,000.00
10	Barima	Infrastructure	Provision of solar lights in the village squares	4	60,000.00	1	15,000.00	2	30,000.00	2	30,000.00	2	30,000.00
11	Sarbhanja	Infrastructure	Provision of solar lights in the village squares	4	60,000.00	4	60,000.00	4	60,000.00	1	10,000.00	1	10,000.00
12	Lurena	Infrastructure	Provision of solar lights in the village squares	4	60,000.00	4	60,000.00	4	60,000.00	1	10,000.00	1	10,000.00
13	Bisarpani	Infrastructure	Provision of solar lights in the village squares	4	60,000.00	4	60,000.00	4	60,000.00	4	60,000.00	4	60,000.00
14	Maltipur	Infrastructure	Provision of solar lights in the village squares	4	60,000.00	4	60,000.00	4	60,000.00	4	60,000.00	4	60,000.00

ENCLOSURE-5

STATUS REPORT ON THE COMPLIANCE OF PARTIALLY/NOT COMPLIED CONDITIONS OF EARLIER ISSUED EC

Vedanta Limited
(formerly known as Sesa Sterlite Ltd.)

balco

Balco/Envt/A-04(D)/2017/183 19 May, 2017

To
Mr.Suresh Kumar Adapa
Scientist "D"
Regional Office (WCZ)
Ground Floor, East Wing
New Secretariat Building
Civil Lines, Nagpur-44001

Respected Sir,

Sub : Response of Balco on the status of compliance Conditions stipulated in the environment clearance dated 26.10.2010 accorded by the MoEF&CC, New Delhi in respect to Mainpat Bauxite Mines of BALCO in Sarguja District in the state of Chhattisgarh regarding.

Ref : Your Letter No:F.No:3-50/2008(Env)/1478 Dated 14.03.2017.

With reference to the above cited letter, Please find enclosed, response of Balco on the status of compliance Conditions stipulated in the environment clearance dated 26.10.2010 accorded by the MoEF&CC, New Delhi in respect to Mainpat Bauxite Mines of BALCO in Sarguja District in the state of Chhattisgarh with supporting documents.

We hope the above information is in order. It will be our pleasure to furnish any other information, which your good office may require.

Thanking you

KV Kulkarni
Head – HSE

Encl :a/a

CC :
[redacted]
Director
I A Division(Non coal mining)
Vayu-305,Indira Paryavaran Bhawan,
Ministry of Environment , Forest &CC
Jorbagh Road,Lodhi Road,
New Delhi 110003

24/5/17

पी. आर. अनुभाग द्वारा प्राप्त किया
Received by CR Section
पर्यावरण,वन एवम् जलवायु परिवर्तन मंत्रालय
Ministry of Environment, Forests & Climate Change
भारत सरकार/ Govt. of India
इंदिरा पर्यावरण भवन/Indira Paryavaran Bhawan
जोरबाग रोड,अलीगंज/Jorbagh Road, Aliganj
नई दिल्ली/New Delhi-110003

Bharat Aluminium Company Limited
Balco Nagar, Korba (Chhattisgarh) - 495 684
T +91 7759 242031 F +91 7759 242031 www.balcoIndia.com

Registered Office : Aluminium Sadan Core - 6, Scope Office Complex, 7 Lodi Road, New Delhi - 110 003
CIN : U74899DL1965PLC004518

STATUS REPORT ON THE COMPLIANCE OF PARTIALLY/NOT COMPLIED CONDITION OF EARLIER ISSUED ENVIRONMENT CLEARANCE

(LETTER. NO. –J-11015/235/2007-IA.II (M) dated 26.10.2010 & further extension received for EC vide letter dated 27.10.2015)

MAINPAT BAUXITE MINE

(ML Area 639.169 Ha, Expansion in Production Capacity from 0.75 million tonne per annum to 2.25 million tonnes dispatchable bauxite per annum)

at

Villages: Kudaridih, Kesra & Sapanadar, Tehsil: Mainpat, District: Surguja, State – Chhattisgarh

Specific Condition-i

SN	CONDITION	COMPLIANCE STATUS as per RO, MoEF&CC, Nagpur	Compliance Status as on 8th July, 2017
i	Maintenance of village roads through which transportation of ore is undertaken shall be carried out by the company regularly at its own expenses. The roads shall be black topped.	Partially Complied with It is observed that village road through which ore transportation takes place is being maintained by BALCO. However, no block topping was observed in the main haul road.	**Complied with** **Main haul road has been fully black topped, repaired / re black topping work completed. Photographs of the same are given on the follow up slide.**

Specific Condition-i Road Construction and Maintenance

During WMM laying Work

During Watering Work

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Specific Condition-i Road Construction and Maintenance

During BM Work

During SDBC Work

Specific Condition-iv

SN	CONDITION	COMPLIANCE STATUS as per RO, MoEF&CC, Nagpur	Compliance Status as on 8th July, 2017
iv	Measures for prevention and control of soil erosion and management of silt shall be undertaken. Protection of dumps against erosion shall be carried out with geo-textile matting or other suitable material, and thick plantations of native trees and shrubs shall be carried out at the dump slopes. Dumps shall be protected by retaining walls.	Partially Complied with It is observed that mining operations have been resumed recently and the PP has been implementing the soil conservation measures in the mined out area in the form of retaining walls, gabion structures and garland drains etc. It is observed that mined out areas are being backfilled concurrently. Since bauxite ore is available at a depth of only 8-10 meters below ground level, no dumps are kept active for long period. No practice of reclaiming the dumps by geo-textile sheet was observed. Retaining wall was observed to be constructed at the foot of new dumps, however, no retaining walls were observed to be provided for old dumps to arrest flow of silt	**Being shallow mine working, the concurrent backfilling system has been adopted which results to minimal time exposure of open pit/dump. Such backfilled area is afforested every year in this way land degradation is minimized in our mines therefore use of geo-textile is not required. Old dumps has been properly leveled and shall be planted in the coming monsoons season. No new temporary dumps are envisaged. Photographs of parapet wall are given on the following slide.** **The 'old dumps' are very small dumps which have got stabilized over time and there is no run-off. However, retaining walls have been constructed now (shown in the following pictures). Further, these dumps will be backfilled in excavated voids latest by 30th September and thus will no longer remain there**

Specific Condition-v

SN	CONDITION	COMPLIANCE STATUS as per RO, MoEF&CC, Nagpur	Compliance Status as on 8th July, 2017
v	Trenches / garland drains shall be constructed at foot of dumps and coco filters installed at regular intervals to arrest silt from being carried to water bodies. Adequate number of Check Dams and Gully Plugs shall be constructed across seasonal/perennial nallahs (if any) flowing through the ML area and silts arrested. De- silting at regular intervals shall be carried out. Garland drain of appropriate size, gradient and length shall be constructed for both mine pit and for waste dump and sump capacity shall be designed keeping 50% safety margin over and above peak sudden rainfall (based on 50 years data) and maximum discharge in the area adjoining the mine site. Sump capacity shall also provide adequate retention period to allow proper settling of silt material. Sedimentation pits shall be constructed at the corners of the garland drains and de-silted at regular intervals.	Partially Complied With It is observed that considerable number of check dam have been constructed and catch pits/sedimentation pits have been provided at the end of the garland drains to arrest the silt. The catch pits/sedimentation pits are de-silted on regular basis, However, garland drains were not constructed for all dumps as some of the dumps were observed without garland drains. Management of existing garland drains was also observed poor as the measures like de-silting of the catch drains was not observed to be undertaken..	**Old temporary dumps have been properly levelled and garland drains have been constructed/ maintained where ever it is required.** **De-silting of garland drains has been done and shall be regularly maintained henceforth.** **Photographs of retaining wall and garland drains are given on the following slide.**

Specific Condition no-v Retaining wall and Garland drain

Retaining wall- Kesra

Retaining wall- Kesra

Garland Drain Kudaridih

Garland Drain Kesra

Specific Condition-vii

S.NO	CONDITION	COMPLIANCE STATUS as per RO, MoEF&CC, Nagpur	Compliance Status as on 8th July, 2017
vii	Occupational health and safety measures for the workers including identification of work related health hazards, training on malaria eradication, HIV, and health effects on exposure to mineral dust etc. shall be carried out. The company shall engage a full time qualified doctor who is trained in occupational health. Periodic monitoring for exposure to respirable mineral dust on the workers shall be conducted and records maintained including health records of the workers. Awareness programme for workers on impact of mining on their health and precautionary measures like use of personal equipments etc. shall be carried out periodically. Review of impact of various health measures undertaken (at interval of five years of less) shall be conducted followed by follow up action wherever required.	Partially Complied with No full time doctor for occupational health was observed to be deputed by the PP, though the PP has made provisions for doctor on temporary basis. It is informed that occupational health hazard issues have been identified and appropriate safety measures to mitigate these hazards are being practiced. However, no details pertaining to the mitigative hazards measures was made available by the PP. It is also informed by the PP that various camps on water borne diseases, HIV and health check-ups are carried out and records are maintained. On-site and Off site awareness training on work related aspects and use of personal protective equipment (PPEs) to employees and workers are given on regular basis. Details are not made available by the PP>	**Mainpat mines is certified as per OHSAS 18001 (Occupational Health and Safety Management System) and accordingly occupational health and safety hazards have been identified and control measures are already in place.** **The occupational health checkups are done as per provision of Mines Rules 1955. Health checkup and maintenance of medical records is being done at Mine site itself.** **A centralized occupational health cell is functioning at Main hospital, BALCO Korba with team of qualified doctors and nurses. Tie up has been made with fully equipped hospital located at Ambikapur 50 kms away for providing medical facilities to mine employees. We also organize Medical camps are organized regularly at different villages. Different awareness programmes regarding Malaria, HIV & occupational health hazards are conducted periodically through CSR team.** **Full time doctor has been appointed at Mine Site.** **Details of medical checkups and training programmes are given in follow up slides.**

Specific Conditions-vii OHSAS 18001:2007 Certificate

IRCLASS
SYSTEMS AND SOLUTIONS PRIVATE LIMITED

CERTIFICATE OF APPROVAL

Issued by Indian Register Quality Systems
(A Division of IRCLASS Systems and Solutions Private Limited)

This is to certify that the Occupational Health & Safety Management Systems of

Organisation: Bharat Aluminium Company Limited

Address: Balco Nagar, Korba,
Chhattisgarh,
Pin Code - 495 684

has been assessed and found conforming to the following requirement

Standard: OHSAS 18001:2007

Scope:
- Mining and Dispatch of Bauxite & Coal
- Manufacturing and Dispatch of Aluminium Ingots, Wire Rods, Aluminium Billets and Rolled Products
- Generation and Supply of Electric Power to Smelters and National Grid

For Detailed Scope & Support Locations: Refer Annexure

Certificate No.: IRQS/1740087

This Certificate Supersede our Previous Certificate no. IRQS/1540071 dated 30th January 2015

Original Certification Date : 30/01/2015

Current Date of Granting : 20/01/2017

Expiry Date : 29/01/2018

Shashi Nath Mishra
Head IRQS

Head Office: 52A, Adi Shankaracharya Marg, Opp. Powai Lake, Powai, Mumbai - 400 072, India.

IRCLASS
SYSTEMS AND SOLUTIONS PRIVATE LIMITED

Annexure to Certificate No. IRQS/1740087

with respect to the following scope:

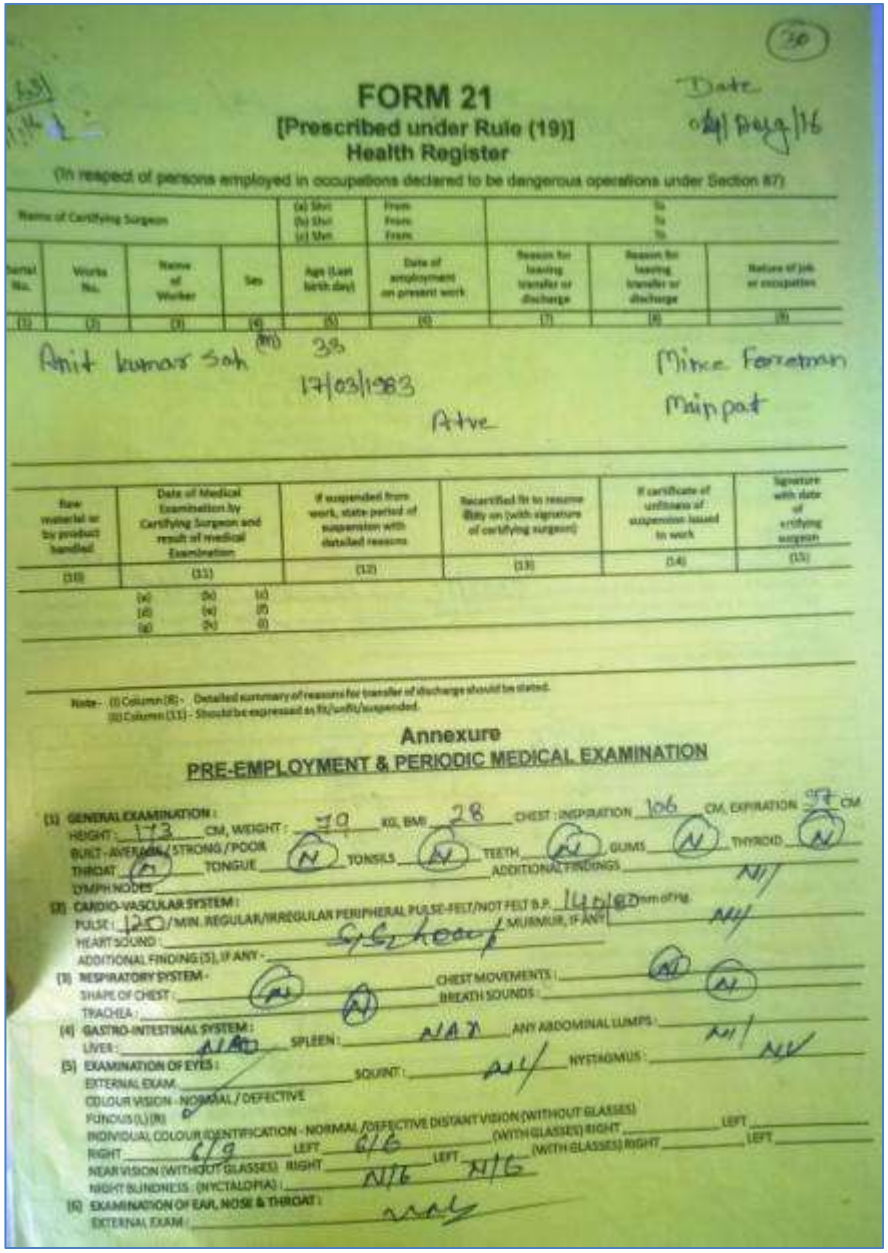
Sites/Support Functions & Locations which Support

M/s. Bharat Aluminium Company Limited

Support Site/Support Function	Address	Scope of support site/Support function for this site
BALCO, Mainpat & Bodai Daldali Mines (Kawardha)	At Semsata, P.O.: Baijalpur, Dist. Kabirdham, Chhattisgarh - 491 995	Mining and Dispatch of Bauxite
BALCO, Plant I, Plant II & Plant III	Balco Nagar, Korba, Chhattisgarh, Pin Code - 495 684	Manufacturing and Supply of Aluminium Ingots, Wire Rods, Aluminium Billets and Rolled Products
BALCO, CPP - I, CPP - II & CPP - III	Balco Nagar, Korba, Chhattisgarh, Pin Code - 495 684	Generation and Supply of Electric Power to BALCO and Wheeling to National Grid
Chotia Mines	Dist. Korba, Chattisgarh	Mining and Dispatch of Coal

Shashi Nath Mishra
Head IRQS

Specific Conditions-vii Occupational Hazards- Medical Check-up sample



FORM 21

[Prescribed under Rule (19)]

Health Register

(In respect of persons employed in occupations declared to be dangerous operations under Section 87)

Name of Certifying Surgeon

Serial No.	Works No.	Name of Worker	Sex	Age (Last birth day)	Date of employment on present work	Reason for leaving transfer or discharge	Reason for leaving transfer or discharge	Nature of job or occupation
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Amit kumar Sah	(M)	38	17/03/1983	Active		Mine Foreman Mainpat

Raw material or by product handled	Date of Medical Examination by Certifying Surgeon and result of medical Examination	If suspended from work, state period of suspension with detailed reasons	Recertified fit to resume duty on (with signature of certifying surgeon)	If certificate of unfitness of suspension issued to work	Signature with date of certifying surgeon
(10)	(11)	(12)	(13)	(14)	(15)

Note- (i) Column (9) - Detailed summary of reasons for transfer or discharge should be stated.
(ii) Column (11) - Should be expressed as fit/unfit/suspended.

Annexure

PRE-EMPLOYMENT & PERIODIC MEDICAL EXAMINATION

(1) GENERAL EXAMINATION :
HEIGHT : 173 CM, WEIGHT : 70 KG, BMI : 28 CHEST : INSPIRATION 106 CM, EXPIRATION 97 CM
BUILT - AVERAGE / STRONG / POOR
THROAT : N TONGUE : N TONSILS : N TEETH : N GUMS : N THYROID : N
LYMPH NODES : ADDITIONAL FINDINGS : Nil

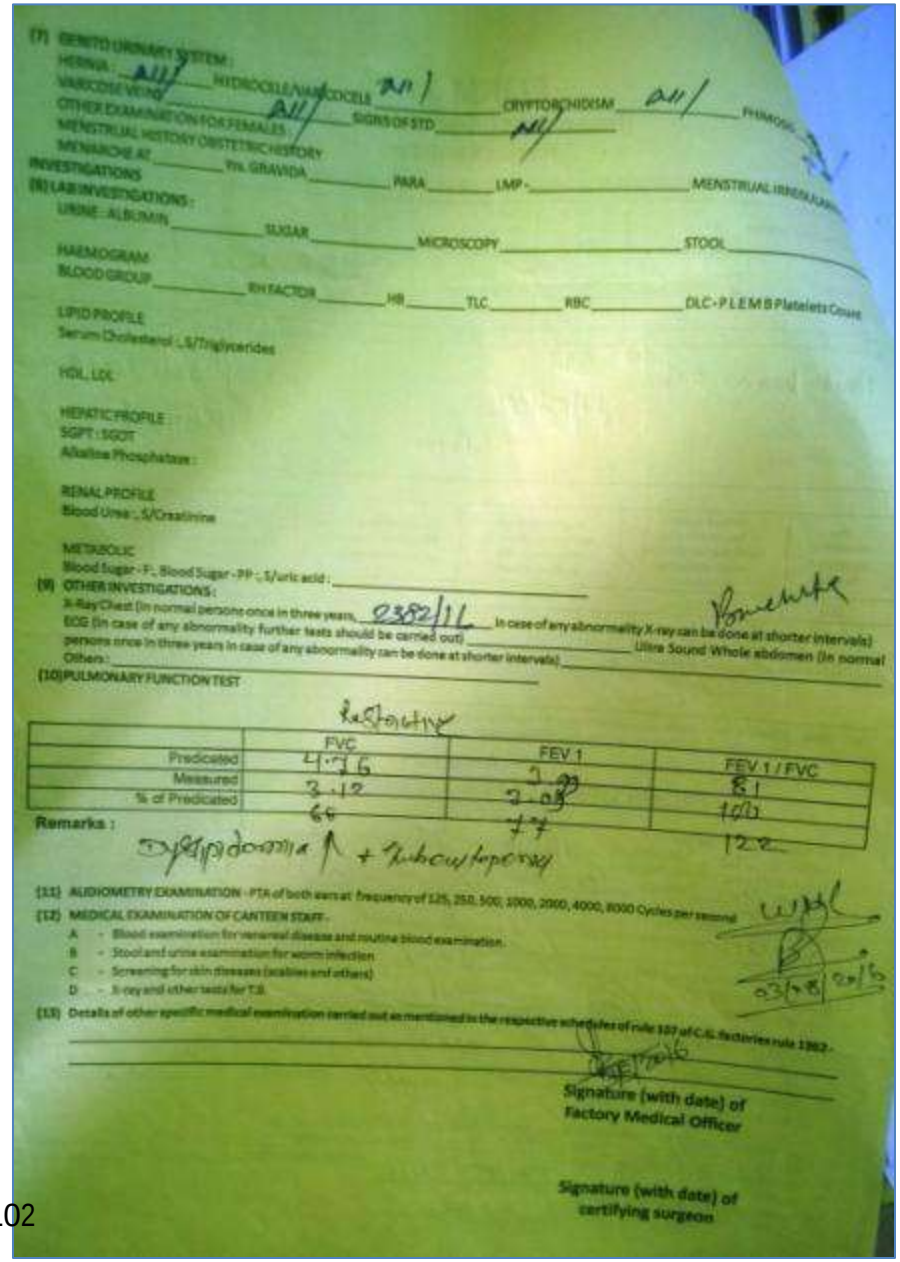
(2) CARDIO-VASCULAR SYSTEM :
PULSE : 120 /MIN. REGULAR/IRREGULAR PERIPHERAL PULSE-FELT/NOT FELT B.P. 140/80 mm of Hg.
HEART SOUND : MURMUR, IF ANY : Nil
ADDITIONAL FINDING (S), IF ANY : S1S2 heard

(3) RESPIRATORY SYSTEM :
SHAPE OF CHEST : CHEST MOVEMENTS : N
TRACHEA : BREATH SOUNDS : N

(4) GASTRO-INTESTINAL SYSTEM :
LIVER : N SPLEEN : N ANY ABDOMINAL LUMPS : Nil

(5) EXAMINATION OF EYES :
EXTERNAL EXAM : SQUINT : Nil NYSTAGMUS : Nil
COLOUR VISION - NORMAL / DEFECTIVE
FUNDUS (L) (R)
INDIVIDUAL COLOUR IDENTIFICATION - NORMAL / DEFECTIVE DISTANT VISION (WITHOUT GLASSES) RIGHT 6/9 LEFT 6/6 (WITH GLASSES) RIGHT LEFT
NEAR VISION (WITHOUT GLASSES) RIGHT N/6 LEFT N/6 (WITH GLASSES) RIGHT LEFT
NIGHT BLINDNESS (NYCTALOPIA) :

(6) EXAMINATION OF EAR, NOSE & THROAT :
EXTERNAL EXAM : Nad



(7) GENITO URINARY SYSTEM :
HERNIA : Nil HYDROCELE/VARICOCELE Nil CRYPTORCHIDISM Nil PHIMOSIS
VARICOSE VEINS : Nil SIGNS OF STD : Nil
OTHER EXAMINATION FOR FEMALES :
MENSTRUAL HISTORY OBSTETRIC HISTORY
MENARCHE AT : Yrs. GRAVIDA PARA LMP : MENSTRUAL IRREGULARITY
INVESTIGATIONS

(8) LAB INVESTIGATIONS :
URINE : ALBUMIN SUGAR MICROSCOPY STOOL
HAEMOGRAM
BLOOD GROUP RH FACTOR HB TLC RBC DLC - P L E M B Platelets Count
LIPID PROFILE
Serum Cholesterol : S/Triglycerides
HDL, LDL
HEPATIC PROFILE :
SGPT : SGOT
Alkaline Phosphatase :
RENAL PROFILE
Blood Urea :, S/Creatinine
METABOLIC
Blood Sugar - F, Blood Sugar - PP :, S/uric acid :

(9) OTHER INVESTIGATIONS :
X-Ray Chest (in normal persons once in three years) 2382/11 In case of any abnormality X-ray can be done at shorter intervals)
ECG (In case of any abnormality further tests should be carried out) Ultra Sound Whole abdomen (In normal persons once in three years in case of any abnormality can be done at shorter intervals)
Others :

(10) PULMONARY FUNCTION TEST

Refractive

	FVC	FEV 1	FEV 1 / FVC
Predicated	4.76	3.93	81
Measured	3.12	2.08	100
% of Predicated	66	77	122

Remarks : Dyspnoea on exertion + Tuberculosis

(11) AUDIOMETRY EXAMINATION - PTA of both ears at frequency of 125, 250, 500, 1000, 2000, 4000, 8000 Cycles per second

(12) MEDICAL EXAMINATION OF CANTEEN STAFF :
A - Blood examination for venereal disease and routine blood examination.
B - Stool and urine examination for worm infection
C - Screening for skin diseases (scabies and others)
D - X-ray and other tests for T.B.

(13) Details of other specific medical examination carried out as mentioned in the respective schedules of rule 107 of C.G. factories rule 1962 :

Signature (with date) of Factory Medical Officer

Signature (with date) of certifying surgeon

Specific Conditions-vii Occupational Hazards & Control Measure

TRAINING PROGRAM - VTC

TRAINING PROGRAM - VTC

FIRST AID TRAINING PROGRAM

FIRE FIGHTING-TRAINING

CPR-TRAINING

ONSITE - TRAINING PROGRAM

ACTIVITY	OCCUPATIONAL HAZARD	CONTROL MEASURES
DRILLING AND BLASTING	Noise Ground Vibration	Closed Cabin Controlled Blasting
WASTE ROCK REMOVAL AND DUMPING	Dust	PPE usage
LOADING	Dust	Water Sprinkling PPE usage
TRANSPORTATION	Dust & Noise	Tarpaulin Covering No Overloading PUC check of Vehicle

Specific Conditions-vii Occupational Hazards- Medical Check-up sample

FORM-O

See rules 29F (2), and 29L

Report of medical examination under rule 29B

(To be issued in triplicate)

Certificate No.........

Certified that Shri/Shrimati ANIT KUMAR SAH. .... employed as Miner (excavating) ... Bauxite mine, Form B No. .... has been examined for an initial/periodical medical examination. He/She appears to be 33 years of age. The findings of the examining authority are given in the attached sheet. It is considered that Shri/Shrimati ANIT KUMAR SAH.

(a) * Is medically fit for any employment in mines
(b) * Is suffering from .... and is medically unfit for
(i) Any employment in mines or
(ii) Any employment below ground; or
(iii) Any employment or work ....
(c). * it suffering from .... should get this disability cured/controlled and should be again examined within a period of .... months. He/she will appear for re-examination with the result of test of .... and the opinion of .... Specialist from .... He/She may be permitted/not permitted to carry on his duties during this period.

Paste passport Size recent Photograph (without staple)

Place : Balco

Date : 4/8/2016

4/8/2016

Signature of the examining authority

Name and designation in block letters.

Page 1 of 3

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)

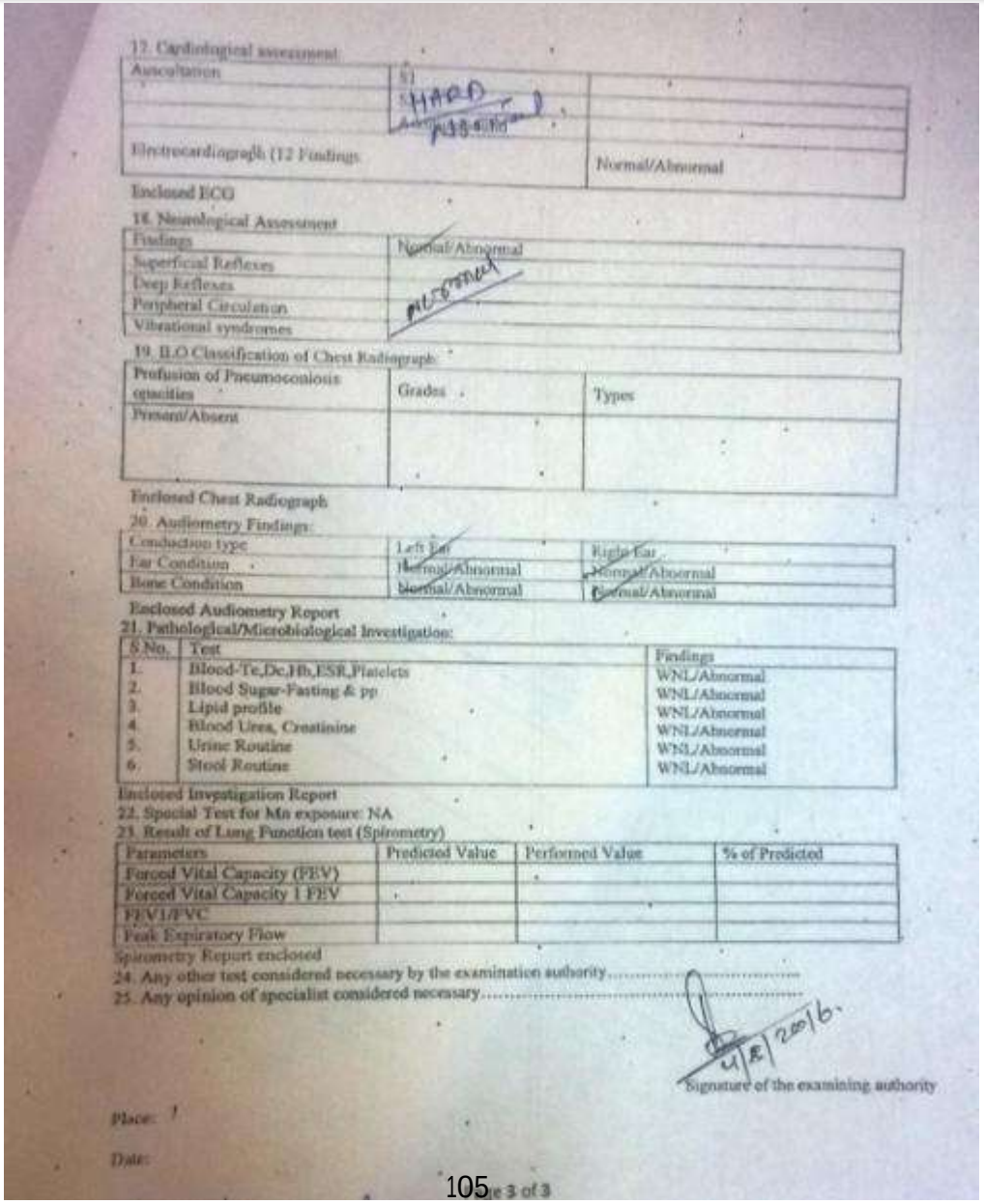
Annexure to Certificate No. .... as a result of medical examination on .... Identification Mark ....

Signature/Left thumb impression of the candidate.

1. General development. Good/Fair/Poor
2. Height ...173... Cms
3. Weight ...77... Kg
4. Eyes:
   (i) Visual acuity—Distant vision (with or without glasses). Right eye ...N/6... Left eye ...N/6...
   (ii) Any organic disease of eyes ....
   (iii) Night blindness ...WNL...
   (iv) Colour blindness ...WNL...
   (v) Squint ...NIL...
   (*To be stated in special cases)
5. Ears:
   (i) Hearing Right ear ...NIL... Left ear ...NIL...
   (ii) Any organic disease ...NAD...
6. Respiratory system. Chest measurement:
   (i) After full inspiration ...106... cms.
   (ii) After full expiration ...97... cms.
7. Circulatory system:
   Blood pressure ...140/80 mmHg...
   Pulse ...120...
8. Abdomen:
   Tenderness ...NAD...
   Liver ...NAD...
   Spleen ...NAD...
   Tumour ...NIL...
9. Nervous system:
   History of fits or epilepsy ...NIL...
   Paralysis ...NIL...
   Mental health ...WNL...
10. Locomotor system ....
11. Skin ...WNL...
12. Hernia ...NIL...
13. Hydrocele ....
14. Any other abnormality ...NAD...
15. Urine:
    Reaction ....
    Albumin ....
    Sugar ....
16. Skiagram of chest ...Bronchitis...

Page 2 of 3

Specific Conditions-vii Occupational Hazards- Medical Check-up sample



12. Cardiological assessment

Auscultation	S1 HARD S2 NORMAL	
Electrocardiograph (12 Findings		Normal/Abnormal

Enclosed ECG

18. Neurological Assessment

Findings	Normal/Abnormal
Superficial Reflexes	
Deep Reflexes	
Peripheral Circulation	
Vibrational syndromes	

19. ILO Classification of Chest Radiograph:

Profusion of Pneumoconiosis opacities	Grades	Types
Present/Absent		

Enclosed Chest Radiograph

20. Audiometry Findings:

	Left Ear	Right Ear
Conduction type		
Ear Condition	Normal/Abnormal	Normal/Abnormal
Bone Condition	Normal/Abnormal	Normal/Abnormal

Enclosed Audiometry Report

21. Pathological/Microbiological Investigation:

S.No.	Test	Findings
1.	Blood-Te,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 Report

22. Special Test for Mn exposure: NA

23. Result of Lung Function test (Spirometry)

Parameters	Predicted Value	Performed Value	% of Predicted
Forced Vital Capacity (FEV)			
Forced Vital Capacity 1 FEV			
FEV1/FVC			
Peak Expiratory Flow			

Spirometry Report enclosed

24. Any other test considered necessary by the examination authority.....

25. Any opinion of specialist considered necessary.....

4/8/2016.

Signature of the examining authority

Place:

Date:

105

Specific Condition-xiii

SN	CONDITION	COMPLIANCE STATUS as per RO, MoEF&CC, Nagpur	Compliance Status as on 8th July, 2017
xiii	Regular monitoring of ground water level and quality shall be carried out by establishing a network of existing wells and constructing new piezometers during the mining operation. The monitoring shall be carried out four times in a year, pre-monsoon (April-May), monsoon (August), post-monsoon (November) and winter (January) and the data thus collected shall be regularly sent to MoEF, Central Ground Water Authority and Regional Director, Central Ground Water Board.	Partially Complied with It is observed that regular monitoring of ground water and surface water is carried out and reports are submitted to all concerned. However, no details pertaining to the monitoring of surface water was made available by the PP.	**Complied with** **It is observed that regular monitoring of ground water & surface water is carried out & reports are submitted to all concerns.** **A latest report containing the monitoring of ground water is given in reply of SC III.** **Surface water quality is being regularly monitored. Analysis data is given in the follow up slide.**

Specific Condition-xiii Water quality monitoring data

R. & C. LABORATORY (BALCO, KORBA)
Environment Monitoring Section

REF : BALCO/QAP1/POLL/MS 05/File-08B/MPT-WATER-1/MAY-17

DATE -16/05/2017

Water Analysis Report of Mainpat Mines.

Sampling Date - 02/05/2017

S.No	Parameters	Units	W1	W2	W4	W5	W6	W7	W8	W9	W10
			Gungutta nallah Kesra	Gungutta nallah Pakri jharia	Mangarda nallah	Down stream 1km of W4	Gungutta nallah proposed T/S	Gungutta nallah 1 km down from W6	Manjharia nallah	Jokki nallah	Hand pump Kudaridih
1	pH		7.3	7.2	7.2	7.3	7.2	7.2	7.3	7.4	6.9
2	Turbidity	NTU	68	72	74	76	76	72	66	90	4.7
3	Conductivity	µS/cm	44.4	44.8	42.9	43.2	46.3	45.6	77.6	39.5	104.8
4	Solid (Total)	mg/l	79	82	83	84	87	80	79	109	50
5	Solid (Dissolved)	mg/l	44	46	44	52	50	48	49	68	24
6	Solid (Suspended)	mg/l	35	36	39	32	37	32	30	41	26
7	Chloride as Cl	mg/l	9.3	9.4	10.3	10.4	10.3	10.8	9.7	11.7	9.2
8	Fluoride as F	mg/l	0.30	0.30	0.32	0.33	0.36	0.30	0.32	0.42	0.28
9	Total Hardness as $CaCO_3$	mg/l	66	63	52	57	61	58	55	63	51
10	Calcium Hardness as $CaCO_3$	mg/l	41	42	34	36	37	39	34	43	33
11	Magnesium Hardness as $CaCO_3$	mg/l	25	21	18	21	24	19	21	20	18
12	Oil & Grease	mg/l	Traces	Traces	Traces	Traces	Traces	Traces	Traces	Traces	Traces
13	B.O.D.	mg/l	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
14	C.O.D	mg/l	3	2	3	2	2	3	3	4	3
15	Sodium as Na	mg/l	0.74	0.76	0.72	0.74	0.75	0.76	0.68	0.80	0.69
16	Potassium as K	mg/l	0.30	0.29	0.34	0.34	0.33	0.32	0.33	0.35	0.33
17	Iron as Fe	mg/l	0.43	0.42	0.49	0.39	0.45	0.47	0.40	0.47	0.44
18	Silica as Si	mg/l	1.12	1.18	1.16	1.18	1.15	1.12	1.06	1.22	1.13
19	Zinc as Zn	mg/l	0.003	0.002	0.003	0.002	0.003	0.002	0.003	0.003	0.003
20	Manganese as Mn	mg/l	0.003	0.003	0.003	0.003	0.003	0.003	0.002	0.003	0.001
21	Nickel as Ni	mg/l	0.002	0.003	0.001	0.002	0.002	0.003	0.003	0.002	0.003
22	Chromium as Cr	mg/l	0.002	BDL	BDL	BDL	BDL	BDL	0.002	BDL	BDL
23	Lead as Pb	mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Copy to :
GM (HSE)

Analysed by

Approved by
Manager (QA)

R. & C. LABORATORY (BALCO, KORBA)
Environment Monitoring Section

REF : BALCO/QAP1/POLL/MS 05/File-08B/MPT-WATER-1/Jun-17

DATE -15/08/2017

Water Analysis Report of Mainpat Mines.

Sampling Date - 04/06/2017

S.No	Parameters	Units	W1	W2	W4	W5	W6	W7	W8	W9	W10
			Gungutta nallah Kesra	Gungutta nallah Pakri jharia	Mangarda nallah	Down stream 1km of W4	Gungutta nallah proposed T/S	Gungutta nallah 1 km down from W6	Manjharia nallah	Jokki nallah	Hand pump Kudaridih
1	pH		7.2	7.2	7.0	7.1	7.2	7.3	7.1	7.4	6.9
2	Turbidity	NTU	69	72	71	75	73	77	67	91	4.8
3	Conductivity	µS/cm	43.9	44.3	43.0	43.4	46.2	45.8	78.1	69.8	106.0
4	Solid (Total)	mg/l	84	86	85	88	85	87	78	115	55
5	Solid (Dissolved)	mg/l	49	50	49	50	48	49	47	72	29
6	Solid (Suspended)	mg/l	35	36	36	38	37	38	31	43	26
7	Chloride as Cl	mg/l	9.6	9.9	9.2	9.6	11.0	11.7	9.9	12.1	9.2
8	Fluoride as F	mg/l	0.29	0.31	0.31	0.30	0.32	0.31	0.28	0.36	0.27
9	Total Hardness as $CaCO_3$	mg/l	64	66	53	55	59	57	55	68	48
10	Calcium Hardness as $CaCO_3$	mg/l	43	44	36	37	39	38	37	45	32
11	Magnesium Hardness as $CaCO_3$	mg/l	21	22	17	18	20	19	18	23	16
12	Oil & Grease	mg/l	Traces	Traces	Traces	Traces	Traces	Traces	Traces	Traces	Traces
13	B.O.D	mg/l	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
14	C.O.D	mg/l	2	3	3	5	3	4	3	4	2
15	Sodium as Na	mg/l	0.73	0.75	0.71	0.74	0.77	0.75	0.69	0.81	0.68
16	Potassium as K	mg/l	0.32	0.31	0.33	0.34	0.38	0.32	0.32	0.37	0.31
17	Iron as Fe	mg/l	0.44	0.45	0.44	0.41	0.43	0.45	0.42	0.49	0.42
18	Silica as Si	mg/l	1.14	1.17	1.15	1.18	1.16	1.12	1.09	1.27	1.08
19	Zinc as Zn	mg/l	0.003	0.004	0.003	0.004	0.003	0.004	0.003	0.005	0.003
20	Manganese as Mn	mg/l	0.003	0.004	0.003	0.003	0.004	0.003	0.004	0.006	0.004
21	Nickel as Ni	mg/l	0.004	0.005	0.004	0.004	0.004	0.003	0.003	0.003	0.003
22	Chromium as Cr	mg/l	0.002	BDL	BDL	BDL	BDL	BDL	0.002	BDL	BDL
23	Lead as Pb	mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

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GM (HSE)

Analysed by

Approved by
Manager (QA)

Specific Condition-xiii Water quality monitoring data

R. & C. LABORATORY (BALCO, KORBA)
Environment Monitoring Section

REF : BALCO/QAP1/POLL/IMS 05/File-08B/MPT-WATER-1/MARCH-17

DATE -15/03/2017

Water Analysis Report of Mainpat Mines.
Sampling Date - 01/03/2017

S.No.	Parameters	Units	W1	W2	W4	W5	W6	W7	W8	W9	W10
			Gungutta nallah Kesra	Gungutta nallah Pakri jhana	Mangarda nallah	Down stream 1km of W4	Gungutta nallah proposed T/S	Gungutta nallah 1 km down from W6	Manjhania nallah	Jokki nallah	Hand pump Kudaridih
1	pH		7.4	7.4	7.4	7.1	7.2	7.2	7.5	7.4	7.2
2	Turbidity	NTU	66	82	72	80	74	69	75	86	5.2
3	Conductivity	µS/cm	44.8	45.3	42.6	42.6	46.2	45.8	76.3	39.6	104.6
4	Solid (Total)	mg/l	84	83	88	91	79	88	85	110	51
5	Solid (Dissolved)	mg/l	47	57	50	53	52	55	44	57	22
6	Solid (Suspended)	mg/l	37	26	38	38	27	33	41	53	29
7	Chloride as Cl	mg/l	9.6	10.6	10.3	10.5	11.5	11.2	10.5	12.4	9.4
8	Fluoride as F	mg/l	0.35	0.32	0.32	0.32	0.37	0.34	0.41	0.49	0.33
9	Total Hardness as $CaCO_3$	mg/l	78	73	51	60	54	67	66	65	49
10	Calcium Hardness as $CaCO_3$	mg/l	44	44	36	39	34	46	43	42	30
11	Magnesium Hardness as $CaCO_3$	mg/l	34	29	15	21	20	21	23	23	19
12	Oil & Grease	mg/l	Traces	Traces	Traces	Traces	Traces	Traces	Traces	Traces	Traces
13	B.O.D.	mg/l	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
14	C.O.D	mg/l	2	5	1	4	4	2	3	2	3
15	Sodium as Na	mg/l	0.79	0.81	0.75	0.72	0.72	0.81	0.74	0.75	0.64
16	Potassium as K	mg/l	0.31	0.32	0.35	0.35	0.34	0.29	0.42	0.43	0.33
17	Iron as Fe	mg/l	0.42	0.44	0.49	0.48	0.50	0.55	0.46	0.51	0.44
18	Silica as Si	mg/l	1.10	1.10	1.18	1.17	1.14	1.18	1.17	1.22	1.15
19	Zinc as Zn	mg/l	0.003	0.003	0.002	0.003	0.004	0.002	0.003	0.003	0.004
20	Mangnese as Mn	mg/l	0.002	0.001	0.003	0.004	0.003	0.002	0.002	0.004	0.003
21	Nickel as Ni	mg/l	0.002	0.004	0.002	0.001	0.002	0.001	0.004	0.004	0.001
22	Chromium as Cr	mg/l	0.002	BDL	BDL	BDL	BDL	BDL	0.002	BDL	BDL
23	Lead as Pb	mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

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R. & C. LABORATORY (BALCO, KORBA)
Environment Monitoring Section

REF : BALCO/QAP1/POLL/IMS 05/File-08B/MPT-WATER-1/April-17

DATE -15/04/2017

Water Analysis Report of Mainpat Mines.
Sampling Date - 04/04/2017

S.No.	Parameters	Units	W1	W2	W4	W5	W6	W7	W8	W9	W10
			Gungutta nallah Kesra	Gungutta nallah Pakri jhana	Mangarda nallah	Down stream 1km of W4	Gungutta nallah proposed T/S	Gungutta nallah 1 km down from W6	Manjhania nallah	Jokki nallah	Hand pump Kudaridih
1	pH		7.2	7.3	7.3	7.4	7.4	7.5	7.3	7.5	6.9
2	Turbidity	NTU	72	76	75	78	74	77	66	93	4.7
3	Conductivity	µS/cm	45.2	44.7	43.9	43.2	46.1	45.9	76.6	40.2	104.5
4	Solid (Total)	mg/l	83	82	85	86	81	83	75	109	54
5	Solid (Dissolved)	mg/l	46	44	49	48	47	46	43	65	29
6	Solid (Suspended)	mg/l	37	38	36	38	34	35	32	44	25
7	Chloride as Cl	mg/l	9.6	9.2	10.3	10.6	9.9	10.6	9.2	11.7	9.6
8	Fluoride as F	mg/l	0.34	0.36	0.33	0.36	0.37	0.36	0.34	0.45	0.32
9	Total Hardness as $CaCO_3$	mg/l	70	68	56	58	61	64	59	71	48
10	Calcium Hardness as $CaCO_3$	mg/l	47	46	37	38	39	41	39	47	33
11	Magnesium Hardness as $CaCO_3$	mg/l	23	22	19	20	22	23	20	24	15
12	Oil & Grease	mg/l	Traces	Traces	Traces	Traces	Traces	Traces	Traces	Traces	Traces
13	B.O.D.	mg/l	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
14	C.O.D	mg/l	4	5	4	4	4	5	4	6	3
15	Sodium as Na	mg/l	0.78	0.81	0.76	0.78	0.77	0.81	0.72	0.82	0.68
16	Potassium as K	mg/l	0.33	0.35	0.34	0.36	0.34	0.35	0.36	0.39	0.33
17	Iron as Fe	mg/l	0.46	0.45	0.49	0.44	0.47	0.50	0.46	0.51	0.44
18	Silica as Si	mg/l	1.19	1.17	1.23	1.20	1.18	1.16	1.11	1.28	1.12
19	Zinc as Zn	mg/l	0.003	0.005	0.004	0.005	0.004	0.005	0.004	0.005	0.004
20	Mangnese as Mn	mg/l	0.004	0.005	0.003	0.004	0.004	0.004	0.005	0.005	0.003
21	Nickel as Ni	mg/l	0.003	0.004	0.004	0.004	0.005	0.004	0.004	0.005	0.004
22	Chromium as Cr	mg/l	0.002	BDL	BDL	BDL	BDL	BDL	0.002	BDL	BDL
23	Lead as Pb	mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

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Specific Condition-xiii Water quality monitoring data

R. & C. LABORATORY (BALCO, KORBA)
Environment Monitoring Section

REF: BALCO/QAP1/POLL/MS 05/Fle-08B/MPT-WATER-1/JAN-17 DATE -16/01/2017

Water Analysis Report of Mainpat Mines.
Sampling Date - 01/01/2017

S.No	Parameters	Units	W1	W2	W4	W5	W6	W7	W8	W9	W10
			Gungutta nallah Kesra	Gungutta nallah Pakri jharia	Mangarda nallah	Down stream 1km of W4	Gungutta nallah proposed T/S	Gungutta nallah 1 km down from W6	Manjharia nallah	Jokki nallah	Hand pump Kudaridih
1	pH		7.2	7.3	7.2	7.1	7.3	7.3	7.2	7.2	7.2
2	Turbidity	NTU	66	73	77	81	74	71	56	88	5.1
3	Conductivity	µS/cm	44.5	44.2	42.6	42.6	46.4	46.1	83.4	39.5	104.3
4	Solid (Total)	mg/l	85	84	90	97	80	90	68	109	42
5	Solid (Dissolved)	mg/l	51	54	57	59	50	56	36	62	22
6	Solid (Suspended)	mg/l	34	30	33	38	30	34	32	47	20
7	Chloride as Cl	mg/l	9.9	10.4	10.7	10.6	11.2	11.3	9.3	12.4	9.6
8	Fluoride as F	mg/l	0.37	0.35	0.40	0.39	0.39	0.40	0.31	0.48	0.37
9	Total Hardness as $CaCO_3$	mg/l	69	71	61	64	62	69	54	69	53
10	Calcium Hardness as $CaCO_3$	mg/l	44	45	36	43	39	44	35	43	36
11	Magnesium Hardness as $CaCO_3$	mg/l	25	26	25	21	23	25	19	26	17
12	Oil & Grease	mg/l	Traces	Traces	Traces	Traces	Traces	Traces	Traces	Traces	Traces
13	B.O.D.	mg/l	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
14	C.O.D	mg/l	4	4	3	2	3	3	3	2	4
15	Sodium as Na	mg/l	0.74	0.80	0.82	0.82	0.73	0.83	0.72	0.81	0.65
16	Potassium as K	mg/l	0.33	0.36	0.36	0.42	0.36	0.34	0.36	0.44	0.34
17	Iron as Fe	mg/l	0.47	0.53	0.51	0.54	0.50	0.55	0.44	0.53	0.45
18	Silica as Si	mg/l	1.19	1.21	1.23	1.24	1.21	1.24	1.09	1.25	1.15
19	Zinc as Zn	mg/l	0.001	0.002	0.003	0.003	0.002	0.003	0.003	0.003	0.003
20	Manganese as Mn	mg/l	0.003	0.003	0.004	0.003	0.004	0.003	0.003	0.002	0.003
21	Nickel as Ni	mg/l	0.002	0.003	0.001	0.001	0.003	0.002	0.002	0.003	0.002
22	Chromium as Cr	mg/l	0.004	BDL	BDL	BDL	BDL	BDL	0.003	BDL	BDL
23	Lead as Pb	mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

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R. & C. LABORATORY (BALCO, KORBA)
Environment Monitoring Section

REF: BALCO/QAP1/POLL/MS 05/Fle-08B/MPT-WATER-1/FEB-17 DATE -16/02/2017

Water Analysis Report of Mainpat Mines.
Sampling Date - 03/02/2017

S.No	Parameters	Units	W1	W2	W4	W5	W6	W7	W8	W9	W10
			Gungutta nallah Kesra	Gungutta nallah Pakri jharia	Mangarda nallah	Down stream 1km of W4	Gungutta nallah proposed T/S	Gungutta nallah 1 km down from W6	Manjharia nallah	Jokki nallah	Hand pump Kudaridih
1	pH		7.3	7.3	7.1	7.3	7.1	7.3	7.1	7.1	7.0
2	Turbidity	NTU	62	74	74	85	70	71	69	85	5.5
3	Conductivity	µS/cm	44.4	44.5	42.3	42.8	46.0	46.2	79.1	39.1	104.1
4	Solid (Total)	mg/l	87	76	84	94	72	85	78	107	46
5	Solid (Dissolved)	mg/l	49	54	53	57	46	53	42	58	20
6	Solid (Suspended)	mg/l	38	22	31	37	26	32	36	49	26
7	Chloride as Cl	mg/l	9.1	10.1	10.2	10.1	11.3	10.9	9.9	12.1	9.1
8	Fluoride as F	mg/l	0.38	0.31	0.36	0.35	0.35	0.36	0.39	0.47	0.32
9	Total Hardness as $CaCO_3$	mg/l	74	69	55	61	58	61	59	62	51
10	Calcium Hardness as $CaCO_3$	mg/l	46	40	33	41	36	40	39	40	31
11	Magnesium Hardness as $CaCO_3$	mg/l	28	29	22	20	22	21	20	22	20
12	Oil & Grease	mg/l	Traces	Traces	Traces	Traces	Traces	Traces	Traces	Traces	Traces
13	B.O.D.	mg/l	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
14	C.O.D	mg/l	2	4	2	3	2	3	2	3	2
15	Sodium as Na	mg/l	0.72	0.81	0.81	0.79	0.79	0.79	0.71	0.77	0.62
16	Potassium as K	mg/l	0.31	0.33	0.33	0.40	0.33	0.30	0.40	0.41	0.31
17	Iron as Fe	mg/l	0.44	0.49	0.52	0.51	0.52	0.49	0.49	0.49	0.40
18	Silica as Si	mg/l	1.12	1.16	1.21	1.20	1.09	1.19	1.11	1.19	1.11
19	Zinc as Zn	mg/l	0.002	0.004	0.004	0.002	0.003	0.001	0.002	0.004	0.002
20	Manganese as Mn	mg/l	0.001	0.002	0.001	0.001	0.002	0.003	0.002	0.003	0.004
21	Nickel as Ni	mg/l	0.003	0.004	0.003	0.002	0.003	0.002	0.003	0.002	0.003
22	Chromium as Cr	mg/l	0.002	BDL	BDL	BDL	BDL	BDL	0.002	BDL	BDL
23	Lead as Pb	mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

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General Condition-v

SN	CONDITION	COMPLIANCE STATUS as per RO, MoEF&CC, Nagpur	Compliance Status as on 8th July, 2017
v.	Fugitive dust emission from all the sources shall be controlled regularly. Water spraying arrangements on haul roads, loading and unloading and at transfer points shall be provided and properly maintained.	Not Complied with No water spraying arrangements on haul roads, loading and unloading and at transfer points were observed to be provided by the PP. However, PP has informed that dust generated from haul roads, loading and un-loading and at transfer points etc is controlled by regular water sprinkling. Fugitive dust emissions are regularly monitored and data are maintained. Water sprinkling systems over fixed structure will be installed of adequate capacity over proposed crushers and screens and mineral transfer points.	**Complied with** Main haul road has been fully black topped, repaired / re-black topping work completed. On internal roads water sprinkling arrangement is already in place. Three water tankers have been provided for regular water sprinkling over road. Transportation is allowed only after sufficient wetting of road surface. Photograph showing water sprinkling of road is given on the following slide.

General Condition-v Water Sprinkling on roads

Sprinkling of Water near Mine Workings

General Condition-vi

SN	CONDITION	COMPLIANCE STATUS as per RO, MoEF&CC, Nagpur	Compliance Status as on 8th July, 2017
vi.	Measures shall be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in operations of HEMM, etc, shall be provided with ear plugs / muffs.	Partially Complied with The PP has informed that proper maintenance of equipment are regularly carried out for keeping the noise within permissible limit. Operators cabins have been provided. Controlled blasting and other measures are taken for control of noise levels below 85 dBA in the work environment. Ear plugs and muffs are provided to the workers engaged in noisy operation, equipment with inbuilt enclosures like DG sets have been purchased by PP. However details of the data pertaining to the control of noise level below 85 dBA has not been made available by the PP.	**Complied with** **The mine workers are provided with all necessary PPEs especially dust masks for dust, ear plugs for noise, safety boots, helmets etc.** **By proper maintenance of machineries, vibration generation through HEMM is minimized and ground vibration by blasting are kept within permissible limits by adopting controlled blasting technique.** **Noise monitoring is being carried out regularly and is maintained well below the stipulated limit of 85 dBA (data attached in following slides). This data is also being regularly submitted to Chhattisgarh Environment Conservation Board**

General Condition-vi Noise Level Monitoring Results

R. & C. LABORATORY (BALCO, KORBA)

Environment Monitoring Section

REF : BALCO/QAP1/POLL/IMS 05/File-08B/MPT-AIR-1/April-17 DATE -15/04/2017

Ambient Air Quality Report of Mainpat Bauxite mines

Sampling Date : 01 to 04 April 2017

SN	Parameters	Unit	Norms	Near Balco T/S	Old Kesra	Camp No-2	Office
				01/04/2017	02/04/2017	03/04/2017	04/04/2017
1	PM 2.5	µg/m3	40(Annual) & 60(24 hrs)	26	25	32	33
2	PM 10	µg/m3	60(Annual)&100(24 hrs)	52	48	55	55
3	SO2	µg/m3	50(Annual)&80(24 hrs)	16	15	18	17
4	NOx	µg/m3	40(Annual)&80(24 hrs)	17	13	16	15
5	Sound level (Day)	dB	75	44.5	43.4	45.3	44.9
6	Sound level (Night)	dB	70	43.7	43.0	44.4	44.2

Norms-National Ambient Air Quality Standards (18 November 2009)

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R. & C. LABORATORY (BALCO, KORBA)

Environment Monitoring Section

REF : BALCO/QAP1/POLL/IMS 05/File-08B/MPT-AIR-1/May-17 DATE -15/05/2017

Ambient Air Quality Report of Mainpat Bauxite mines

Sampling Date : 01 to 4 May 2017

SN	Parameters	Unit	Norms	Near Balco T/S	Old Kesra	Camp No-2	Office
				01/05/2017	02/05/2017	03/05/2017	04/05/2017
1	PM 2.5	µg/m3	40(Annual) & 60(24 hrs)	24	27	33	31
2	PM 10	µg/m3	60(Annual)&100(24 hrs)	48	51	54	52
3	SO2	µg/m3	50(Annual)&80(24 hrs)	14	17	17	19
4	NOx	µg/m3	40(Annual)&80(24 hrs)	15	16	15	14
5	Sound level (Day)	dB	75	44.3	43.2	45.2	44.6
6	Sound level (Night)	dB	70	43.9	42.8	44.2	44.0

Norms-National Ambient Air Quality Standards (18 November 2009)

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R. & C. LABORATORY (BALCO, KORBA)

Environment Monitoring Section

REF : BALCO/QAP1/POLL/IMS 05/File-08B/MPT-AIR-1/Jun-17 DATE -15/06/2017

Ambient Air Quality Report of Mainpat Bauxite mines

Sampling Date : 01 to 04 June 2017

SN	Parameters	Unit	Norms	Near Balco T/S	Old Kesra	Camp No-2	Office
				01/06/2017	02/06/2017	03/06/2017	04/06/2017
1	PM 2.5	µg/m3	40(Annual) & 60(24 hrs)	25	24	33	32
2	PM 10	µg/m3	60(Annual)&100(24 hrs)	51	46	53	54
3	SO2	µg/m3	50(Annual)&80(24 hrs)	16	15	17	18
4	NOx	µg/m3	40(Annual)&80(24 hrs)	13	13	15	14
5	Sound level (Day)	dB	75	44.2	43.3	45.1	44.7
6	Sound level (Night)	dB	70	43.6	42.7	44.3	44.1

Norms-National Ambient Air Quality Standards (18 November 2009)

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General Condition-vi Noise Level Monitoring Results

R. & C. LABORATORY (BALCO, KORBA)

Environment Monitoring Section

REF : BALCO/QAP1/POLL/IMS 05/File-08B/MPT-AIR-1/DEC-16 DATE -16/12/2016

Ambient Air Quality Report of Mainpat Bauxite mines

Sampling Date : 01 to 05 December 2016

SN	Parameters	Unit	Norms	Near Balco T/S	Old Kesra	Camp No-2	Office
				01/12/2016	02/12/2016	03/12/2016	05/12/2016
1	PM 2.5	µg/m3	40(Annual) & 60(24 hrs)	34	31	35	34
2	PM 10	µg/m3	60(Annual)&100(24 hrs)	56	53	58	57
3	SO2	µg/m3	50(Annual)&80(24 hrs)	15	14	16	15
4	NOx	µg/m3	40(Annual)&80(24 hrs)	13	12	14	13
5	Sound level (Day)	dB	75	44.4	43.8	45.4	45.2
6	Sound level (Night)	dB	70	43.9	43.2	44.8	44.6

Norms-National Ambient Air Quality Standards (18 November 2009)

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R. & C. LABORATORY (BALCO, KORBA)

Environment Monitoring Section

REF : BALCO/QAP1/POLL/IMS 05/File-08B/MPT-AIR-1/JAN-17 DATE -16/01/2017

Ambient Air Quality Report of Mainpat Bauxite mines

Sampling Date : 01 TO 04 JANUARY-17

SN	Parameters	Unit	Norms	Near Balco T/S	Old Kesra	Camp No-2	Office
				01/01/2017	02/01/2017	03/01/2017	04/01/2017
1	PM 2.5	µg/m3	40(Annual) & 60(24 hrs)	30	32	34	33
2	PM 10	µg/m3	60(Annual)&100(24 hrs)	52	51	57	56
3	SO2	µg/m3	50(Annual)&80(24 hrs)	17	17	14	14
4	NOx	µg/m3	40(Annual)&80(24 hrs)	15	14	15	12
5	Sound level (Day)	dB	75	44.2	43.6	45.6	45.3
6	Sound level (Night)	dB	70	43.6	43.0	44.6	44.4

Norms-National Ambient Air Quality Standards (18 November 2009)

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R. & C. LABORATORY (BALCO, KORBA)

Environment Monitoring Section

REF : BALCO/QAP1/POLL/IMS 05/File-08B/MPT-AIR-1/FEB-17 DATE -16/02/2017

Ambient Air Quality Report of Mainpat Bauxite mines

Sampling Date : 1 TO 04 FEB 2017

SN	Parameters	Unit	Norms	Near Balco T/S	Old Kesra	Camp No-2	Office
				01/02/2017	02/02/2017	03/02/2017	04/02/2017
1	PM 2.5	µg/m3	40(Annual) & 60(24 hrs)	26	28	33	30
2	PM 10	µg/m3	60(Annual)&100(24 hrs)	48	49	56	52
3	SO2	µg/m3	50(Annual)&80(24 hrs)	14	16	12	12
4	NOx	µg/m3	40(Annual)&80(24 hrs)	16	15	13	11
5	Sound level (Day)	dB	75	44.3	43.4	45.5	45.1
6	Sound level (Night)	dB	70	43.5	43.1	44.4	44.5

Norms-National Ambient Air Quality Standards (18 November 2009)

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R. & C. LABORATORY (BALCO, KORBA)

Environment Monitoring Section

REF : BALCO/QAP1/POLL/IMS 05/File-08B/MPT-AIR-1/MARCH-17 DATE -15/03/2017

Ambient Air Quality Report of Mainpat Bauxite mines

Sampling Date : 01 TO 04 MARCH 2017

SN	Parameters	Unit	Norms	Near Balco T/S	Old Kesra	Camp No-2	Office
				01/03/2017	02/03/2017	03/03/2017	04/03/2017
1	PM 2.5	µg/m3	40(Annual) & 60(24 hrs)	27	30	31	34
2	PM 10	µg/m3	60(Annual)&100(24 hrs)	50	51	52	56
3	SO2	µg/m3	50(Annual)&80(24 hrs)	15	18	15	10
4	NOx	µg/m3	40(Annual)&80(24 hrs)	18	15	14	13
5	Sound level (Day)	dB	75	44.4	43.3	45.4	45.0
6	Sound level (Night)	dB	70	43.4	43.2	44.2	44.6

Norms-National Ambient Air Quality Standards (18 November 2009)

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General Condition-viii

SN	CONDITION	COMPLIANCE STATUS as per RO, MoEF&CC, Nagpur	Compliance Status as on 8th July, 2017
viii.	Personnel working in dusty areas shall be provided with protective respiratory devices and they shall also be imparted adequate training and information on safety and health aspects.	Partially Complied with The PP has informed that protective respiratory devices have been provided to the personnel working in dusty areas and training and information on safety and health aspects is imparted on monthly basis. However no details pertaining to the protective respiratory devices provided to the personnel working in dusty areas has been provided by the PP.	**Complied with** **All necessary PPEs like dust mask, ear plug, goggles, helmets, safety shoe, hand gloves have been issued and records are maintained in register. The use /wearing of PPEs by workers are ensured by regular persuasion and monitoring.**

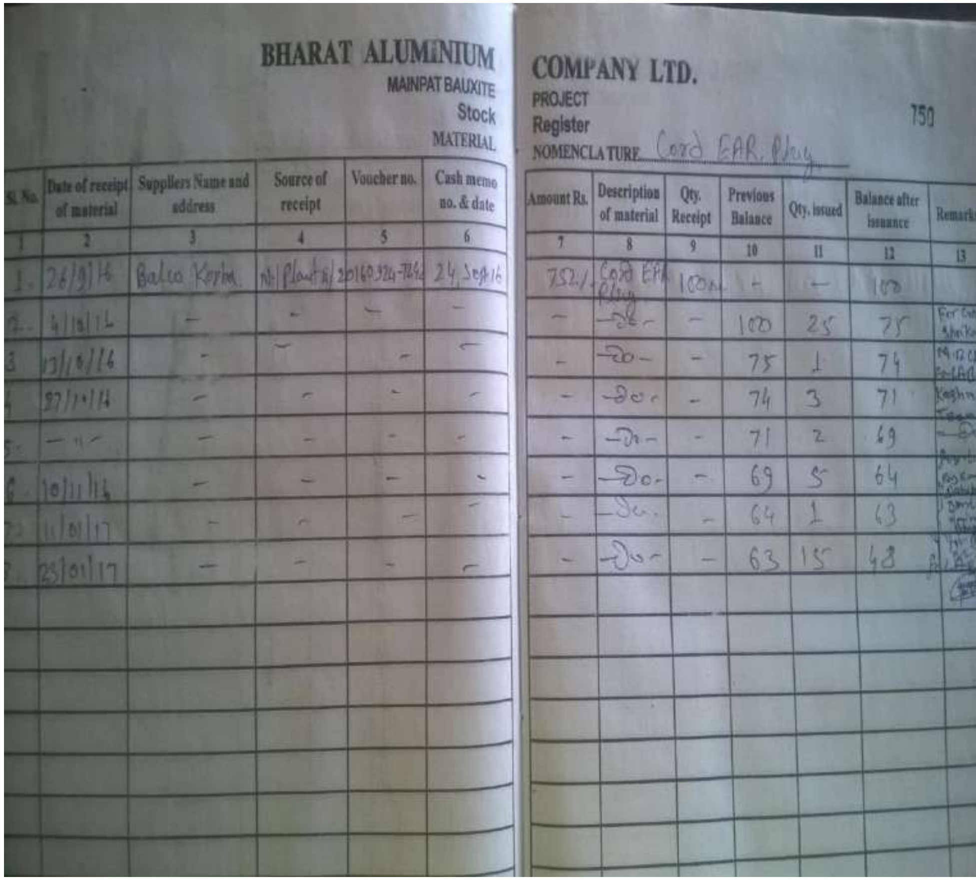
General Condition-viii Use of PPE's

Mandatory PPEs: to be used in Mines area

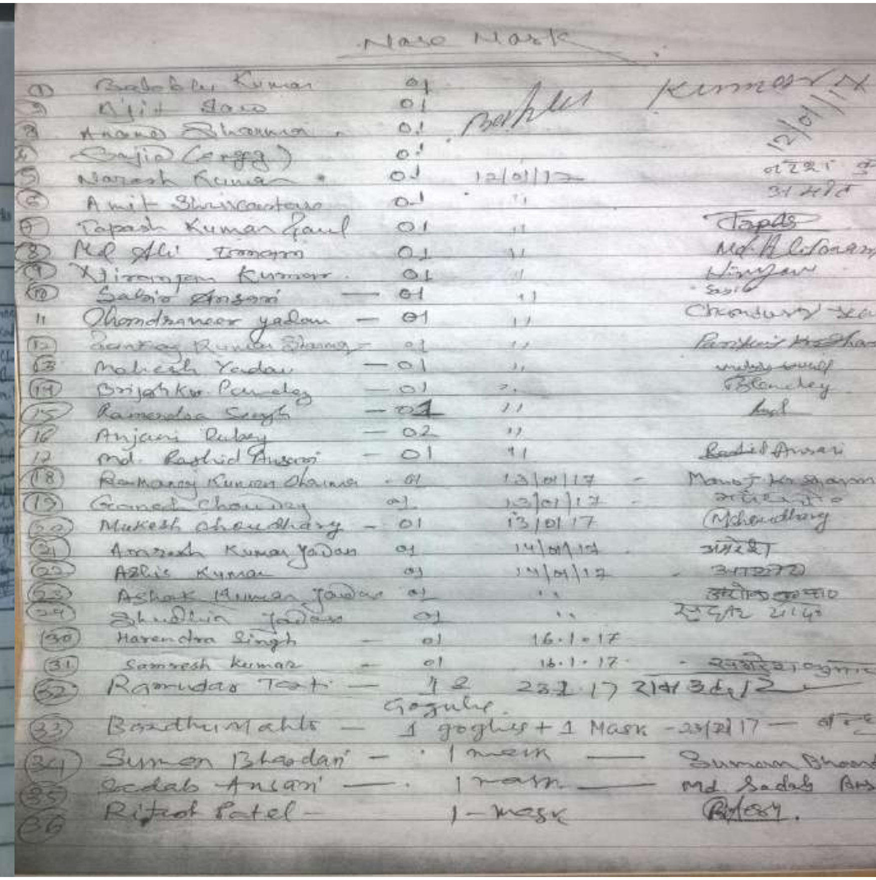
Job Specific/ Hazard Specific PPEs

General Condition-viii Use of PPE's

General Condition-viii Use of PPE's



Sl. No.	Date of receipt of material	Suppliers Name and address	Source of receipt	Voucher no.	Cash memo no. & date	Amount Rs.	Description of material	Qty. Receipt	Previous Balance	Qty. issued	Balance after issuance	Remarks
1	2	3	4	5	6	7	8	9	10	11	12	13
1	26/9/16	Balco Korba	NH Plant [illegible]	20160324-[illegible]	24 Sep 16	752/-	Cord EAR Plug	100 Nos	-	-	100	
2	4/10/16	-	-	-	-	-	-do-	-	100	25	75	[illegible]
3	13/10/16	-	-	-	-	-	-do-	-	75	1	74	[illegible]
4	27/10/16	-	-	-	-	-	-do-	-	74	3	71	[illegible]
5	-"-	-	-	-	-	-	-do-	-	71	2	69	[illegible]
6	10/11/16	-	-	-	-	-	-do-	-	69	5	64	[illegible]
7	11/01/17	-	-	-	-	-	-do-	-	64	1	63	[illegible]
8	25/01/17	-	-	-	-	-	-do-	-	63	15	48	[illegible]



Ear Plug- Stock register

Nose Mask-Stock register

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ENCLOSURE-6

UNDERTAKING MENTIONING TIMELINE TO ACHIEVE THE FULL COMPLIANCE OF CONDITIONS OF EARLIER ISSUED EC

vedanta

balco

UNDERTAKING

Date:10-07-2017

I, Afroz Ali, Authorized Signatory of Bharat Aluminium Company Ltd., give this undertaking

1. That the **Environment Clearance** for our Mainpat bauxite mine was granted by **MOEFCC, New Delhi vide letter no. J-11015/235/2007-IA.II (M) dated 26.10.2010 for production capacity of 0.75 Million TPA.**

2. That **Certified Compliance Report vide letter no F. No. 3-50/2008 (ENV) dated 14.03.2017 has been Obtained from Regional Office of Ministry of Environment, Forest and Climate Change.**

3. That the compliance report mentions some of the EC conditions as partially complied or not complied.

4. That we have now complied fully with all such conditions mentioned as partly complied or not complied. Details of such compliance are being provided separately.

5. I, on behalf of BALCO, undertake that we shall continue to comply with all conditions stipulated by MOEFCC in the current EC or to be stipulated in future.

6. Even if any conditions remain partially complied/not complied as per Regional Office, MoEF&CC same will be completed within a maximum time frame of six months.

This undertaking is submitted in reference of our proposal for Proposed Expansion in Production Capacity of Mainpat Bauxite Mine (M.L. Area 639.169 ha.) from 0.75 Million TPA to 2.25 Million TPA (Dispatchable), Located at Villages – Kesra, Kudaridih & Sapnadar, Tehsil Mainpat, District-Surguja (Chhattisgarh).

Place: New Delhi

Afroz Ali
Head- Mines

Authorised Signatory

Bharat Aluminium Company Limited

ENCLOSURE-7

STATUS REPORT ON COMPLIANCE OF ALL CONDITIONS OF EARLIER ISSUED EC

STATUS REPORT ON THE COMPLIANCE OF ALL CONDITION OF EARLIER ISSUED ENVIRONMENT CLEARANCE

(LETTER. NO. –J-11015/235/2007-IA.II (M) dated 26.10.2010 & further extension received for EC vide letter dated 27.10.2015)

of

MAINPAT BAUXITE MINE

(ML Area 639.169 Ha, Expansion in Production Capacity from 0.75 million tonne per annum to 2.25 million tonnes dispatchable bauxite per annum)

at

Villages: Kudaridih, Kesra & Sapanadar, Tehsil: Mainpat, District: Surguja, State – Chhattisgarh

Specific Condition-i

SN	CONDITION	COMPLIANCE STATUS as per RO, MoEF&CC, Nagpur	Compliance Status as on 8th July, 2017
i	Maintenance of village roads through which transportation of ore is undertaken shall be carried out by the company regularly at its own expenses. The roads shall be black topped.	Partially Complied with It is observed that village road through which ore transportation takes place is being maintained by BALCO. However, no block topping was observed in the main haul road.	**Complied with** **Main haul road has been fully black topped, repaired / re black topping work completed. Photographs of the same are given on the follow up slide.**

Specific Condition-i Road Construction and Maintenance

During WMM laying Work

During Watering Work

Specific Condition-i Road Construction and Maintenance

During BM Work

During SDBC Work

Specific Condition-ii

SN	CONDITION	COMPLIANCE STATUS as per RO, MoEF&CC, Nagpur	Compliance Status as on 8th July, 2017
ii	Rain water harvesting shall be undertaken to recharge the ground water. Status of implementation shall be submitted to the Regional Office of the Ministry within six months and thereafter every year from the next consequent year.	Complied with It is observed that two mined out pits have been developed as water bodies to recharge the ground water. However, rainwater harvesting measures needs to be strengthened in the township area. The PP has submitted a status of implementation of rainwater harvesting structure in the compliance report submitted to the Regional Office. Photographs of the same are given on the follow up slide.	**Complied with**

Specific Condition-ii Rainwater Harvesting

PIEZOMETERS

Water Body Developed in Kesra

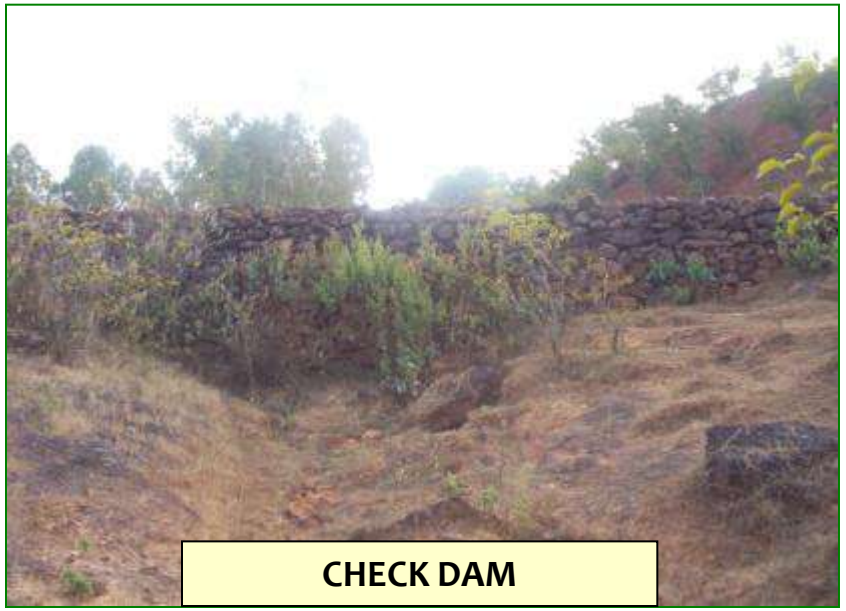
Water Body Developed in Kudaridih

Water Body Developed in Kesra

Specific Condition-ii Rainwater Harvesting

STOP DAM & CHECK DAM

GARLAND DRAIN



CHECK DAM

Specific Condition-iii

SN	CONDITION	COMPLIANCE STATUS as per RO, MoEF&CC, Nagpur	Compliance Status as on 8th July, 2017
iii	Ground water in the core zone shall be regularly monitored for depletion and contamination due to mining activity and mitigation measures undertaken to prevent adverse affects.	Complied With It is observed that three Peizometric wells have been constructed and the water quality being monitored regularly for the depletion and contamination. It is also observed that opencast mining of bauxite is being done upto a depth of 8-10 meters from the surface. Ground water level being existing at far below level of mining, no intersection of the mining operations with the ground water was observed. A report on ground water monitoring is given on the follow up slides.	**Complied with**

Specific Condition-iii Water quality monitoring data

R. & C. LABORATORY (BALCO, KORRA)
Environment Monitoring Section

REF : BALCO/QAP1/POLL/MS 05/File-08B/MPT-WATER-1/MAY-17 DATE -16/05/2017

Water Analysis Report of Mainpat Mines.
Sampling Date - 02/05/2017

S.No	Parameters	Units	W1	W2	W4	W5	W6	W7	W8	W9	W10
			Gungutta nallah Kesra	Gungutta nallah Pakri jharia	Mangarda nallah	Down stream 1km of W4	Gungutta nallah proposed T/S	Gungutta nallah 1 km down from W6	Manjharia nallah	Jokki nallah	Hand pump Kudaridih
1	pH		7.3	7.2	7.2	7.3	7.2	7.2	7.3	7.4	6.9
2	Turbidity	NTU	68	72	74	76	76	72	66	90	4.7
3	Conductivity	µS/cm	44.4	44.8	42.9	43.2	46.3	45.6	77.6	39.5	104.8
4	Solid (Total)	mg/l	79	82	83	84	87	80	79	109	50
5	Solid (Dissolved)	mg/l	44	46	44	52	50	48	49	68	24
6	Solid (Suspended)	mg/l	35	36	39	32	37	32	30	41	26
7	Chloride as Cl	mg/l	9.3	9.4	10.3	10.4	10.3	10.8	9.7	11.7	9.2
8	Fluoride as F	mg/l	0.30	0.30	0.32	0.33	0.36	0.30	0.32	0.42	0.28
9	Total Hardness as $CaCO_3$	mg/l	66	63	52	57	61	58	55	63	51
10	Calcium Hardness as $CaCO_3$	mg/l	41	42	34	36	37	39	34	43	33
11	Magnesium Hardness as $CaCO_3$	mg/l	25	21	18	21	24	19	21	20	18
12	Oil & Grease	mg/l	Traces	Traces	Traces	Traces	Traces	Traces	Traces	Traces	Traces
13	B.O.D.	mg/l	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
14	C.O.D	mg/l	3	2	3	2	2	3	3	4	3
15	Sodium as Na	mg/l	0.74	0.76	0.72	0.74	0.75	0.76	0.68	0.80	0.69
16	Potassium as K	mg/l	0.30	0.29	0.34	0.34	0.33	0.32	0.33	0.35	0.33
17	Iron as Fe	mg/l	0.43	0.42	0.49	0.39	0.45	0.47	0.40	0.47	0.44
18	Silica as Si	mg/l	1.12	1.18	1.16	1.18	1.15	1.12	1.06	1.22	1.13
19	Zinc as Zn	mg/l	0.003	0.002	0.003	0.002	0.003	0.002	0.003	0.003	0.003
20	Manganese as Mn	mg/l	0.003	0.003	0.003	0.003	0.003	0.003	0.002	0.003	0.001
21	Nickel as Ni	mg/l	0.002	0.003	0.001	0.002	0.002	0.003	0.003	0.002	0.003
22	Chromium as Cr	mg/l	0.002	BDL	BDL	BDL	BDL	BDL	0.002	BDL	BDL
23	Lead as Pb	mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

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R. & C. LABORATORY (BALCO, KORBA)
Environment Monitoring Section

REF : BALCO/QAP1/POLL/MS 05/File-08B/MPT-WATER-1/Jun-17 DATE -15/06/2017

Water Analysis Report of Mainpat Mines.
Sampling Date - 04/06/2017

S.No	Parameters	Units	W1	W2	W4	W5	W6	W7	W8	W9	W10
			Gungutta nallah Kesra	Gungutta nallah Pakri jharia	Mangarda nallah	Down stream 1km of W4	Gungutta nallah proposed T/S	Gungutta nallah 1 km down from W6	Manjharia nallah	Jokki nallah	Hand pump Kudaridih
1	pH		7.2	7.2	7.0	7.1	7.2	7.3	7.1	7.4	6.9
2	Turbidity	NTU	69	72	71	75	73	77	67	91	4.8
3	Conductivity	µS/cm	43.9	44.3	43.0	43.4	46.2	45.8	78.1	69.8	106.0
4	Solid (Total)	mg/l	84	86	85	88	85	87	78	115	55
5	Solid (Dissolved)	mg/l	49	50	49	50	48	49	47	72	29
6	Solid (Suspended)	mg/l	35	36	36	38	37	38	31	43	26
7	Chloride as Cl	mg/l	9.6	9.9	9.2	9.6	11.0	11.7	9.9	12.1	9.2
8	Fluoride as F	mg/l	0.29	0.31	0.31	0.30	0.32	0.31	0.28	0.36	0.27
9	Total Hardness as $CaCO_3$	mg/l	64	66	53	55	59	57	55	59	48
10	Calcium Hardness as $CaCO_3$	mg/l	43	44	36	37	39	38	37	45	32
11	Magnesium Hardness as $CaCO_3$	mg/l	21	22	17	18	20	19	18	23	16
12	Oil & Grease	mg/l	Traces	Traces	Traces	Traces	Traces	Traces	Traces	Traces	Traces
13	B.O.D	mg/l	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
14	C.O.D	mg/l	2	3	3	5	3	4	3	4	2
15	Sodium as Na	mg/l	0.73	0.75	0.71	0.74	0.77	0.75	0.69	0.81	0.68
16	Potassium as K	mg/l	0.32	0.31	0.33	0.34	0.38	0.32	0.32	0.37	0.31
17	Iron as Fe	mg/l	0.44	0.45	0.44	0.41	0.43	0.45	0.42	0.49	0.42
18	Silica as Si	mg/l	1.14	1.17	1.15	1.18	1.16	1.12	1.09	1.27	1.08
19	Zinc as Zn	mg/l	0.003	0.004	0.003	0.004	0.003	0.004	0.003	0.005	0.003
20	Manganese as Mn	mg/l	0.003	0.004	0.003	0.003	0.004	0.003	0.004	0.006	0.004
21	Nickel as Ni	mg/l	0.004	0.005	0.004	0.004	0.004	0.003	0.003	0.003	0.003
22	Chromium as Cr	mg/l	0.002	BDL	BDL	BDL	BDL	BDL	0.002	BDL	BDL
23	Lead as Pb	mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

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Specific Condition-iii Water quality monitoring data

R. & C. LABORATORY (BALCO, KORBA)
Environment Monitoring Section

REF : BALCO/QAP1/POLL/IMS 05/File-08B/MPT-WATER-1/MARCH-17

DATE -15/03/2017

Water Analysis Report of Mainpat Mines.
Sampling Date - 01/03/2017

S.No.	Parameters	Units	W1	W2	W4	W5	W6	W7	W8	W9	W10
			Gungutta nallah Kesra	Gungutta nallah Pakri jhana	Mangarda nallah	Down stream 1km of W4	Gungutta nallah proposed T/S	Gungutta nallah 1 km down from W6	Manjhana nallah	Jokki nallah	Hand pump Kudaridih
1	pH		7.4	7.4	7.4	7.1	7.2	7.2	7.5	7.4	7.2
2	Turbidity	NTU	66	82	72	80	74	69	75	86	5.2
3	Conductivity	µS/cm	44.8	45.3	42.6	42.6	46.2	45.8	76.3	39.6	104.6
4	Solid (Total)	mg/l	84	83	88	91	79	88	85	110	51
5	Solid (Dissolved)	mg/l	47	57	50	53	52	55	44	57	22
6	Solid (Suspended)	mg/l	37	26	38	38	27	33	41	53	29
7	Chloride as Cl	mg/l	9.6	10.6	10.3	10.5	11.5	11.2	10.5	12.4	9.4
8	Fluoride as F	mg/l	0.35	0.32	0.32	0.32	0.37	0.34	0.41	0.49	0.33
9	Total Hardness as $CaCO_3$	mg/l	78	73	51	60	54	67	66	65	49
10	Calcium Hardness as $CaCO_3$	mg/l	44	44	36	39	34	46	43	42	30
11	Magnesium Hardness as $CaCO_3$	mg/l	34	29	15	21	20	21	23	23	19
12	Oil & Grease	mg/l	Traces	Traces	Traces	Traces	Traces	Traces	Traces	Traces	Traces
13	B.O.D.	mg/l	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
14	C.O.D	mg/l	2	5	1	4	4	2	3	2	3
15	Sodium as Na	mg/l	0.79	0.81	0.75	0.72	0.72	0.81	0.74	0.75	0.64
16	Potassium as K	mg/l	0.31	0.32	0.35	0.35	0.34	0.29	0.42	0.43	0.33
17	Iron as Fe	mg/l	0.42	0.44	0.49	0.48	0.50	0.55	0.46	0.51	0.44
18	Silica as Si	mg/l	1.10	1.10	1.18	1.17	1.14	1.18	1.17	1.22	1.15
19	Zinc as Zn	mg/l	0.003	0.003	0.002	0.003	0.004	0.002	0.003	0.003	0.004
20	Mangnese as Mn	mg/l	0.002	0.001	0.003	0.004	0.003	0.002	0.002	0.004	0.003
21	Nickel as Ni	mg/l	0.002	0.004	0.002	0.001	0.002	0.001	0.004	0.004	0.001
22	Chromium as Cr	mg/l	0.002	BDL	BDL	BDL	BDL	BDL	0.002	BDL	BDL
23	Lead as Pb	mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

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R. & C. LABORATORY (BALCO, KORBA)
Environment Monitoring Section

REF : BALCO/QAP1/POLL/IMS 05/File-08B/MPT-WATER-1/April-17

DATE -15/04/2017

Water Analysis Report of Mainpat Mines.
Sampling Date - 04/04/2017

S.No.	Parameters	Units	W1	W2	W4	W5	W6	W7	W8	W9	W10
			Gungutta nallah Kesra	Gungutta nallah Pakri jhana	Mangarda nallah	Down stream 1km of W4	Gungutta nallah proposed T/S	Gungutta nallah 1 km down from W6	Manjhana nallah	Jokki nallah	Hand pump Kudaridih
1	pH		7.2	7.3	7.3	7.4	7.4	7.5	7.3	7.5	6.9
2	Turbidity	NTU	72	78	75	78	74	77	68	83	4.7
3	Conductivity	µS/cm	45.2	44.7	43.6	43.2	46.1	45.9	76.6	40.2	104.5
4	Solid (Total)	mg/l	83	82	85	86	81	83	75	109	54
5	Solid (Dissolved)	mg/l	46	44	49	48	47	48	43	65	29
6	Solid (Suspended)	mg/l	37	38	36	38	34	35	32	44	25
7	Chloride as Cl	mg/l	9.6	9.2	10.3	10.6	9.9	10.6	9.2	11.7	9.6
8	Fluoride as F	mg/l	0.34	0.36	0.33	0.36	0.37	0.30	0.34	0.46	0.32
9	Total Hardness as $CaCO_3$	mg/l	70	68	56	58	61	64	59	71	48
10	Calcium Hardness as $CaCO_3$	mg/l	47	46	37	38	39	41	39	47	33
11	Magnesium Hardness as $CaCO_3$	mg/l	23	22	19	20	22	23	20	24	15
12	Oil & Grease	mg/l	Traces	Traces	Traces	Traces	Traces	Traces	Traces	Traces	Traces
13	B.O.D.	mg/l	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
14	C.O.D	mg/l	4	5	4	4	4	5	4	6	3
15	Sodium as Na	mg/l	0.78	0.81	0.76	0.78	0.77	0.81	0.72	0.82	0.66
16	Potassium as K	mg/l	0.33	0.35	0.34	0.36	0.34	0.35	0.36	0.39	0.33
17	Iron as Fe	mg/l	0.46	0.45	0.49	0.44	0.47	0.50	0.46	0.51	0.44
18	Silica as Si	mg/l	1.19	1.17	1.23	1.20	1.18	1.16	1.11	1.28	1.12
19	Zinc as Zn	mg/l	0.003	0.005	0.004	0.005	0.004	0.005	0.004	0.005	0.004
20	Mangnese as Mn	mg/l	0.004	0.005	0.003	0.004	0.004	0.004	0.005	0.005	0.003
21	Nickel as Ni	mg/l	0.003	0.004	0.004	0.004	0.005	0.004	0.004	0.005	0.004
22	Chromium as Cr	mg/l	0.002	BDL	BDL	BDL	BDL	BDL	0.002	BDL	BDL
23	Lead as Pb	mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

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Specific Condition-iii Water quality monitoring data

R. & C. LABORATORY (BALCO, KORBA)
Environment Monitoring Section

REF : BALCO/QAP1/POLL/MS 05/File-08B/MPT-WATER-1/JAN-17

DATE -16/01/2017

Water Analysis Report of Mainpat Mines.
Sampling Date - 01/01/2017

S.No	Parameters	Units	W1	W2	W4	W5	W6	W7	W8	W9	W10
			Gungutta nallah Kesra	Gungutta nallah Pakri jharia	Mangarda nallah	Down stream 1km of W4	Gungutta nallah proposed T/S	Gungutta nallah 1 km down from W6	Manjharia nallah	Jokki nallah	Hand pump Kudaridih
1	pH		7.2	7.3	7.2	7.1	7.3	7.3	7.2	7.2	7.2
2	Turbidity	NTU	66	73	77	81	74	71	56	88	5.1
3	Conductivity	µS/cm	44.5	44.2	42.6	42.6	46.4	46.1	83.4	39.5	104.3
4	Solid (Total)	mg/l	85	84	90	97	80	90	68	109	42
5	Solid (Dissolved)	mg/l	51	54	57	59	50	56	36	62	22
6	Solid (Suspended)	mg/l	34	30	33	38	30	34	32	47	20
7	Chloride as Cl	mg/l	9.9	10.4	10.7	10.6	11.2	11.3	9.3	12.4	9.6
8	Fluoride as F	mg/l	0.37	0.35	0.40	0.39	0.39	0.40	0.31	0.48	0.37
9	Total Hardness as $CaCO_3$	mg/l	69	71	61	64	62	69	54	69	53
10	Calcium Hardness as $CaCO_3$	mg/l	44	45	36	43	39	44	35	43	36
11	Magnesium Hardness as $CaCO_3$	mg/l	25	26	25	21	23	25	19	26	17
12	Oil & Grease	mg/l	Traces	Traces	Traces	Traces	Traces	Traces	Traces	Traces	Traces
13	B.O.D.	mg/l	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
14	C.O.D	mg/l	4	4	3	2	3	3	3	2	4
15	Sodium as Na	mg/l	0.74	0.80	0.82	0.82	0.73	0.83	0.72	0.81	0.65
16	Potassium as K	mg/l	0.33	0.36	0.36	0.42	0.36	0.34	0.36	0.44	0.34
17	Iron as Fe	mg/l	0.47	0.53	0.51	0.54	0.50	0.56	0.44	0.53	0.45
18	Silica as Si	mg/l	1.19	1.21	1.23	1.24	1.21	1.24	1.09	1.25	1.15
19	Zinc as Zn	mg/l	0.001	0.002	0.003	0.003	0.002	0.003	0.003	0.003	0.003
20	Mangnese as Mn	mg/l	0.003	0.003	0.004	0.003	0.004	0.003	0.003	0.002	0.003
21	Nickel as Ni	mg/l	0.002	0.003	0.001	0.001	0.003	0.002	0.002	0.003	0.002
22	Chromium as Cr	mg/l	0.004	BDL	BDL	BDL	BDL	BDL	0.003	BDL	BDL
23	Lead as Pb	mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

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R. & C. LABORATORY (BALCO, KORBA)
Environment Monitoring Section

REF : BALCO/QAP1/POLL/MS 05/File-08B/MPT-WATER-1/FEB-17

DATE -16/02/2017

Water Analysis Report of Mainpat Mines.
Sampling Date - 03/02/2017

S.No	Parameters	Units	W1	W2	W4	W5	W6	W7	W8	W9	W10
			Gungutta nallah Kesra	Gungutta nallah Pakri jharia	Mangarda nallah	Down stream 1km of W4	Gungutta nallah proposed T/S	Gungutta nallah 1 km down from W6	Manjharia nallah	Jokki nallah	Hand pump Kudaridih
1	pH		7.3	7.3	7.1	7.3	7.1	7.3	7.1	7.1	7.0
2	Turbidity	NTU	62	74	74	85	70	71	69	85	5.5
3	Conductivity	µS/cm	44.4	44.5	42.3	42.8	46.0	46.2	79.1	39.1	104.1
4	Solid (Total)	mg/l	87	76	84	94	72	85	78	107	46
5	Solid (Dissolved)	mg/l	49	54	53	57	46	53	42	58	20
6	Solid (Suspended)	mg/l	38	22	31	37	26	32	36	49	26
7	Chloride as Cl	mg/l	9.1	10.1	10.2	10.1	11.3	10.9	9.9	12.1	9.1
8	Fluoride as F	mg/l	0.39	0.31	0.36	0.35	0.35	0.36	0.39	0.47	0.32
9	Total Hardness as $CaCO_3$	mg/l	74	69	55	61	58	61	59	62	51
10	Calcium Hardness as $CaCO_3$	mg/l	46	40	33	41	36	40	39	40	31
11	Magnesium Hardness as $CaCO_3$	mg/l	28	29	22	20	22	21	20	22	20
12	Oil & Grease	mg/l	Traces	Traces	Traces	Traces	Traces	Traces	Traces	Traces	Traces
13	B.O.D.	mg/l	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
14	C.O.D	mg/l	2	4	2	3	2	3	2	3	2
15	Sodium as Na	mg/l	0.72	0.81	0.81	0.79	0.79	0.79	0.71	0.77	0.62
16	Potassium as K	mg/l	0.31	0.33	0.33	0.40	0.33	0.30	0.40	0.41	0.31
17	Iron as Fe	mg/l	0.44	0.49	0.52	0.51	0.52	0.49	0.49	0.49	0.40
18	Silica as Si	mg/l	1.12	1.16	1.21	1.20	1.09	1.19	1.11	1.19	1.11
19	Zinc as Zn	mg/l	0.002	0.004	0.004	0.002	0.003	0.001	0.002	0.004	0.002
20	Mangnese as Mn	mg/l	0.001	0.002	0.001	0.001	0.002	0.003	0.002	0.003	0.004
21	Nickel as Ni	mg/l	0.003	0.004	0.003	0.002	0.003	0.002	0.003	0.002	0.003
22	Chromium as Cr	mg/l	0.002	BDL	BDL	BDL	BDL	BDL	0.002	BDL	BDL
23	Lead as Pb	mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Copy to :
GM (HSE)

Analysed by

Approved by
Manager (QA)

Specific Condition-iv

SN	CONDITION	COMPLIANCE STATUS as per RO, MoEF&CC, Nagpur	Compliance Status as on 8th July, 2017
iv	Measures for prevention and control of soil erosion and management of silt shall be undertaken. Protection of dumps against erosion shall be carried out with geo-textile matting or other suitable material, and thick plantations of native trees and shrubs shall be carried out at the dump slopes. Dumps shall be protected by retaining walls.	Partially Complied with It is observed that mining operations have been resumed recently and the PP has been implementing the soil conservation measures in the mined out area in the form of retaining walls, gabion structures and garland drains etc. It is observed that mined out areas are being backfilled concurrently. Since bauxite ore is available at a depth of only 8-10 meters below ground level, no dumps are kept active for long period. No practice of reclaiming the dumps by geo-textile sheet was observed. Retaining wall was observed to be constructed at the foot of new dumps, however, no retaining walls were observed to be provided for old dumps to arrest flow of silt	**Being shallow mine working, the concurrent backfilling system has been adopted which results to minimal time exposure of open pit/dump. Such backfilled area is afforested every year in this way land degradation is minimized in our mines therefore use of geo-textile is not required. Old dumps has been properly leveled and shall be planted in the coming monsoons season. No new temporary dumps are envisaged. Photographs of parapet wall are given on the following slide.** **The 'old dumps' are very small dumps which have got stabilized over time and there is no run-off. However, retaining walls have been constructed now (shown in the following pictures). Further, these dumps will be backfilled in excavated voids latest by 30th September and thus will no longer remain there**

Specific Condition-v

SN	CONDITION	COMPLIANCE STATUS as per RO, MoEF&CC, Nagpur	Compliance Status as on 8th July, 2017
v	Trenches / garland drains shall be constructed at foot of dumps and coco filters installed at regular intervals to arrest silt from being carried to water bodies. Adequate number of Check Dams and Gully Plugs shall be constructed across seasonal/perennial nallahs (if any) flowing through the ML area and silts arrested. De- silting at regular intervals shall be carried out. Garland drain of appropriate size, gradient and length shall be constructed for both mine pit and for waste dump and sump capacity shall be designed keeping 50% safety margin over and above peak sudden rainfall (based on 50 years data) and maximum discharge in the area adjoining the mine site. Sump capacity shall also provide adequate retention period to allow proper settling of silt material. Sedimentation pits shall be constructed at the corners of the garland drains and de-silted at regular intervals.	Partially Complied With It is observed that considerable number of check dam have been constructed and catch pits/sedimentation pits have been provided at the end of the garland drains to arrest the silt. The catch pits/sedimentation pits are de-silted on regular basis, However, garland drains were not constructed for all dumps as some of the dumps were observed without garland drains. Management of existing garland drains was also observed poor as the measures like de-silting of the catch drains was not observed to be undertaken..	**Old temporary dumps have been properly levelled and garland drains have been constructed/ maintained where ever it is required.** **De-silting of garland drains has been done and shall be regularly maintained henceforth.** **Photographs of retaining wall and garland drains are given on the following slide.**

Specific Condition no-v Retaining wall and Garland drain

Retaining wall- Kesra

Retaining wall- Kesra

Garland Drain Kudaridih

Garland Drain Kesra

Specific Condition-vi

SN	CONDITION	COMPLIANCE STATUS as per RO, MoEF&CC, Nagpur	Compliance Status as on 8th July, 2017
vi	Water to be supplied for drinking purposes shall be treated to meet the prescribed standards. Monitoring of water quality for drinking shall be undertaken on daily basis especially for fluoride & arsenic and records maintained.	Complied with It is observed that requirement of drinking water is met from the bore wells and water quality is being monitored regularly for fluoride and arsenic contents. Ground water monitoring results has been shown in reply on SC iii.	**Complied with**

Specific Condition-vii

S.NO	CONDITION	COMPLIANCE STATUS as per RO, MoEF&CC, Nagpur	Compliance Status as on 8th July, 2017
vii	Occupational health and safety measures for the workers including identification of work related health hazards, training on malaria eradication, HIV, and health effects on exposure to mineral dust etc. shall be carried out. The company shall engage a full time qualified doctor who is trained in occupational health. Periodic monitoring for exposure to respirable mineral dust on the workers shall be conducted and records maintained including health records of the workers. Awareness programme for workers on impact of mining on their health and precautionary measures like use of personal equipments etc. shall be carried out periodically. Review of impact of various health measures undertaken (at interval of five years of less) shall be conducted followed by follow up action wherever required.	Partially Complied with No full time doctor for occupational health was observed to be deputed by the PP, though the PP has made provisions for doctor on temporary basis. It is informed that occupational health hazard issues have been identified and appropriate safety measures to mitigate these hazards are being practiced. However, no details pertaining to the mitigative hazards measures was made available by the PP. It is also informed by the PP that various camps on water borne diseases, HIV and health check-ups are carried out and records are maintained. On-site and Off site awareness training on work related aspects and use of personal protective equipment (PPEs) to employees and workers are given on regular basis. Details are not made available by the PP>	**Mainpat mines is certified as per OHSAS 18001 (Occupational Health and Safety Management System) and accordingly occupational health and safety hazards have been identified and control measures are already in place.** **The occupational health checkups are done as per provision of Mines Rules 1955. Health checkup and maintenance of medical records is being done at Mine site itself.** **A centralized occupational health cell is functioning at Main hospital, BALCO Korba with team of qualified doctors and nurses. Tie up has been made with fully equipped hospital located at Ambikapur 50 kms away for providing medical facilities to mine employees. We also organize Medical camps are organized regularly at different villages. Different awareness programmes regarding Malaria, HIV & occupational health hazards are conducted periodically through CSR team.** **Full time doctor has been appointed at Mine Site.** **Details of medical checkups and training programmes are given in follow up slides.**

Specific Conditions-vii OHSAS 18001:2007 Certificate

IRCLASS
SYSTEMS AND SOLUTIONS PRIVATE LIMITED

CERTIFICATE OF APPROVAL

Issued by Indian Register Quality Systems
(A Division of IRCLASS Systems and Solutions Private Limited)

This is to certify that the Occupational Health & Safety Management Systems of

Organisation: Bharat Aluminium Company Limited

Address: Balco Nagar, Korba,
Chhattisgarh,
Pin Code - 495 684

has been assessed and found conforming to the following requirement

Standard: OHSAS 18001:2007

Scope:
- Mining and Dispatch of Bauxite & Coal
- Manufacturing and Dispatch of Aluminium Ingots, Wire Rods, Aluminium Billets and Rolled Products
- Generation and Supply of Electric Power to Smelters and National Grid

For Detailed Scope & Support Locations: Refer Annexure

Certificate No.: IRQS/1740087

This Certificate Supersede our Previous Certificate no. IRQS/1540071 dated 30th January 2015

Original Certification Date : 30/01/2015

Current Date of Granting : 20/01/2017

Expiry Date : 29/01/2018

Shashi Nath Mishra
Head IRQS

This approval is subject to continued satisfactory maintenance of the Occupational Health and Safety Management Systems of the organization to the above standard, which will be monitored by IRQS. The use of the Accreditation Mark indicates accreditation with respect to activities covered by the certificate with accreditation no. 0371. Condition Overleaf CDA/IRQS/RvA/OHSAS/Rev 00

Head Office: 52A, Adi Shankaracharya Marg, Opp. Powai Lake, Powai, Mumbai - 400 072, India.

IRCLASS
SYSTEMS AND SOLUTIONS PRIVATE LIMITED

Annexure to Certificate No. IRQS/1740087

with respect to the following scope:

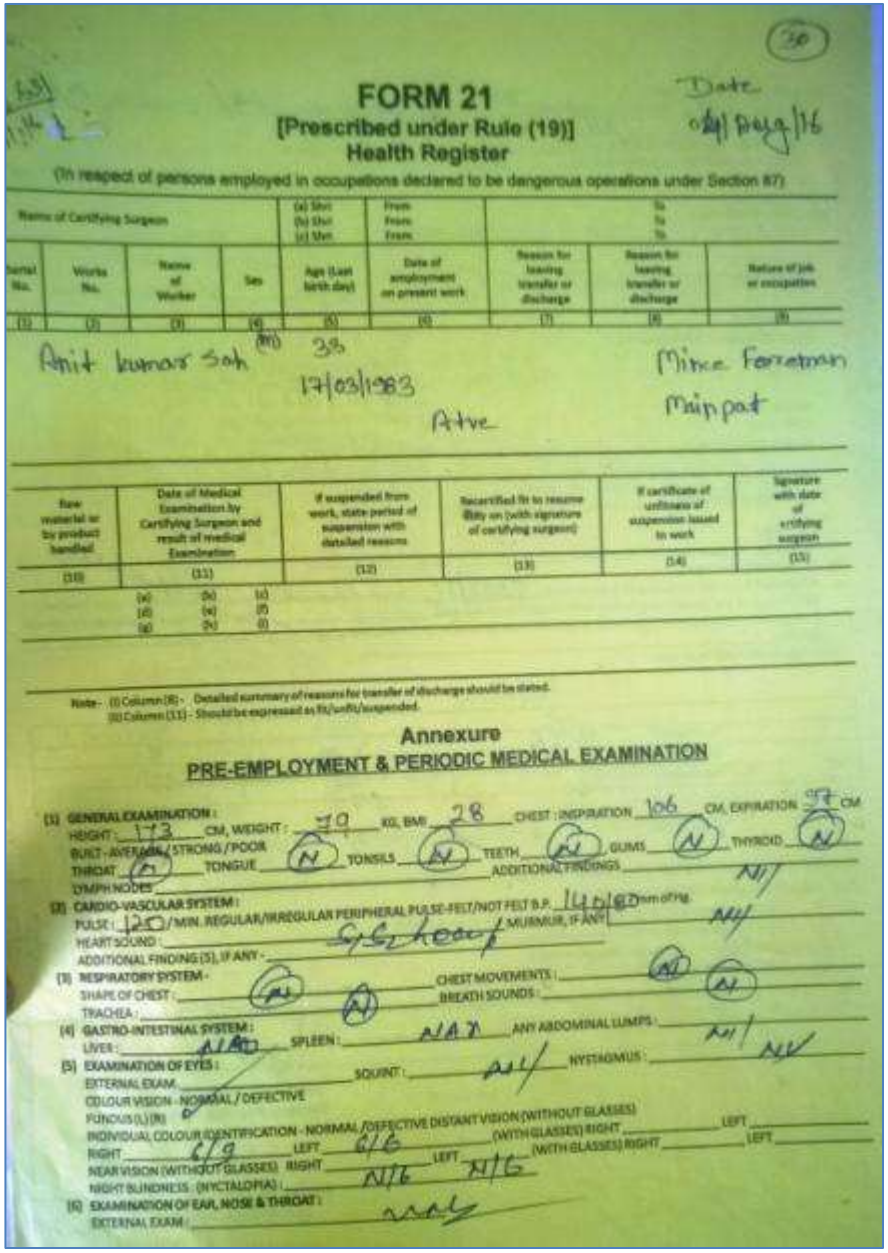
Sites/Support Functions & Locations which Support

M/s. Bharat Aluminium Company Limited

Support Site/Support Function	Address	Scope of support site/Support function for this site
BALCO, Mainpat & Bodai Daldali Mines (Kawardha)	At Semsata, P.O.: Baijalpur, Dist. Kabirdham, Chhattisgarh - 491 995	Mining and Dispatch of Bauxite
BALCO, Plant I, Plant II & Plant III	Balco Nagar, Korba, Chhattisgarh, Pin Code - 495 684	Manufacturing and Supply of Aluminium Ingots, Wire Rods, Aluminium Billets and Rolled Products
BALCO, CPP - I, CPP - II & CPP - III	Balco Nagar, Korba, Chhattisgarh, Pin Code - 495 684	Generation and Supply of Electric Power to BALCO and Wheeling to National Grid
Chotia Mines	Dist. Korba, Chattisgarh	Mining and Dispatch of Coal

Shashi Nath Mishra
Head IRQS

Specific Conditions-vii Occupational Hazards- Medical Check-up sample



FORM 21

[Prescribed under Rule (19)]

Health Register

(In respect of persons employed in occupations declared to be dangerous operations under Section 87)

Name of Certifying Surgeon

Serial No.	Works No.	Name of Worker	Sex	Age (Last birth day)	Date of employment on present work	Reason for leaving transfer or discharge	Reason for leaving transfer or discharge	Nature of job or occupation
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Amit kumar Sah	(M)	38	17/03/1983	Active		Mine Foreman Mainpat

Raw material or by product handled	Date of Medical Examination by Certifying Surgeon and result of medical Examination	If suspended from work, state period of suspension with detailed reasons	Recertified fit to resume duty on (with signature of certifying surgeon)	If certificate of unfitness of suspension issued to work	Signature with date of certifying surgeon
(10)	(11)	(12)	(13)	(14)	(15)

Note- (i) Column (9) - Detailed summary of reasons for transfer or discharge should be stated.
(ii) Column (11) - Should be expressed as fit/unfit/suspended.

Annexure

PRE-EMPLOYMENT & PERIODIC MEDICAL EXAMINATION

(1) GENERAL EXAMINATION :
HEIGHT : 173 CM, WEIGHT : 79 KG, BMI : 28 CHEST : INSPIRATION 106 CM, EXPIRATION 97 CM
BUILT - AVERAGE / STRONG / POOR
THROAT : N TONGUE : N TONSILS : N TEETH : N GUMS : N THYROID : N
LYMPH NODES : ADDITIONAL FINDINGS : NIL

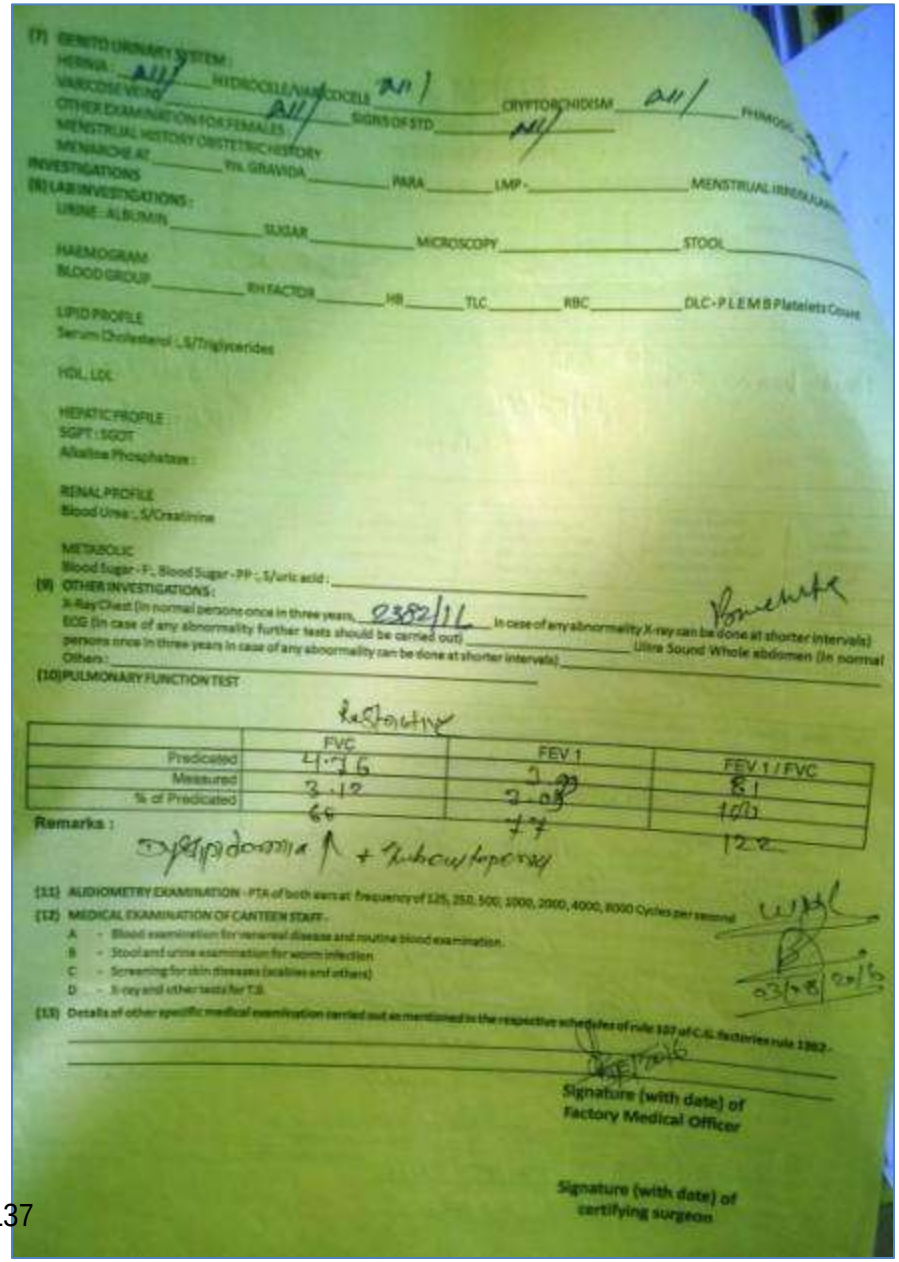
(2) CARDIO-VASCULAR SYSTEM :
PULSE : 120 /MIN. REGULAR/IRREGULAR PERIPHERAL PULSE-FELT/NOT FELT B.P. 140/80 mm of Hg.
HEART SOUND : S1S2 Heard MURMUR, IF ANY : NIL
ADDITIONAL FINDING (S), IF ANY :

(3) RESPIRATORY SYSTEM :
SHAPE OF CHEST : N CHEST MOVEMENTS : N
TRACHEA : N BREATH SOUNDS : N

(4) GASTRO-INTESTINAL SYSTEM :
LIVER : N SPLEEN : N ANY ABDOMINAL LUMPS : NIL

(5) EXAMINATION OF EYES :
EXTERNAL EXAM : SQUINT : NIL NYSTAGMUS : NIL
COLOUR VISION - NORMAL / DEFECTIVE
FUNDUS (L) (R)
INDIVIDUAL COLOUR IDENTIFICATION - NORMAL / DEFECTIVE DISTANT VISION (WITHOUT GLASSES) RIGHT 6/9 LEFT 6/6 (WITH GLASSES) RIGHT LEFT
NEAR VISION (WITHOUT GLASSES) RIGHT N/6 LEFT N/6 (WITH GLASSES) RIGHT LEFT
NIGHT BLINDNESS (NYCTALOPIA) :

(6) EXAMINATION OF EAR, NOSE & THROAT :
EXTERNAL EXAM : Nad



(7) GENITO URINARY SYSTEM :
HERNIA : NIL HYDROCELE/VARICOCELE NIL CRYPTORCHIDISM NIL PHIMOSIS
VARICOSE VEINS : NIL SIGNS OF STD : NIL
OTHER EXAMINATION FOR FEMALES :
MENSTRUAL HISTORY OBSTETRIC HISTORY
MENARCHE AT : Yrs. GRAVIDA : PARA : LMP : MENSTRUAL IRREGULARITIES
INVESTIGATIONS

(8) LAB INVESTIGATIONS :
URINE : ALBUMIN : SUGAR : MICROSCOPY : STOOL :
HAEMOGRAM
BLOOD GROUP : RH FACTOR : HB : TLC : RBC : DLC - P L E M B Platelets Count
LIPID PROFILE
Serum Cholesterol : S/Triglycerides
HDL, LDL
HEPATIC PROFILE :
SGPT : SGOT
Alkaline Phosphatase :
RENAL PROFILE
Blood Urea : , S/Creatinine
METABOLIC
Blood Sugar - F, Blood Sugar - PP : S/uric acid :

(9) OTHER INVESTIGATIONS :
X-Ray Chest (In normal persons once in three years) 2382/11 In case of any abnormality X-ray can be done at shorter intervals)
ECG (In case of any abnormality further tests should be carried out) Ultra Sound Whole abdomen (In normal persons once in three years in case of any abnormality can be done at shorter intervals)
Others :

(10) PULMONARY FUNCTION TEST

Refractive

	FVC	FEV 1	FEV 1 / FVC
Predicated	4.76	3.93	81
Measured	3.12	2.08	100
% of Predicated	66	77	122

Remarks : Dyspnoea ↑ + Tuberculosis

(11) AUDIOMETRY EXAMINATION - PTA of both ears at frequency of 125, 250, 500, 1000, 2000, 4000, 8000 Cycles per second WNL

(12) MEDICAL EXAMINATION OF CANTEEN STAFF :
A - Blood examination for venereal disease and routine blood examination.
B - Stool and urine examination for worm infection
C - Screening for skin diseases (scabies and others)
D - X-ray and other tests for T.B. 23/8/2016

(13) Details of other specific medical examination carried out as mentioned in the respective schedules of rule 107 of C.G. factories rule 1962 :

Signature (with date) of Factory Medical Officer

Signature (with date) of certifying surgeon

Specific Conditions-vii Occupational Hazards & Control Measure

TRAINING PROGRAM - VTC

TRAINING PROGRAM - VTC

FIRST AID TRAINING PROGRAM

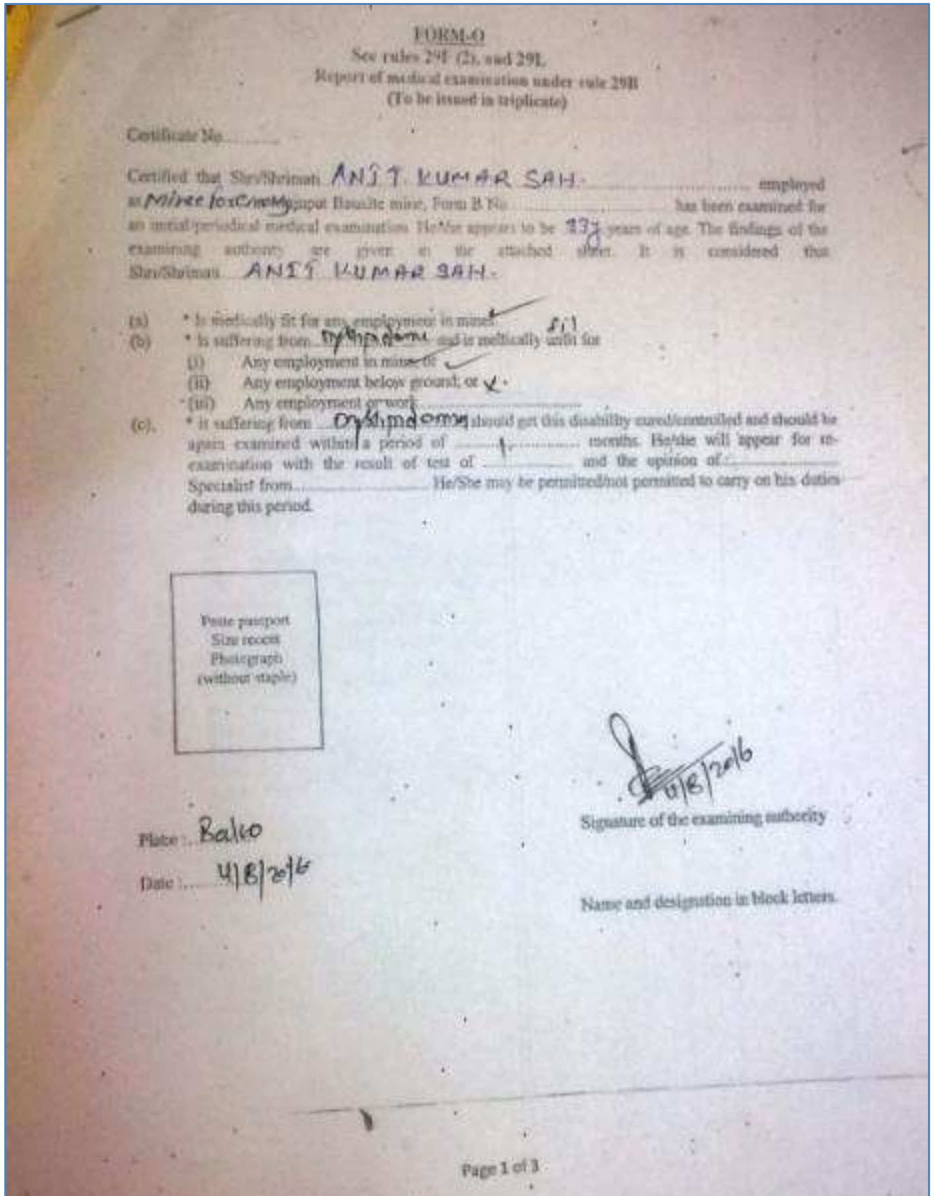
FIRE FIGHTING-TRAINING

CPR-TRAINING

ONSITE - TRAINING PROGRAM

ACTIVITY	OCCUPATIONAL HAZARD	CONTROL MEASURES
DRILLING AND BLASTING	Noise Ground Vibration	Closed Cabin Controlled Blasting
WASTE ROCK REMOVAL AND DUMPING	Dust	PPE usage
LOADING	Dust	Water Sprinkling PPE usage
TRANSPORTATION	Dust & Noise	Tarpaulin Covering No Overloading PUC check of Vehicle

Specific Conditions-vii Occupational Hazards- Medical Check-up sample



FORM-O

See rules 29F (2), and 29L

Report of medical examination under rule 29B

(To be issued in triplicate)

Certificate No............

Certified that Shri/Shrimati ANIT KUMAR SAH .... employed as Miree forcraway at Bauxite mine, Form B No .... has been examined for an initial/periodical medical examination. He/She appears to be 33 years of age. The findings of the examining authority are given in the attached sheet. It is considered that Shri/Shrimati ANIT KUMAR SAH.

(a) * Is medically fit for any employment in mines

(b) * Is suffering from .... and is medically unfit for

(i) Any employment in mines or

(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/she will appear for re-examination with the result of test of .... and the opinion of .... Specialist from .... He/She may be permitted/not permitted to carry on his duties during this period.

Paste passport Size recent Photograph (without staple)

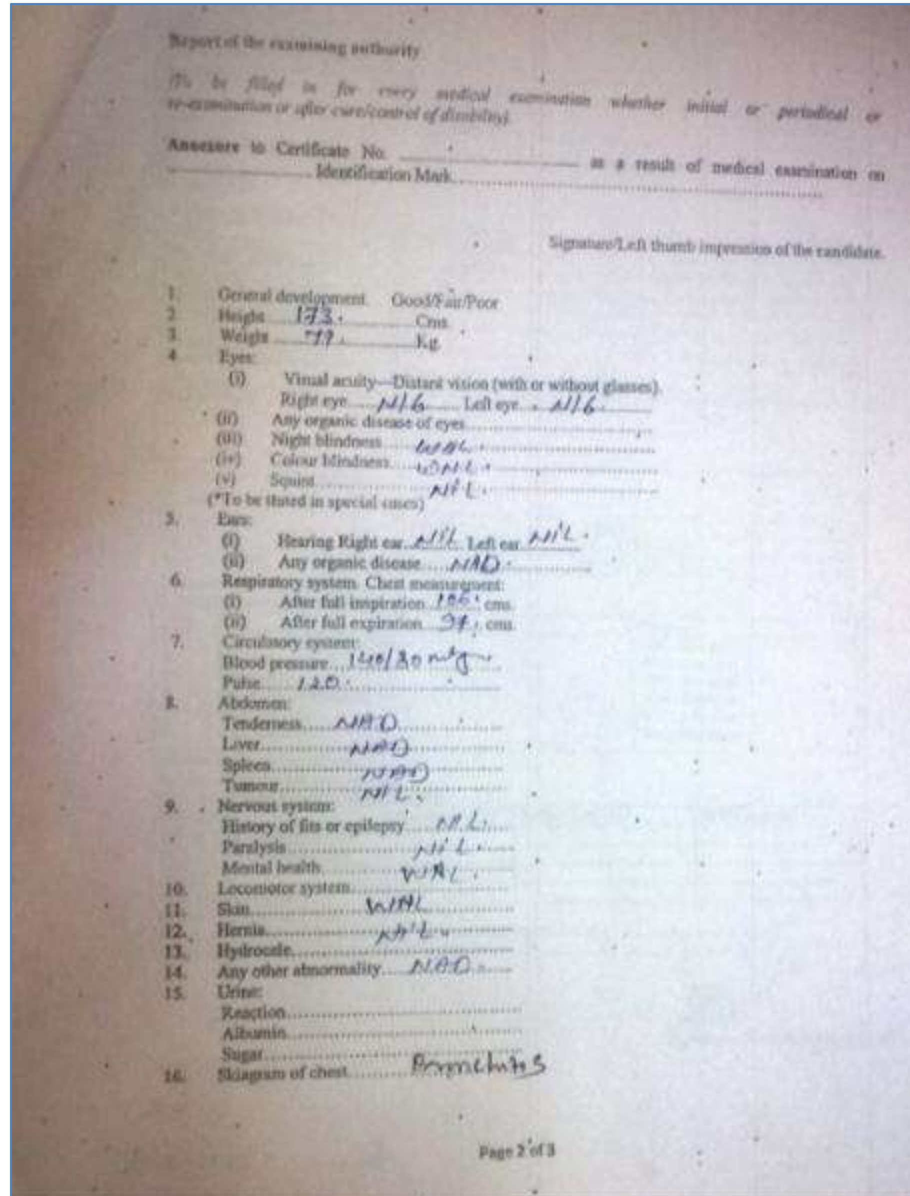
Signature of the examining authority

Place : Balco

Date : 4/8/2016

Name and designation in block letters

Page 1 of 3



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)

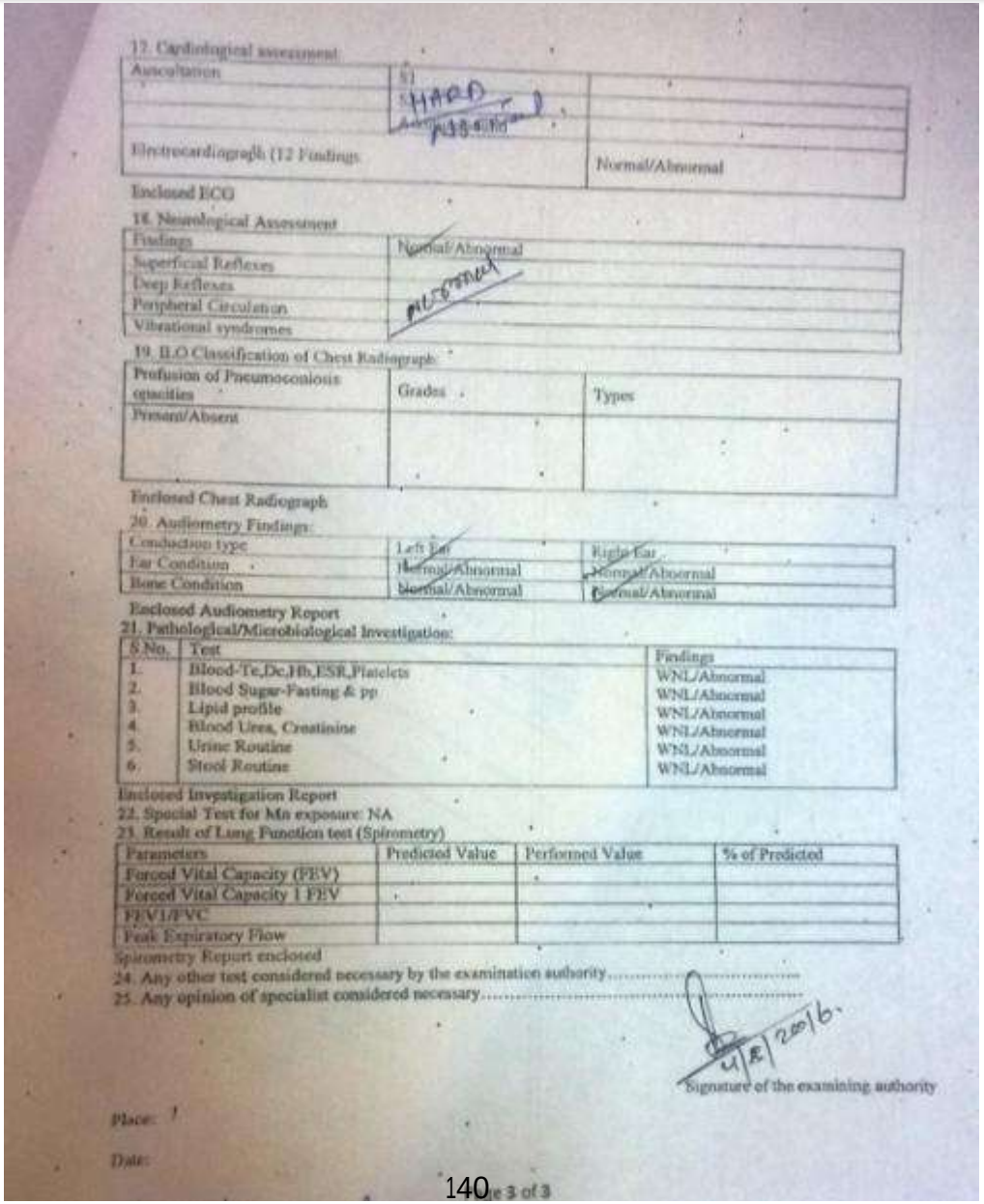
Annexure to Certificate No. .... as a result of medical examination on .... Identification Mark ....

Signature/Left thumb impression of the candidate.

1. General development Good/Fair/Poor
2. Height 173. Cms
3. Weight 77. Kg
4. Eyes:
   - (i) Visual acuity—Distant vision (with or without glasses). Right eye N/6 Left eye N/6
   - (ii) Any organic disease of eyes ....
   - (iii) Night blindness WNL
   - (iv) Colour blindness WNL
   - (v) Squint NIL
   - (*To be tested in special cases)
5. Ears:
   - (i) Hearing Right ear NIL Left ear NIL
   - (ii) Any organic disease NAD
6. Respiratory system. Chest measurement:
   - (i) After full inspiration 100 cms.
   - (ii) After full expiration 97 cms.
7. Circulatory system:
   - Blood pressure 140/80 mmHg
   - Pulse 120
8. Abdomen:
   - Tenderness NAD
   - Liver NAD
   - Spleen NAD
   - Tumour NIL
9. Nervous system:
   - History of fits or epilepsy NIL
   - Paralysis NIL
   - Mental health WNL
10. Locomotor system ....
11. Skin WNL
12. Hernia NIL
13. Hydrocele ....
14. Any other abnormality NAD
15. Urine:
    - Reaction ....
    - Albumin ....
    - Sugar ....
16. Skiagram of chest Bronchitis

Page 2 of 3

Specific Conditions-vii Occupational Hazards- Medical Check-up sample



17. Cardiological assessment

Auscultation	S1 HARD S2 NORMAL	
Electrocardiograph (12 Findings		Normal/Abnormal

Enclosed ECG

18. Neurological Assessment

Findings	Normal/Abnormal
Superficial Reflexes	
Deep Reflexes	
Peripheral Circulation	NORMAL
Vibrational syndromes	

19. ILO Classification of Chest Radiograph:

Profusion of Pneumoconiosis opacities	Grades	Types
Present/Absent		

Enclosed Chest Radiograph

20. Audiometry Findings:

	Left Ear	Right Ear
Conduction type		
Ear Condition	Normal/Abnormal	Normal/Abnormal
Bone Condition	Normal/Abnormal	Normal/Abnormal

Enclosed Audiometry Report

21. Pathological/Microbiological Investigation:

S.No.	Test	Findings
1.	Blood-Te,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 Report

22. Special Test for Mn exposure: NA

23. Result of Lung Function test (Spirometry)

Parameters	Predicted Value	Performed Value	% of Predicted
Forced Vital Capacity (FEV)			
Forced Vital Capacity 1 FEV			
FEV1/FVC			
Peak Expiratory Flow			

Spirometry Report enclosed

24. Any other test considered necessary by the examination authority.....

25. Any opinion of specialist considered necessary.....

4/8/2016.

Signature of the examining authority

Place:

Date:

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Specific Conditions-viii, ix, x

SN	CONDITION	COMPLIANCE STATUS as per RO, MoEF&CC, Nagpur	Compliance Status as on 8th July, 2017
viii	Top soil and solid waste shall be stacked properly with proper slope and adequate safeguards and shall be utilized for backfilling (wherever applicable) for reclamation and rehabilitation of mined out area.	Complied with No separate areas for stacking of the top soil have been observed. However, it is also observed that with the advancement of mining operations and concurrent backfilling, the top soil, stacked temporarily on dumping site itself, is being used for reclamation of the dump.	**Complied**
ix	Over burden (OB) shall be stacked at earmarked dump site(s) only and shall not be kept active for long period. The maximum height of the dump shall not exceed 30 m, each stage shall preferably be of 10 m and overall slope of the dump shall not exceed 28°. The OB dump shall be backfilled. The OB dumps shall be scientifically vegetated with suitable native species to prevent erosion and surface run *off*. Monitoring and management of rehabilitated areas shall continue until the vegetation becomes self-sustaining. Compliance status shall be submitted to the Ministry of Environment & Forests on six monthly basis.	Complied with It is observed that the sufficient mined out area is available with the PP and overburden excavated is being dumped directly for concurrent backfilling and subsequent reclamation. Details of plantation undertaken by PP are given in reply of SC XII.	**Complied**
x	Slope of the mining bench and ultimate pit limit shall be as per the mining scheme approved by Indian Bureau of Mines.	Being complied with Bench height is observed to be less than 10 meters. Maintenance of slope is not required as the mineral are available only at a depth of 8-10 meters.	**Being Complied**

Specific Condition-xi

SN	CONDITION	COMPLIANCE STATUS as per RO, MoEF&CC, Nagpur	Compliance Status as on 8th July, 2017
xi	Drilling (if any) shall be conducted by using dust extractors/wet drilling. Controlled blasting shall be undertaken.	Being complied with It is observed that wet drilling methods are being adopted by the PP to control the dust and controlled blasting is being practiced. Photograph of wet drilling is given in the follow up slide.	**Being complied**

Specific Condition-xi Wet Drilling

Specific Condition-xii

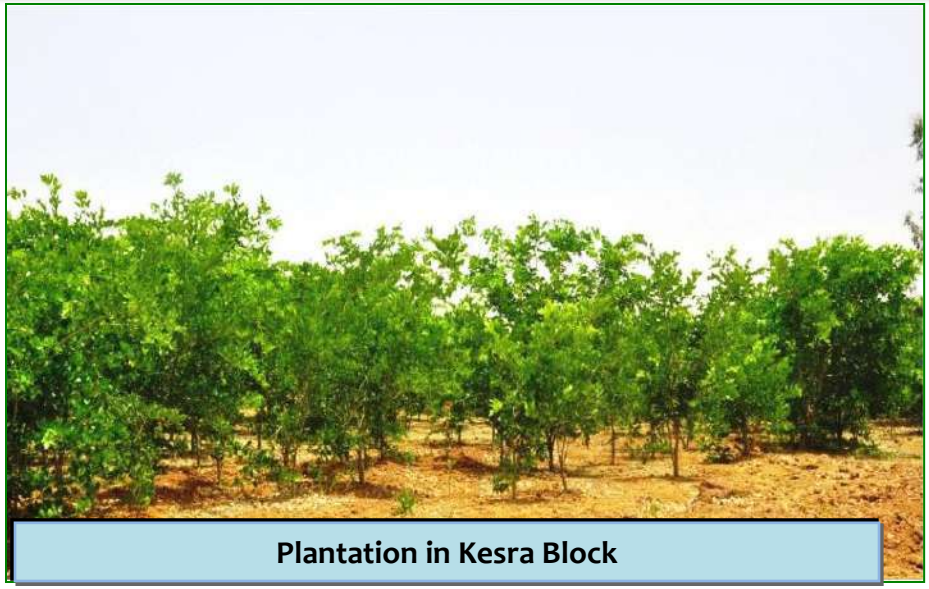
SN	CONDITION	COMPLIANCE STATUS as per RO, MoEF&CC, Nagpur	Compliance Status as on 8th July, 2017
xii	Green belt development shall be carried out considering CPCB guidelines including selection of plant species and in consultation with the local DFO / Agriculture Department. Herbs and shrubs shall also form a part of afforestation programme besides tree plantation. The density of the trees shall be around 2500 plants per ha. The company shall involve local people with the help of self help group for plantation programme. Details of year wise afforestation programme including rehabilitation of mined out area shall be submitted to the Regional Office of the Ministry every year.	Complied with It is observed that PP has already developed consideration area of greenbelt in their lease area and plantation programmed for greenbelt developed are still being undertaken by the PP annually with the native trees and fruit bearing species with the involvement of local people. Details of year wise plantation carried by the PP in their lease area is given in the following slides.	**Complied with**

Specific Condition-xii Afforestation Programme

Year	No. of Saplings Planted	Area Planted (Ha.)
1993-1995	6151	1.7
1995-1996	10500	4
1996-1997	16263	6.6
1997-1998	31556	13
1998-2000	30000	12
2000-2002	21650	8.6
2002-2003	45000	18
2003 -2004	34500	18
2004-2005	21094	10
2005-2006	30000	15.1
2006-2007	108500	30
2007-2008	100000	23.5
2008-2009	119000	41
2009-2010	85000	33
2010-2011	110000	44
2011-2012	100000	20
2012-2013	130000	52
2013-2014	60000	Gap Plantation
2014-2015	60000	Gap Plantation
2015-2016	30000	Gap Plantation
TOTAL	**1149214**	**350.5**

Local Name of species planted
Karanj
Bamboo
Silver Oak
Guava
Mango
Neem
Auccasia
Semi Auccasia
Sagaon
Gulmohar
Imli
Anwala
Jamun
Bair
Kambahar
Jarul
Chachim
Jacaranda
Sisam
Kathal

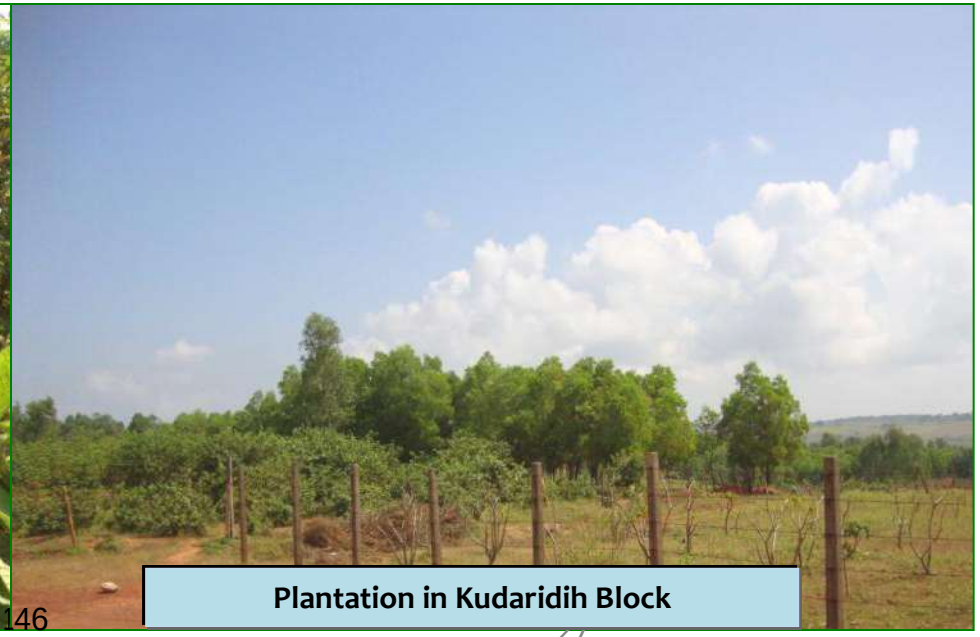
Specific Condition-xii Plantation Over Backfilled Area



Plantation in Kesra Block

Plantation in Kudaridih Block

Fruit Bearing Plantation in Kudaridih Block



Plantation in Kudaridih Block

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Specific Condition-xii Plantation Over Backfilled Area

Plantation in Kesra Block

Plantation in Kesra Block

Plantation in Sapnadar Block

Plantation in Sapnadar Block

Specific Condition-xiii

SN	CONDITION	COMPLIANCE STATUS as per RO, MoEF&CC, Nagpur	Compliance Status as on 8th July, 2017
xiii	Regular monitoring of ground water level and quality shall be carried out by establishing a network of existing wells and constructing new piezometers during the mining operation. The monitoring shall be carried out four times in a year, pre-monsoon (April-May), monsoon (August), post-monsoon (November) and winter (January) and the data thus collected shall be regularly sent to MoEF, Central Ground Water Authority and Regional Director, Central Ground Water Board.	Partially Complied with It is observed that regular monitoring of ground water and surface water is carried out and reports are submitted to all concerned. However, no details pertaining to the monitoring of surface water was made available by the PP.	**Complied with** **It is observed that regular monitoring of ground water & surface water is carried out & reports are submitted to all concerns.** **A latest report containing the monitoring of ground water is given in reply of SC III.** **Surface water quality is being regularly monitored. Analysis data is given in the follow up slide.**

Specific Condition-xiii Water quality monitoring data

R. & C. LABORATORY (BALCO, KORBA)
Environment Monitoring Section

REF : BALCO/QAP1/POLL/MS 05/File-08B/MPT-WATER-1/MAY-17

DATE -16/05/2017

Water Analysis Report of Mainpat Mines.

Sampling Date - 02/05/2017

S.No	Parameters	Units	W1	W2	W4	W5	W6	W7	W8	W9	W10
			Gungutta nallah Kesra	Gungutta nallah Pakri jharia	Mangarda nallah	Down stream 1km of W4	Gungutta nallah proposed T/S	Gungutta nallah 1 km down from W6	Manjharia nallah	Jokki nallah	Hand pump Kudaridih
1	pH		7.3	7.2	7.2	7.3	7.2	7.2	7.3	7.4	6.9
2	Turbidity	NTU	68	72	74	76	76	72	66	90	4.7
3	Conductivity	µS/cm	44.4	44.8	42.9	43.2	46.3	45.6	77.6	39.5	104.8
4	Solid (Total)	mg/l	79	82	83	84	87	80	79	109	50
5	Solid (Dissolved)	mg/l	44	46	44	52	50	48	49	68	24
6	Solid (Suspended)	mg/l	35	36	39	32	37	32	30	41	26
7	Chloride as Cl	mg/l	9.3	9.4	10.3	10.4	10.3	10.8	9.7	11.7	9.2
8	Fluoride as F	mg/l	0.30	0.30	0.32	0.33	0.36	0.30	0.32	0.42	0.28
9	Total Hardness as $CaCO_3$	mg/l	66	63	52	57	61	58	55	63	51
10	Calcium Hardness as $CaCO_3$	mg/l	41	42	34	36	37	39	34	43	33
11	Magnesium Hardness as $CaCO_3$	mg/l	25	21	18	21	24	19	21	20	18
12	Oil & Grease	mg/l	Traces	Traces	Traces	Traces	Traces	Traces	Traces	Traces	Traces
13	B.O.D.	mg/l	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
14	C.O.D	mg/l	3	2	3	2	2	3	3	4	3
15	Sodium as Na	mg/l	0.74	0.76	0.72	0.74	0.75	0.76	0.68	0.80	0.69
16	Potassium as K	mg/l	0.30	0.29	0.34	0.34	0.33	0.32	0.33	0.35	0.33
17	Iron as Fe	mg/l	0.43	0.42	0.49	0.39	0.45	0.47	0.40	0.47	0.44
18	Silica as Si	mg/l	1.12	1.18	1.16	1.18	1.15	1.12	1.06	1.22	1.13
19	Zinc as Zn	mg/l	0.003	0.002	0.003	0.002	0.003	0.002	0.003	0.003	0.003
20	Manganese as Mn	mg/l	0.003	0.003	0.003	0.003	0.003	0.003	0.002	0.003	0.001
21	Nickel as Ni	mg/l	0.002	0.003	0.001	0.002	0.002	0.003	0.003	0.002	0.003
22	Chromium as Cr	mg/l	0.002	BDL	BDL	BDL	BDL	BDL	0.002	BDL	BDL
23	Lead as Pb	mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

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R. & C. LABORATORY (BALCO, KORBA)
Environment Monitoring Section

REF : BALCO/QAP1/POLL/MS 05/File-08B/MPT-WATER-1/Jun-17

DATE -15/08/2017

Water Analysis Report of Mainpat Mines.

Sampling Date - 04/06/2017

S.No	Parameters	Units	W1	W2	W4	W5	W6	W7	W8	W9	W10
			Gungutta nallah Kesra	Gungutta nallah Pakri jharia	Mangarda nallah	Down stream 1km of W4	Gungutta nallah proposed T/S	Gungutta nallah 1 km down from W6	Manjharia nallah	Jokki nallah	Hand pump Kudaridih
1	pH		7.2	7.2	7.0	7.1	7.2	7.3	7.1	7.4	6.9
2	Turbidity	NTU	69	72	71	75	73	77	67	91	4.8
3	Conductivity	µS/cm	43.9	44.3	43.0	43.4	46.2	45.8	78.1	69.8	106.0
4	Solid (Total)	mg/l	84	86	85	88	85	87	78	115	55
5	Solid (Dissolved)	mg/l	49	50	49	50	48	49	47	72	29
6	Solid (Suspended)	mg/l	35	36	36	38	37	38	31	43	26
7	Chloride as Cl	mg/l	9.6	9.9	9.2	9.6	11.0	11.7	9.9	12.1	9.2
8	Fluoride as F	mg/l	0.29	0.31	0.31	0.30	0.32	0.31	0.28	0.36	0.27
9	Total Hardness as $CaCO_3$	mg/l	64	66	53	55	59	57	55	68	48
10	Calcium Hardness as $CaCO_3$	mg/l	43	44	36	37	39	38	37	45	32
11	Magnesium Hardness as $CaCO_3$	mg/l	21	22	17	18	20	19	18	23	16
12	Oil & Grease	mg/l	Traces	Traces	Traces	Traces	Traces	Traces	Traces	Traces	Traces
13	B.O.D	mg/l	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
14	C.O.D	mg/l	2	3	3	5	3	4	3	4	2
15	Sodium as Na	mg/l	0.73	0.75	0.71	0.74	0.77	0.75	0.69	0.81	0.68
16	Potassium as K	mg/l	0.32	0.31	0.33	0.34	0.36	0.32	0.32	0.37	0.31
17	Iron as Fe	mg/l	0.44	0.45	0.44	0.41	0.43	0.45	0.42	0.49	0.42
18	Silica as Si	mg/l	1.14	1.17	1.15	1.18	1.16	1.12	1.09	1.27	1.08
19	Zinc as Zn	mg/l	0.003	0.004	0.003	0.004	0.003	0.004	0.003	0.005	0.003
20	Manganese as Mn	mg/l	0.003	0.004	0.003	0.003	0.004	0.003	0.004	0.006	0.004
21	Nickel as Ni	mg/l	0.004	0.005	0.004	0.004	0.004	0.003	0.003	0.003	0.003
22	Chromium as Cr	mg/l	0.002	BDL	BDL	BDL	BDL	BDL	0.002	BDL	BDL
23	Lead as Pb	mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

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Specific Condition-xiii Water quality monitoring data

R. & C. LABORATORY (BALCO, KORBA)
Environment Monitoring Section

REF : BALCO/QAP1/POLL/MS 05/File-08B/MPT-WATER-1/MARCH-17

DATE -15/03/2017

Water Analysis Report of Mainpat Mines.
Sampling Date - 01/03/2017

S.No	Parameters	Units	W1	W2	W4	W5	W6	W7	W8	W9	W10
			Gungutta nallah Kesra	Gungutta nallah Pakri jhana	Mangarda nallah	Down stream 1km of W4	Gungutta nallah proposed T/S	Gungutta nallah 1 km down from W6	Manjhania nallah	Jokki nallah	Hand pump Kudaridih
1	pH		7.4	7.4	7.4	7.1	7.2	7.2	7.5	7.4	7.2
2	Turbidity	NTU	66	82	72	80	74	69	75	86	5.2
3	Conductivity	µS/cm	44.8	45.3	42.6	42.6	46.2	45.8	76.3	39.6	104.6
4	Solid (Total)	mg/l	84	83	88	91	79	88	85	110	51
5	Solid (Dissolved)	mg/l	47	57	50	53	52	55	44	57	22
6	Solid (Suspended)	mg/l	37	26	38	38	27	33	41	53	29
7	Chloride as Cl	mg/l	9.6	10.6	10.3	10.5	11.5	11.2	10.5	12.4	9.4
8	Fluoride as F	mg/l	0.35	0.32	0.32	0.32	0.37	0.34	0.41	0.49	0.33
9	Total Hardness as $CaCO_3$	mg/l	78	73	51	60	54	67	66	65	49
10	Calcium Hardness as $CaCO_3$	mg/l	44	44	36	39	34	46	43	42	30
11	Magnesium Hardness as $CaCO_3$	mg/l	34	29	15	21	20	21	23	23	19
12	Oil & Grease	mg/l	Traces	Traces	Traces	Traces	Traces	Traces	Traces	Traces	Traces
13	B.O.D.	mg/l	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
14	C.O.D	mg/l	2	5	1	4	4	2	3	2	3
15	Sodium as Na	mg/l	0.79	0.81	0.75	0.72	0.72	0.81	0.74	0.75	0.64
16	Potassium as K	mg/l	0.31	0.32	0.35	0.35	0.34	0.29	0.42	0.43	0.33
17	Iron as Fe	mg/l	0.42	0.44	0.49	0.48	0.50	0.55	0.46	0.51	0.44
18	Silica as Si	mg/l	1.10	1.10	1.18	1.17	1.14	1.18	1.17	1.22	1.15
19	Zinc as Zn	mg/l	0.003	0.003	0.002	0.003	0.004	0.002	0.003	0.003	0.004
20	Mangnese as Mn	mg/l	0.002	0.001	0.003	0.004	0.003	0.002	0.002	0.004	0.003
21	Nickel as Ni	mg/l	0.002	0.004	0.002	0.001	0.002	0.001	0.004	0.004	0.001
22	Chromium as Cr	mg/l	0.002	BDL	BDL	BDL	BDL	BDL	0.002	BDL	BDL
23	Lead as Pb	mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

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R. & C. LABORATORY (BALCO, KORBA)
Environment Monitoring Section

REF : BALCO/QAP1/POLL/MS 05/File-08B/MPT-WATER-1/April-17

DATE -15/04/2017

Water Analysis Report of Mainpat Mines.
Sampling Date - 04/04/2017

S.No.	Parameters	Units	W1	W2	W4	W5	W6	W7	W8	W9	W10
			Gungutta nallah Kesra	Gungutta nallah Pakri jhana	Mangarda nallah	Down stream 1km of W4	Gungutta nallah proposed T/S	Gungutta nallah 1 km down from W6	Manjhania nallah	Jokki nallah	Hand pump Kudaridih
1	pH		7.2	7.3	7.3	7.4	7.4	7.5	7.3	7.5	6.9
2	Turbidity	NTU	72	76	75	78	74	77	66	93	4.7
3	Conductivity	µS/cm	45.2	44.7	43.9	43.2	46.1	45.9	76.6	40.2	104.5
4	Solid (Total)	mg/l	83	82	85	86	81	83	75	109	54
5	Solid (Dissolved)	mg/l	46	44	49	48	47	46	43	65	29
6	Solid (Suspended)	mg/l	37	38	36	38	34	35	32	44	25
7	Chloride as Cl	mg/l	9.6	9.2	10.3	10.6	9.9	10.6	9.2	11.7	9.6
8	Fluoride as F	mg/l	0.34	0.36	0.33	0.36	0.37	0.36	0.34	0.45	0.32
9	Total Hardness as $CaCO_3$	mg/l	70	68	56	58	61	64	59	71	48
10	Calcium Hardness as $CaCO_3$	mg/l	47	46	37	38	39	41	39	47	33
11	Magnesium Hardness as $CaCO_3$	mg/l	23	22	19	20	22	23	20	24	15
12	Oil & Grease	mg/l	Traces	Traces	Traces	Traces	Traces	Traces	Traces	Traces	Traces
13	B.O.D.	mg/l	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
14	C.O.D	mg/l	4	5	4	4	4	5	4	6	3
15	Sodium as Na	mg/l	0.78	0.81	0.76	0.78	0.77	0.81	0.72	0.82	0.68
16	Potassium as K	mg/l	0.33	0.35	0.34	0.36	0.34	0.35	0.36	0.39	0.33
17	Iron as Fe	mg/l	0.46	0.45	0.49	0.44	0.47	0.50	0.46	0.51	0.44
18	Silica as Si	mg/l	1.19	1.17	1.23	1.20	1.18	1.16	1.11	1.28	1.12
19	Zinc as Zn	mg/l	0.003	0.005	0.004	0.005	0.004	0.005	0.004	0.005	0.004
20	Mangnese as Mn	mg/l	0.004	0.005	0.003	0.004	0.004	0.004	0.005	0.005	0.003
21	Nickel as Ni	mg/l	0.003	0.004	0.004	0.004	0.005	0.004	0.004	0.005	0.004
22	Chromium as Cr	mg/l	0.002	BDL	BDL	BDL	BDL	BDL	0.002	BDL	BDL
23	Lead as Pb	mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

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Specific Condition-xiii Water quality monitoring data

R. & C. LABORATORY (BALCO, KORBA)
Environment Monitoring Section

REF: BALCO/QAP1/POLL/MS 05/Fle-08B/MPT-WATER-1/JAN-17 DATE -16/01/2017

Water Analysis Report of Mainpat Mines.
Sampling Date - 01/01/2017

S.No	Parameters	Units	W1	W2	W4	W5	W6	W7	W8	W9	W10
			Gungutta nallah Kesra	Gungutta nallah Pakri jharia	Mangarda nallah	Down stream 1km of W4	Gungutta nallah proposed T/S	Gungutta nallah 1 km down from W6	Manjharia nallah	Jokki nallah	Hand pump Kudaridih
1	pH		7.2	7.3	7.2	7.1	7.3	7.3	7.2	7.2	7.2
2	Turbidity	NTU	66	73	77	81	74	71	56	88	5.1
3	Conductivity	µS/cm	44.5	44.2	42.6	42.6	46.4	46.1	83.4	39.5	104.3
4	Solid (Total)	mg/l	85	84	90	97	80	90	68	109	42
5	Solid (Dissolved)	mg/l	51	54	57	59	50	56	36	62	22
6	Solid (Suspended)	mg/l	34	30	33	38	30	34	32	47	20
7	Chloride as Cl	mg/l	9.9	10.4	10.7	10.6	11.2	11.3	9.3	12.4	9.6
8	Fluoride as F	mg/l	0.37	0.35	0.40	0.39	0.39	0.40	0.31	0.48	0.37
9	Total Hardness as $CaCO_3$	mg/l	69	71	61	64	62	69	54	69	53
10	Calcium Hardness as $CaCO_3$	mg/l	44	45	36	43	39	44	35	43	36
11	Magnesium Hardness as $CaCO_3$	mg/l	25	26	25	21	23	25	19	26	17
12	Oil & Grease	mg/l	Traces	Traces	Traces	Traces	Traces	Traces	Traces	Traces	Traces
13	B.O.D.	mg/l	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
14	C.O.D	mg/l	4	4	3	2	3	3	3	2	4
15	Sodium as Na	mg/l	0.74	0.80	0.82	0.82	0.73	0.83	0.72	0.81	0.65
16	Potassium as K	mg/l	0.33	0.36	0.36	0.42	0.36	0.34	0.36	0.44	0.34
17	Iron as Fe	mg/l	0.47	0.53	0.51	0.54	0.50	0.55	0.44	0.53	0.45
18	Silica as Si	mg/l	1.19	1.21	1.23	1.24	1.21	1.24	1.09	1.25	1.15
19	Zinc as Zn	mg/l	0.001	0.002	0.003	0.003	0.002	0.003	0.003	0.003	0.003
20	Manganese as Mn	mg/l	0.003	0.003	0.004	0.003	0.004	0.003	0.003	0.002	0.003
21	Nickel as Ni	mg/l	0.002	0.003	0.001	0.001	0.003	0.002	0.002	0.003	0.002
22	Chromium as Cr	mg/l	0.004	BDL	BDL	BDL	BDL	BDL	0.003	BDL	BDL
23	Lead as Pb	mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

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Manager (QA)

R. & C. LABORATORY (BALCO, KORBA)
Environment Monitoring Section

REF: BALCO/QAP1/POLL/MS 05/Fle-08B/MPT-WATER-1/FEB-17 DATE -16/02/2017

Water Analysis Report of Mainpat Mines.
Sampling Date - 03/02/2017

S.No	Parameters	Units	W1	W2	W4	W5	W6	W7	W8	W9	W10
			Gungutta nallah Kesra	Gungutta nallah Pakri jharia	Mangarda nallah	Down stream 1km of W4	Gungutta nallah proposed T/S	Gungutta nallah 1 km down from W6	Manjharia nallah	Jokki nallah	Hand pump Kudaridih
1	pH		7.3	7.3	7.1	7.3	7.1	7.3	7.1	7.1	7.0
2	Turbidity	NTU	62	74	74	85	70	71	69	85	5.5
3	Conductivity	µS/cm	44.4	44.5	42.3	42.8	46.0	46.2	79.1	39.1	104.1
4	Solid (Total)	mg/l	87	76	84	94	72	85	78	107	46
5	Solid (Dissolved)	mg/l	49	54	53	57	46	53	42	58	20
6	Solid (Suspended)	mg/l	38	22	31	37	26	32	36	49	26
7	Chloride as Cl	mg/l	9.1	10.1	10.2	10.1	11.3	10.9	9.9	12.1	9.1
8	Fluoride as F	mg/l	0.38	0.31	0.36	0.35	0.35	0.36	0.39	0.47	0.32
9	Total Hardness as $CaCO_3$	mg/l	74	69	55	61	58	61	59	62	51
10	Calcium Hardness as $CaCO_3$	mg/l	46	40	33	41	36	40	39	40	31
11	Magnesium Hardness as $CaCO_3$	mg/l	28	29	22	20	22	21	20	22	20
12	Oil & Grease	mg/l	Traces	Traces	Traces	Traces	Traces	Traces	Traces	Traces	Traces
13	B.O.D.	mg/l	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
14	C.O.D	mg/l	2	4	2	3	2	3	2	3	2
15	Sodium as Na	mg/l	0.72	0.81	0.81	0.79	0.79	0.79	0.71	0.77	0.62
16	Potassium as K	mg/l	0.31	0.33	0.33	0.40	0.33	0.30	0.40	0.41	0.31
17	Iron as Fe	mg/l	0.44	0.49	0.52	0.51	0.52	0.49	0.49	0.49	0.40
18	Silica as Si	mg/l	1.12	1.16	1.21	1.20	1.09	1.19	1.11	1.19	1.11
19	Zinc as Zn	mg/l	0.002	0.004	0.004	0.002	0.003	0.001	0.002	0.004	0.002
20	Manganese as Mn	mg/l	0.001	0.002	0.001	0.001	0.002	0.003	0.002	0.003	0.004
21	Nickel as Ni	mg/l	0.003	0.004	0.003	0.002	0.003	0.002	0.003	0.002	0.003
22	Chromium as Cr	mg/l	0.002	BDL	BDL	BDL	BDL	BDL	0.002	BDL	BDL
23	Lead as Pb	mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

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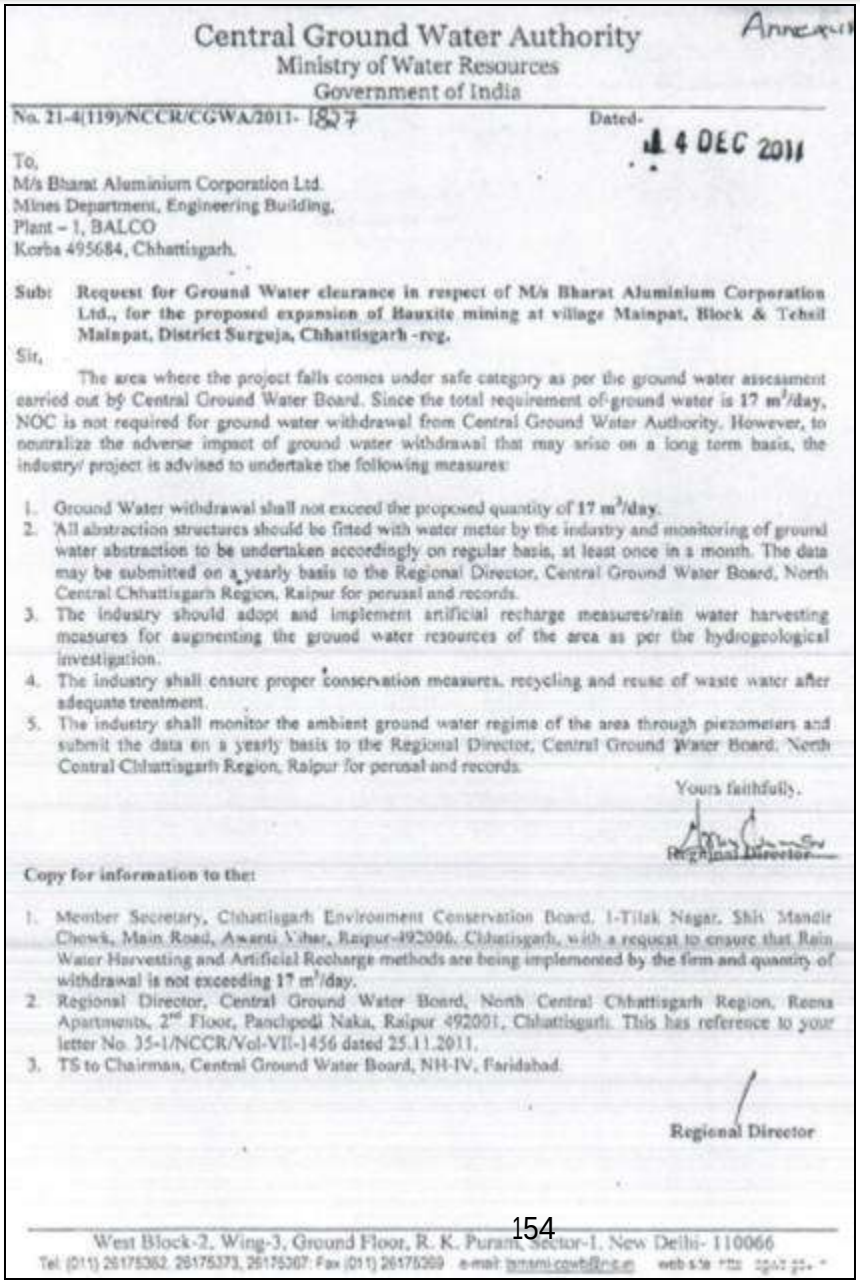
Specific Condition-xiv

SN	CONDITION	COMPLIANCE STATUS as per RO, MoEF&CC, Nagpur	Compliance Status as on 8th July, 2017
xiv	The waste water from the mine shall be treated to conform to the prescribed standards before discharging in to the natural stream. The discharged water from the Tailing Dam (if any) shall be regularly monitored and report submitted to the Ministry of Environment & Forests, Central Pollution Control Board and the State Pollution Control Board.	Complied with It is observed that no waste water is generated from the mining operations.	**Complied with**

Specific Condition-xv

SN	CONDITION	COMPLIANCE STATUS as per RO, MoEF&CC, Nagpur	Compliance Status as on 8th July, 2017
xv	Prior permission from the competent authority shall be obtained for extraction of ground water, if any.	Complied with Permission has been obtained by the pp from competent authority for extraction of ground water and the same is available in the follow up slide.	**Complied with**

Specific Condition-xv CGWA Permission



Central Ground Water Authority
Ministry of Water Resources
Government of India

Annexure

No. 21-4(119)/NCCR/CGWA/2011- 1857 Dated- 14 DEC 2011

To,
M/s Bharat Aluminium Corporation Ltd.
Mines Department, Engineering Building,
Plant – I, BALCO
Korba 495684, Chhattisgarh.

Sub: Request for Ground Water clearance in respect of M/s Bharat Aluminium Corporation Ltd., for the proposed expansion of Bauxite mining at village Mainpat, Block & Tehsil Mainpat, District Surguja, Chhattisgarh -reg.

Sir,

The area where the project falls comes under safe category as per the ground water assessment carried out by Central Ground Water Board. Since the total requirement of ground water is 17 m^3/day, NOC is not required for ground water withdrawal from Central Ground Water Authority. However, to neutralize the adverse impact of ground water withdrawal that may arise on a long term basis, the industry/ project is advised to undertake the following measures:

1. Ground Water withdrawal shall not exceed the proposed quantity of 17 m^3/day.
2. All abstraction structures should be fitted with water meter by the industry and monitoring of ground water abstraction to be undertaken accordingly on regular basis, at least once in a month. The data may be submitted on a yearly basis to the Regional Director, Central Ground Water Board, North Central Chhattisgarh Region, Raipur for perusal and records.
3. The industry should adopt and implement artificial recharge measures/rain water harvesting measures for augmenting the ground water resources of the area as per the hydrogeological investigation.
4. The industry shall ensure proper conservation measures, recycling and reuse of waste water after adequate treatment.
5. The industry shall monitor the ambient ground water regime of the area through piezometers and submit the data on a yearly basis to the Regional Director, Central Ground Water Board, North Central Chhattisgarh Region, Raipur for perusal and records.

Yours faithfully,

Regional Director

Copy for information to the:

1. Member Secretary, Chhattisgarh Environment Conservation Board, 1-Tilak Nagar, Shiv Mandir Chowk, Main Road, Awanti Vihar, Raipur-492006, Chhattisgarh, with a request to ensure that Rain Water Harvesting and Artificial Recharge methods are being implemented by the firm and quantity of withdrawal is not exceeding 17 m^3/day.
2. Regional Director, Central Ground Water Board, North Central Chhattisgarh Region, Reena Apartments, 2nd Floor, Panchpedi Naka, Raipur 492001, Chhattisgarh. This has reference to your letter No. 35-1/NCCR/Vol-VII-1456 dated 25.11.2011.
3. TS to Chairman, Central Ground Water Board, NH-IV, Faridabad.

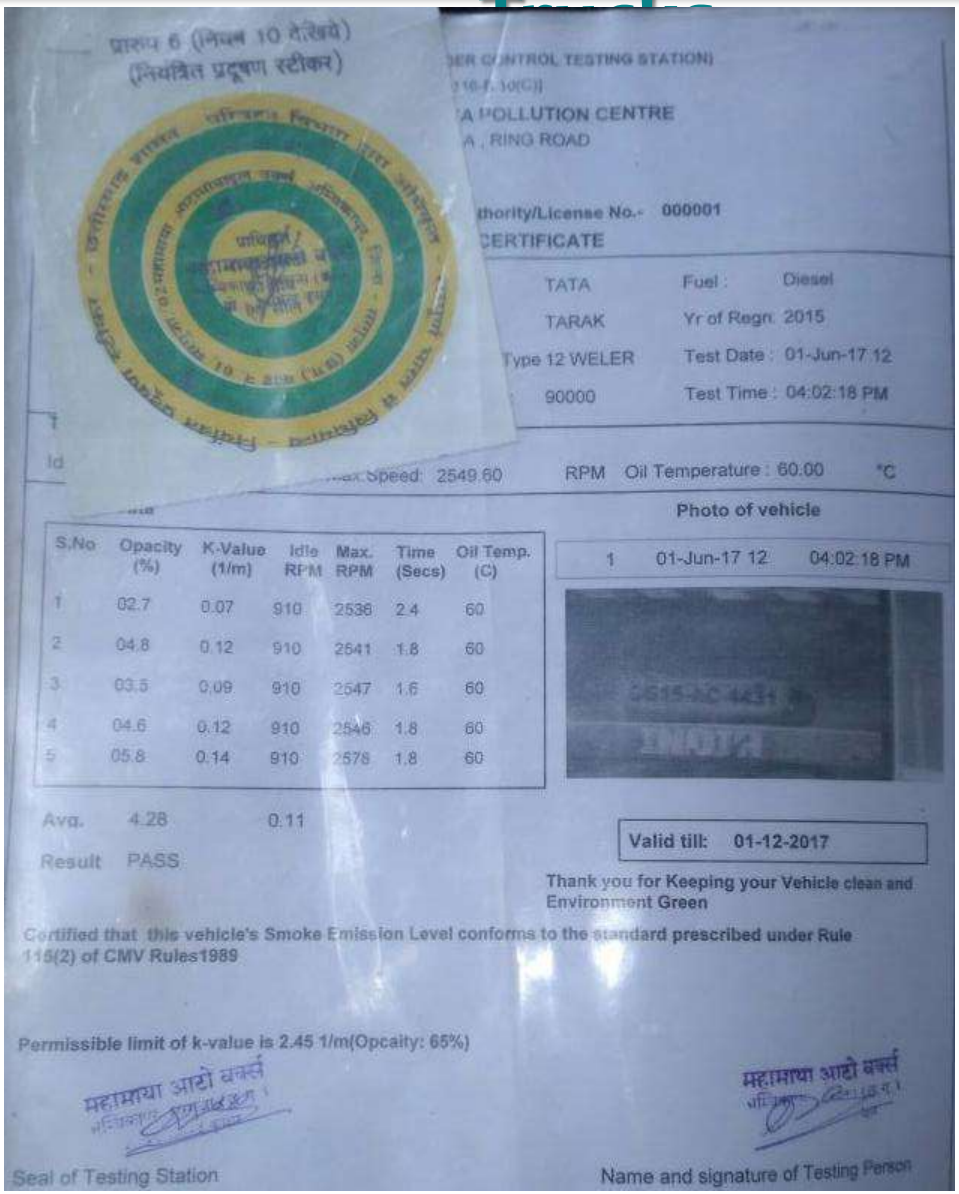
Regional Director

West Block-2, Wing-3, Ground Floor, R. K. Puram, Sector-1, New Delhi- 110066
Tel: (011) 26175362, 26175373, 26175367; Fax (011) 26175309 e-mail: [illegible] web site: [illegible]

Specific Condition-xvi

SN	CONDITION	COMPLIANCE STATUS as per RO, MoEF&CC, Nagpur	Compliance Status as on 8th July, 2017
xvi	Vehicular emissions shall be kept under control and regularly monitored. Vehicles used for transportation of ores and others shall have valid permissions as prescribed under Central Motor Vehicle Rules, 1989 and its amendments. Transportation of ore shall be done only during day time. The vehicles transporting ores shall be covered with a tarpaulin or other suitable enclosures so that no dust particles / fine matters escape during the course of transportation. No overloading of ores for transportation shall be committed.	Complied with The PP has informed that Pollution under Control Certificate is verified for all the ore transporting vehicles and tarpaulin cover is ensured. Overloading of ores is not allowed. The submission made the PP were verified during inspection and observed to be appropriate. (Relevant photographs are in following slides)	**Complied with**

Specific Condition-xvi PUC Certificate of Trucks



(नियंत्रित प्रदूषण स्टीकर)

ER CONTROL TESTING STATION)

A POLLUTION CENTRE

A , RING ROAD

thority/License No.- 000001

CERTIFICATE

TATA Fuel : Diesel

TARAK Yr of Regn: 2015

Type 12 WELER Test Date : 01-Jun-17 12

90000 Test Time : 04:02:18 PM

Id

Speed: 2549.60 RPM Oil Temperature : 60.00 °C

Photo of vehicle

S.No	Opacity (%)	K-Value (1/m)	Idle RPM	Max. RPM	Time (Secs)	Oil Temp. (C)
1	02.7	0.07	910	2536	2.4	60
2	04.8	0.12	910	2541	1.8	60
3	03.5	0.09	910	2547	1.6	60
4	04.6	0.12	910	2546	1.8	60
5	05.8	0.14	910	2578	1.8	60

1 01-Jun-17 12 04:02:18 PM

Avg. 4.28 0.11

Result PASS

Valid till: 01-12-2017

Thank you for Keeping your Vehicle clean and Environment Green

Certified that this vehicle's Smoke Emission Level conforms to the standard prescribed under Rule 115(2) of CMV Rules1989

Permissible limit of k-value is 2.45 1/m(Opcaity: 65%)

महामाया आटो वर्क्स

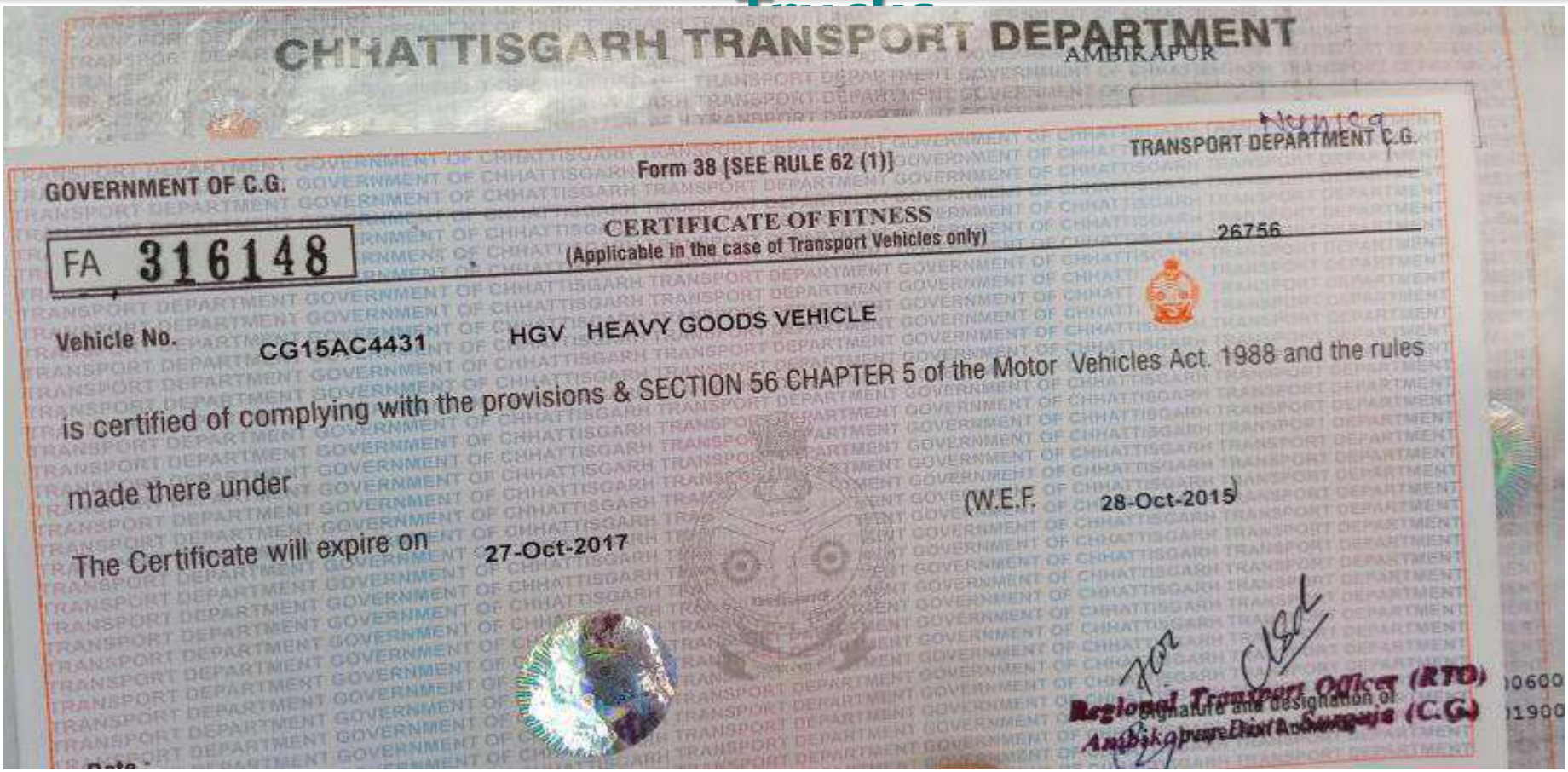
Seal of Testing Station

Name and signature of Testing Person

VALID PUC Certificate

156

Specific Condition-xvi Fitness Certificate of Trucks



CHHATTISGARH TRANSPORT DEPARTMENT

AMBIKAPUR

GOVERNMENT OF C.G.

Form 38 [SEE RULE 62 (1)]

TRANSPORT DEPARTMENT C.G.

CERTIFICATE OF FITNESS

(Applicable in the case of Transport Vehicles only)

FA 316148

26756

Vehicle No. CG15AC4431 HGV HEAVY GOODS VEHICLE

is certified of complying with the provisions & SECTION 56 CHAPTER 5 of the Motor Vehicles Act. 1988 and the rules made there under

(W.E.F. 28-Oct-2015)

The Certificate will expire on 27-Oct-2017

Regional Transport Officer (RTO)

Ambikapur Distt. Surguja (C.G.)

VALID FITNESS CERTIFICATE

Specific Condition-xvi Tarpaulin Covered Trucks

TRUCKS COVERED WITH TARPAULIN BEFORE DESPATCH

Specific Condition-xvii

SN	CONDITION	COMPLIANCE STATUS as per RO, MoEF&CC, Nagpur	Compliance Status as on 8th July, 2017
xvii	Progressive reclamation of the mined out area shall be undertaken inconformity with the approved mine plan. A final mine closure plan, along with details of Corpus Fund, shall be submitted to the Ministry of Environment & Forests, 5 years in advance of final mine closure for approval.	Complied with It is also observed that concurrent backfilling thereafter, it technical and biological reclamation is being carried out by the PP. The PP has also informed that reclamation is being carried out as per the approved Mine plan and progressive mines closure plan as already been submitted to MOEF, New Delhi. It is also observed that presently PP has Mine plan & Progressive mine closure plan for next five year 9th July 2012 to 2017 duly approved by IBM.	**Complied with**

Specific Condition-xviii

SN	CONDITION	COMPLIANCE STATUS as per RO, MoEF&CC, Nagpur	Compliance Status as on 8th July, 2017
xviii	The critical parameters such as RSPM (Particulate matter with size less than 10micron i.e. PM10) and NOx in the ambient air within the impact zone, peak particle velocity at 300m distance or within the nearest habitation, whichever is closer shall be monitored periodically. Further, quality of discharged water shall also be monitored [(TDS, DO, PH and Total Suspended Solids (TSS)]. The monitored data shall be uploaded on the website of the company as well as displayed on a display board at the project site at a suitable location near the main gate of the Company in public domain. The Circular No. J-20012/1/2006-IA.II (M) dated 27.05.2009 issued by Ministry of Environment and Forests, which is available on the website of the Ministry www.envfor.nic.in shall also be referred in this regard for its compliance.	Complied with It is observed that Ambient Air Quality, peak particle velocity and water quality are being monitored on regular basis by the PP. The reports for AAQ & water quality is uploaded to the company's website. Web link of the PP's company i.e. http://balcoindia.com/sustainability/pdf/MainpatMined.pdf at as accessed on 24.02.2017 at 12.32 PM revealed that regular updating of the data on the website of the company is not being done by the PP. The AAQ reports uploaded on the website pertains to the may 2016.	**Complied with** **Latest monitoring website till June-2017 uploaded on the company's website.**

Specific Condition-xviii Balco India website

Bharat Aluminium Comp

www.balcoindia.com/sustainability/environment_compliance/

Apps | Knowledge is Power | Try Google Input Too | New Railways in Chh | UTM to Latitude and | CSIR UGC NET 2013 | Copper Prices Foreca | IGNOU Online Adm | watch series online g

vedanta transforming elements | balco

Mainpat Mines

Location : Kesra, Kudardih & Sapnadar Tehsil : Sitapur, District : Surguja
Capacity : 7.5 LTPA
Environmental Clearance : Obtained
Half yearly Compliance Status : Last submitted June 2017
Half yearly Compliance Report : View report..
Monitoring Report : View report..
Yearly Environment Statement : Last submitted Sep 2016

Specific Condition-xviii Monitoring Data

R. & C. LABORATORY (BALCO, KORBA)

Environment Monitoring Section

REF : BALCO/QAP1/POLL/IMS 05/File-08B/MPT-AIR-1/Jun-17 DATE -15/06/2017

Ambient Air Quality Report of Mainpat Bauxite mines

Sampling Date : 01 to 04 June 2017

SN	Parameters	Unit	Norms	Near Balco T/S	Old Kesra	Camp No-2	Office
				01/06/2017	02/06/2017	03/06/2017	04/06/2017
1	PM 2.5	µg/m3	40(Annual) & 60(24 hrs)	25	24	33	32
2	PM 10	µg/m3	60(Annual)&100(24 hrs)	51	46	53	54
3	SO2	µg/m3	50(Annual)&80(24 hrs)	16	15	17	18
4	NOx	µg/m3	40(Annual)&80(24 hrs)	13	13	15	14
5	Sound level (Day)	dB	75	44.2	43.3	45.1	44.7
6	Sound level (Night)	dB	70	43.6	42.7	44.3	44.1

Norms-National Ambient Air Quality Standards (18 November 2009)

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Approved by

Manager (QA)

R. & C. LABORATORY (BALCO, KORBA)

Environment Monitoring Section

REF : BALCO/QAP1/POLL/IMS 05/File-08B/MPT-WATER-1/Jun-17 DATE -15/06/2017

Water Analysis Report of Mainpat Mines.

Sampling Date - 04/06/2017

S.No	Parameters	Units	W1	W2	W4	W5	W6	W7	W8	W9	W10
			Gungutta nallah Kesra	Gungutta nallah Pakri jharia	Mangarda nallah	Down stream 1km of W4	Gungutta nallah proposed T/S	Gungutta nallah 1 km down from W6	Manjharia nallah	Jokki nallah	Hand pump Kudaridih
1	pH		7.2	7.2	7.0	7.1	7.2	7.3	7.1	7.4	6.9
2	Turbidity	NTU	69	72	71	75	73	77	67	91	4.6
3	Conductivity	µS/cm	43.9	44.3	43.0	43.4	46.2	45.8	78.1	69.8	106.0
4	Solid (Total)	mg/l	84	86	85	88	85	87	78	115	55
5	Solid (Dissolved)	mg/l	49	50	49	50	48	49	47	72	29
6	Solid (Suspended)	mg/l	35	36	36	38	37	38	31	43	26
7	Chloride as Cl	mg/l	9.6	9.9	9.2	9.6	11.0	11.7	9.9	12.1	9.2
8	Fluoride as F	mg/l	0.29	0.31	0.31	0.30	0.32	0.31	0.28	0.38	0.27
9	Total Hardness as $CaCO_3$	mg/l	64	66	53	55	59	57	55	68	48
10	Calcium Hardness as $CaCO_3$	mg/l	43	44	36	37	39	38	37	45	32
11	Magnesium Hardness as $CaCO_3$	mg/l	21	22	17	18	20	19	18	23	16
12	Oil & Grease	mg/l	Traces	Traces	Traces	Traces	Traces	Traces	Traces	Traces	Traces
13	B.O.D	mg/l	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
14	C.O.D	mg/l	2	3	3	5	3	4	3	4	2
15	Sodium as Na	mg/l	0.73	0.75	0.71	0.74	0.77	0.75	0.69	0.81	0.68
16	Potassium as K	mg/l	0.32	0.31	0.33	0.34	0.36	0.32	0.32	0.37	0.31
17	Iron as Fe	mg/l	0.44	0.45	0.44	0.41	0.43	0.45	0.42	0.49	0.42
18	Silica as Si	mg/l	1.14	1.17	1.15	1.18	1.16	1.12	1.09	1.27	1.08
19	Zinc as Zn	mg/l	0.003	0.004	0.003	0.004	0.003	0.004	0.003	0.005	0.003
20	Mangnese as Mn	mg/l	0.003	0.004	0.003	0.003	0.004	0.003	0.004	0.006	0.004
21	Nickel as Ni	mg/l	0.004	0.005	0.004	0.004	0.004	0.003	0.003	0.003	0.003
22	Chromium as Cr	mg/l	0.002	BDL	BDL	BDL	BDL	BDL	0.002	BDL	BDL
23	Lead as Pb	mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

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Specific Conditions-xix, xx

SN	CONDITION	COMPLIANCE STATUS as per RO, MoEF&CC, Nagpur	Compliance Status as on 8th July, 2017
xix	The project proponent shall obtain Consent to Establish and Consent to Operate from the Chhattisgarh Environment Conservation Board and effectively implement all the conditions stipulated therein. (CTO copy and compliance)	Complied with It is observed that Consent To Operate has been obtained and renewed vide letter no 3240&3442/TS/CECB/2016 Raipur 2/09/2016. The CTO is valid up to 27/08/2017.	**Complied with**
xx	The environmental clearance is subject to the condition, if any, stipulated by the IBM on the mining scheme submitted by the project proponent for its approval.	Being Complied with.	**Being Complied with.**

General Conditions-I, ii, iii

SN	CONDITION	COMPLIANCE STATUS as per RO, MoEF&CC, Nagpur	Compliance Status as on 8th July, 2017
i.	No change in mining technology and scope of working shall be made without prior approval of the Ministry of Environment & Forests.	Being complied with	**Being complied with**
ii.	No change in the calendar plan including excavation, quantum of bauxite and waste shall be made.	The PP has consented to this condition	**The PP has consented to this condition**
iii.	Four ambient air quality monitoring stations shall be established in the core zone as well as in the buffer zone for RPM, SPM, SO_2 and NO_x monitoring. Location and number of the stations should be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets and frequency of monitoring should be undertaken in consultation with the State Pollution Control Board. (Monitoring stations and results in c Pm 2.5)	Complied with In the observed that four ambient air quality monitoring stations have been established in the core zone as well as buffer zone for monitoring of RPM ,SPM, SO2 and NOx. The PP has informed that location of ambient air quality monitoring station has been finalized in consultation with state pollution control board.	**Complied with**

General Condition-iv

SN	CONDITION	COMPLIANCE STATUS as per RO, MoEF&CC, Nagpur	Compliance Status as on 8th July, 2017
iv.	Data on ambient air quality RSPM (Particulate matter with size less than 10micron i.e., PM10) & NOx should be regularly submitted to the Ministry of Environment and Forests including its Regional office located at Lucknow and the State Pollution Control Board / Central Pollution Control Board once in six months.	Being complied with The PP has been submitting the ambient air quality monitoring reports regularly to the regional office. A copy of reports containing the monitoring reports of the AAQ are given in follow up slides.	**Being complied with**

General Condition-iv AAQ Monitoring Results

R. & C. LABORATORY (BALCO, KORBA)

Environment Monitoring Section

REF : BALCO/QAP1/POLL/IMS 05/File-08B/MPT-AIR-1/April-17 DATE -15/04/2017

Ambient Air Quality Report of Mainpat Bauxite mines

Sampling Date : 01 to 04 April 2017

SN	Parameters	Unit	Norms	Near Balco T/S	Old Kesra	Camp No-2	Office
				01/04/2017	02/04/2017	03/04/2017	04/04/2017
1	PM 2.5	µg/m3	40(Annual) & 60(24 hrs)	26	25	32	33
2	PM 10	µg/m3	60(Annual)&100(24 hrs)	52	48	55	55
3	SO2	µg/m3	50(Annual)&80(24 hrs)	16	15	18	17
4	NOx	µg/m3	40(Annual)&80(24 hrs)	17	13	16	15
5	Sound level (Day)	dB	75	44.5	43.4	45.3	44.9
6	Sound level (Night)	dB	70	43.7	43.0	44.4	44.2

Norms-National Ambient Air Quality Standards (18 November 2009)

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Manager (QA)

R. & C. LABORATORY (BALCO, KORBA)

Environment Monitoring Section

REF : BALCO/QAP1/POLL/IMS 05/File-08B/MPT-AIR-1/May-17 DATE -15/05/2017

Ambient Air Quality Report of Mainpat Bauxite mines

Sampling Date : 01 to 4 May 2017

SN	Parameters	Unit	Norms	Near Balco T/S	Old Kesra	Camp No-2	Office
				01/05/2017	02/05/2017	03/05/2017	04/05/2017
1	PM 2.5	µg/m3	40(Annual) & 60(24 hrs)	24	27	33	31
2	PM 10	µg/m3	60(Annual)&100(24 hrs)	48	51	54	52
3	SO2	µg/m3	50(Annual)&80(24 hrs)	14	17	17	19
4	NOx	µg/m3	40(Annual)&80(24 hrs)	15	16	15	14
5	Sound level (Day)	dB	75	44.3	43.2	45.2	44.6
6	Sound level (Night)	dB	70	43.9	42.8	44.2	44.0

Norms-National Ambient Air Quality Standards (18 November 2009)

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Manager (QA)

R. & C. LABORATORY (BALCO, KORBA)

Environment Monitoring Section

REF : BALCO/QAP1/POLL/IMS 05/File-08B/MPT-AIR-1/Jun-17 DATE -15/06/2017

Ambient Air Quality Report of Mainpat Bauxite mines

Sampling Date : 01 to 04 June 2017

SN	Parameters	Unit	Norms	Near Balco T/S	Old Kesra	Camp No-2	Office
				01/06/2017	02/06/2017	03/06/2017	04/06/2017
1	PM 2.5	µg/m3	40(Annual) & 60(24 hrs)	25	24	33	32
2	PM 10	µg/m3	60(Annual)&100(24 hrs)	51	46	53	54
3	SO2	µg/m3	50(Annual)&80(24 hrs)	16	15	17	18
4	NOx	µg/m3	40(Annual)&80(24 hrs)	13	13	15	14
5	Sound level (Day)	dB	75	44.2	43.3	45.1	44.7
6	Sound level (Night)	dB	70	43.6	42.7	44.3	44.1

Norms-National Ambient Air Quality Standards (18 November 2009)

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General Condition-iv AAQ Monitoring Results

R. & C. LABORATORY (BALCO, KORBA)

Environment Monitoring Section

REF : BALCO/QAP1/POLL/IMS 05/File-08B/MPT-AIR-1/DEC-16 DATE -16/12/2016

Ambient Air Quality Report of Mainpat Bauxite mines

Sampling Date : 01 to 05 December 2016

SN	Parameters	Unit	Norms	Near Balco T/S	Old Kesra	Camp No-2	Office
				01/12/2016	02/12/2016	03/12/2016	05/12/2016
1	PM 2.5	µg/m3	40(Annual) & 60(24 hrs)	34	31	35	34
2	PM 10	µg/m3	60(Annual)&100(24 hrs)	56	53	58	57
3	SO2	µg/m3	50(Annual)&80(24 hrs)	15	14	16	15
4	NOx	µg/m3	40(Annual)&80(24 hrs)	13	12	14	13
5	Sound level (Day)	dB	75	44.4	43.8	45.4	45.2
6	Sound level (Night)	dB	70	43.9	43.2	44.8	44.6

Norms-National Ambient Air Quality Standards (18 November 2009)

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R. & C. LABORATORY (BALCO, KORBA)

Environment Monitoring Section

REF : BALCO/QAP1/POLL/IMS 05/File-08B/MPT-AIR-1/JAN-17 DATE -16/01/2017

Ambient Air Quality Report of Mainpat Bauxite mines

Sampling Date : 01 TO 04 JANUARY-17

SN	Parameters	Unit	Norms	Near Balco T/S	Old Kesra	Camp No-2	Office
				01/01/2017	02/01/2017	03/01/2017	04/01/2017
1	PM 2.5	µg/m3	40(Annual) & 60(24 hrs)	30	32	34	33
2	PM 10	µg/m3	60(Annual)&100(24 hrs)	52	51	57	56
3	SO2	µg/m3	50(Annual)&80(24 hrs)	17	17	14	14
4	NOx	µg/m3	40(Annual)&80(24 hrs)	15	14	15	12
5	Sound level (Day)	dB	75	44.2	43.6	45.6	45.3
6	Sound level (Night)	dB	70	43.6	43.0	44.6	44.4

Norms-National Ambient Air Quality Standards (18 November 2009)

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R. & C. LABORATORY (BALCO, KORBA)

Environment Monitoring Section

REF : BALCO/QAP1/POLL/IMS 05/File-08B/MPT-AIR-1/FEB-17 DATE -16/02/2017

Ambient Air Quality Report of Mainpat Bauxite mines

Sampling Date : 1 TO 04 FEB 2017

SN	Parameters	Unit	Norms	Near Balco T/S	Old Kesra	Camp No-2	Office
				01/02/2017	02/02/2017	03/02/2017	04/02/2017
1	PM 2.5	µg/m3	40(Annual) & 60(24 hrs)	26	28	33	30
2	PM 10	µg/m3	60(Annual)&100(24 hrs)	48	49	56	52
3	SO2	µg/m3	50(Annual)&80(24 hrs)	14	16	12	12
4	NOx	µg/m3	40(Annual)&80(24 hrs)	16	15	13	11
5	Sound level (Day)	dB	75	44.3	43.4	45.5	45.1
6	Sound level (Night)	dB	70	43.5	43.1	44.4	44.5

Norms-National Ambient Air Quality Standards (18 November 2009)

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R. & C. LABORATORY (BALCO, KORBA)

Environment Monitoring Section

REF : BALCO/QAP1/POLL/IMS 05/File-08B/MPT-AIR-1/MARCH-17 DATE -15/03/2017

Ambient Air Quality Report of Mainpat Bauxite mines

Sampling Date : 01 TO 04 MARCH 2017

SN	Parameters	Unit	Norms	Near Balco T/S	Old Kesra	Camp No-2	Office
				01/03/2017	02/03/2017	03/03/2017	04/03/2017
1	PM 2.5	µg/m3	40(Annual) & 60(24 hrs)	27	30	31	34
2	PM 10	µg/m3	60(Annual)&100(24 hrs)	50	51	52	56
3	SO2	µg/m3	50(Annual)&80(24 hrs)	15	18	15	10
4	NOx	µg/m3	40(Annual)&80(24 hrs)	18	15	14	13
5	Sound level (Day)	dB	75	44.4	43.3	45.4	45.0
6	Sound level (Night)	dB	70	43.4	43.2	44.2	44.6

Norms-National Ambient Air Quality Standards (18 November 2009)

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General Condition-v

SN	CONDITION	COMPLIANCE STATUS as per RO, MoEF&CC, Nagpur	Compliance Status as on 8th July, 2017
v.	Fugitive dust emission from all the sources shall be controlled regularly. Water spraying arrangements on haul roads, loading and unloading and at transfer points shall be provided and properly maintained.	Not Complied with No water spraying arrangements on haul roads, loading and unloading and at transfer points were observed to be provided by the PP. However, PP has informed that dust generated from haul roads, loading and un-loading and at transfer points etc is controlled by regular water sprinkling. Fugitive dust emissions are regularly monitored and data are maintained. Water sprinkling systems over fixed structure will be installed of adequate capacity over proposed crushers and screens and mineral transfer points.	**Complied with** Main haul road has been fully black topped, repaired / re-black topping work completed. On internal roads water sprinkling arrangement is already in place. Three water tankers have been provided for regular water sprinkling over road. Transportation is allowed only after sufficient wetting of road surface. Photograph showing water sprinkling of road is given on the following slide.

General Condition-v Water Sprinkling on roads

Sprinkling of Water near Mine Workings

General Condition-vi

SN	CONDITION	COMPLIANCE STATUS as per RO, MoEF&CC, Nagpur	Compliance Status as on 8th July, 2017
vi.	Measures shall be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in operations of HEMM, etc, shall be provided with ear plugs / muffs.	Partially Complied with The PP has informed that proper maintenance of equipment are regularly carried out for keeping the noise within permissible limit. Operators cabins have been provided. Controlled blasting and other measures are taken for control of noise levels below 85 dBA in the work environment. Ear plugs and muffs are provided to the workers engaged in noisy operation, equipment with inbuilt enclosures like DG sets have been purchased by PP. However details of the data pertaining to the control of noise level below 85 dBA has not been made available by the PP.	**Complied with** **The mine workers are provided with all necessary PPEs especially dust masks for dust, ear plugs for noise, safety boots, helmets etc.** **By proper maintenance of machineries, vibration generation through HEMM is minimized and ground vibration by blasting are kept within permissible limits by adopting controlled blasting technique.** **Noise monitoring is being carried out regularly and is maintained well below the stipulated limit of 85 dBA (data attached in following slides). This data is also being regularly submitted to Chhattisgarh Environment Conservation Board**

General Condition-vi Noise Level Monitoring Results

R. & C. LABORATORY (BALCO, KORBA)

Environment Monitoring Section

REF : BALCO/QAP1/POLL/IMS 05/File-08B/MPT-AIR-1/April-17 DATE -15/04/2017

Ambient Air Quality Report of Mainpat Bauxite mines

Sampling Date : 01 to 04 April 2017

SN	Parameters	Unit	Norms	Near Balco T/S	Old Kesra	Camp No-2	Office
				01/04/2017	02/04/2017	03/04/2017	04/04/2017
1	PM 2.5	µg/m3	40(Annual) & 60(24 hrs)	26	25	32	33
2	PM 10	µg/m3	60(Annual)&100(24 hrs)	52	48	55	55
3	SO2	µg/m3	50(Annual)&80(24 hrs)	16	15	18	17
4	NOx	µg/m3	40(Annual)&80(24 hrs)	17	13	16	15
5	Sound level (Day)	dB	75	44.5	43.4	45.3	44.9
6	Sound level (Night)	dB	70	43.7	43.0	44.4	44.2

Norms-National Ambient Air Quality Standards (18 November 2009)

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R. & C. LABORATORY (BALCO, KORBA)

Environment Monitoring Section

REF : BALCO/QAP1/POLL/IMS 05/File-08B/MPT-AIR-1/May-17 DATE -15/05/2017

Ambient Air Quality Report of Mainpat Bauxite mines

Sampling Date : 01 to 4 May 2017

SN	Parameters	Unit	Norms	Near Balco T/S	Old Kesra	Camp No-2	Office
				01/05/2017	02/05/2017	03/05/2017	04/05/2017
1	PM 2.5	µg/m3	40(Annual) & 60(24 hrs)	24	27	33	31
2	PM 10	µg/m3	60(Annual)&100(24 hrs)	48	51	54	52
3	SO2	µg/m3	50(Annual)&80(24 hrs)	14	17	17	19
4	NOx	µg/m3	40(Annual)&80(24 hrs)	15	16	15	14
5	Sound level (Day)	dB	75	44.3	43.2	45.2	44.6
6	Sound level (Night)	dB	70	43.9	42.8	44.2	44.0

Norms-National Ambient Air Quality Standards (18 November 2009)

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R. & C. LABORATORY (BALCO, KORBA)

Environment Monitoring Section

REF : BALCO/QAP1/POLL/IMS 05/File-08B/MPT-AIR-1/Jun-17 DATE -15/06/2017

Ambient Air Quality Report of Mainpat Bauxite mines

Sampling Date : 01 to 04 June 2017

SN	Parameters	Unit	Norms	Near Balco T/S	Old Kesra	Camp No-2	Office
				01/06/2017	02/06/2017	03/06/2017	04/06/2017
1	PM 2.5	µg/m3	40(Annual) & 60(24 hrs)	25	24	33	32
2	PM 10	µg/m3	60(Annual)&100(24 hrs)	51	46	53	54
3	SO2	µg/m3	50(Annual)&80(24 hrs)	16	15	17	18
4	NOx	µg/m3	40(Annual)&80(24 hrs)	13	13	15	14
5	Sound level (Day)	dB	75	44.2	43.3	45.1	44.7
6	Sound level (Night)	dB	70	43.6	42.7	44.3	44.1

Norms-National Ambient Air Quality Standards (18 November 2009)

Copy to
GM (HSE)

Analysed by

Approved by
Manager (QA)

171

General Condition-vi Noise Level Monitoring Results

R. & C. LABORATORY (BALCO, KORBA)

Environment Monitoring Section

REF : BALCO/QAP1/POLL/IMS 05/File-08B/MPT-AIR-1/DEC-16 DATE -16/12/2016

Ambient Air Quality Report of Mainpat Bauxite mines

Sampling Date : 01 to 05 December 2016

SN	Parameters	Unit	Norms	Near Balco T/S	Old Kesra	Camp No-2	Office
				01/12/2016	02/12/2016	03/12/2016	05/12/2016
1	PM 2.5	µg/m3	40(Annual) & 60(24 hrs)	34	31	35	34
2	PM 10	µg/m3	60(Annual)&100(24 hrs)	56	53	58	57
3	SO2	µg/m3	50(Annual)&80(24 hrs)	15	14	16	15
4	NOx	µg/m3	40(Annual)&80(24 hrs)	13	12	14	13
5	Sound level (Day)	dB	75	44.4	43.8	45.4	45.2
6	Sound level (Night)	dB	70	43.9	43.2	44.8	44.6

Norms-National Ambient Air Quality Standards (18 November 2009)

Copy to GM (HSE)

Analysed by

Approved by Manager (QA)

R. & C. LABORATORY (BALCO, KORBA)

Environment Monitoring Section

REF : BALCO/QAP1/POLL/IMS 05/File-08B/MPT-AIR-1/JAN-17 DATE -16/01/2017

Ambient Air Quality Report of Mainpat Bauxite mines

Sampling Date : 01 TO 04 JANUARY-17

SN	Parameters	Unit	Norms	Near Balco T/S	Old Kesra	Camp No-2	Office
				01/01/2017	02/01/2017	03/01/2017	04/01/2017
1	PM 2.5	µg/m3	40(Annual) & 60(24 hrs)	30	32	34	33
2	PM 10	µg/m3	60(Annual)&100(24 hrs)	52	51	57	56
3	SO2	µg/m3	50(Annual)&80(24 hrs)	17	17	14	14
4	NOx	µg/m3	40(Annual)&80(24 hrs)	15	14	15	12
5	Sound level (Day)	dB	75	44.2	43.6	45.6	45.3
6	Sound level (Night)	dB	70	43.6	43.0	44.6	44.4

Norms-National Ambient Air Quality Standards (18 November 2009)

Copy to GM (HSE)

Analysed by

Approved by Manager (QA)

R. & C. LABORATORY (BALCO, KORBA)

Environment Monitoring Section

REF : BALCO/QAP1/POLL/IMS 05/File-08B/MPT-AIR-1/FEB-17 DATE -16/02/2017

Ambient Air Quality Report of Mainpat Bauxite mines

Sampling Date : 1 TO 04 FEB 2017

SN	Parameters	Unit	Norms	Near Balco T/S	Old Kesra	Camp No-2	Office
				01/02/2017	02/02/2017	03/02/2017	04/02/2017
1	PM 2.5	µg/m3	40(Annual) & 60(24 hrs)	26	28	33	30
2	PM 10	µg/m3	60(Annual)&100(24 hrs)	48	49	56	52
3	SO2	µg/m3	50(Annual)&80(24 hrs)	14	16	12	12
4	NOx	µg/m3	40(Annual)&80(24 hrs)	16	15	13	11
5	Sound level (Day)	dB	75	44.3	43.4	45.5	45.1
6	Sound level (Night)	dB	70	43.5	43.1	44.4	44.5

Norms-National Ambient Air Quality Standards (18 November 2009)

Copy to GM (HSE)

Analysed by

Approved by Manager (QA)

R. & C. LABORATORY (BALCO, KORBA)

Environment Monitoring Section

REF : BALCO/QAP1/POLL/IMS 05/File 08B/MPT AIR 1/MARCH 17 DATE -15/03/2017

Ambient Air Quality Report of Mainpat Bauxite mines

Sampling Date : 01 TO 04 MARCH 2017

SN	Parameters	Unit	Norms	Near Balco T/S	Old Kesra	Camp No-2	Office
				01/03/2017	02/03/2017	03/03/2017	04/03/2017
1	PM 2.5	µg/m3	40(Annual) & 60(24 hrs)	27	30	31	34
2	PM 10	µg/m3	60(Annual)&100(24 hrs)	50	51	52	56
3	SO2	µg/m3	50(Annual)&80(24 hrs)	15	18	15	10
4	NOx	µg/m3	40(Annual)&80(24 hrs)	18	15	14	13
5	Sound level (Day)	dB	75	44.4	43.3	45.4	45.0
6	Sound level (Night)	dB	70	43.4	43.2	44.2	44.6

Norms-National Ambient Air Quality Standards (18 November 2009)

Copy to GM (HSE)

Analysed by

Approved by Manager (QA)

General Condition-vii, viii

SN	CONDITION	COMPLIANCE STATUS as per RO, MoEF&CC, Nagpur	Compliance Status as on 8th July, 2017
vii.	Industrial waste water (workshop and waste water from mine) should be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19th May, 1993 and 31st December, 1993 or as amended from time to time. Oil and grease trap shall be installed before discharge of workshop effluents.	Being complied with It is observed that oil and grease trap have been provided for the waste water generated from the workshop and the treated water is used in gardening. It is also observed that no waste water is being generated from mining operations.	**Being complied with**
viii.	Personnel working in dusty areas shall be provided with protective respiratory devices and they shall also be imparted adequate training and information on safety and health aspects.	Partially Complied with The PP has informed that protective respiratory devices have been provided to the personnel working in dusty areas and training and information on safety and health aspects is imparted on monthly basis. However no details pertaining to the protective respiratory devices provided to the personnel working in dusty areas has been provided by the PP.	**Complied with** **All necessary PPEs like dust mask, ear plug, goggles, helmets, safety shoe, hand gloves have been issued and records are maintained in register. The use /wearing of PPEs by workers are ensured by regular persuasion and monitoring.**

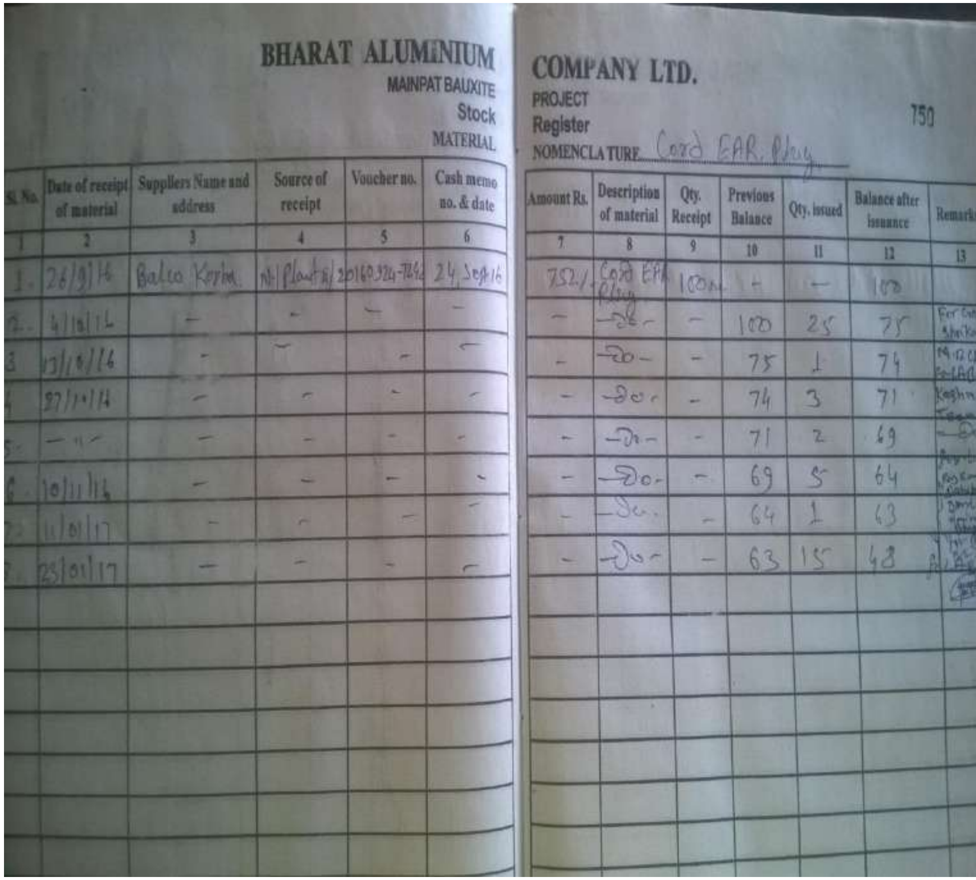
General Condition-viii Use of PPE's

Mandatory PPEs: to be used in Mines area

Job Specific/ Hazard Specific PPEs

General Condition-viii Use of PPE's

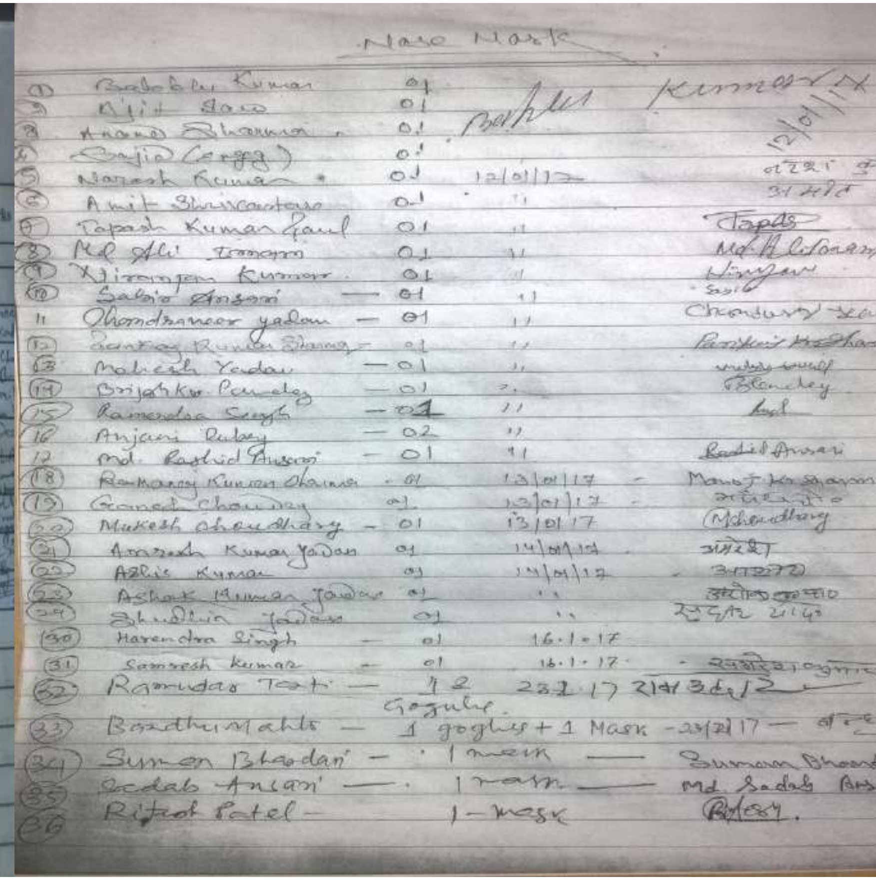
General Condition-viii Use of PPE's



BHARAT ALUMINIUM COMPANY LTD.
MAINPAT BAUXITE PROJECT
Stock Register
MATERIAL NOMENCLATURE Cord EAR Plug

750

Sl. No.	Date of receipt of material	Suppliers Name and address	Source of receipt	Voucher no.	Cash memo no. & date	Amount Rs.	Description of material	Qty. Receipt	Previous Balance	Qty. issued	Balance after issuance	Remarks
1	2	3	4	5	6	7	8	9	10	11	12	13
1	26/9/16	Balco Korba	[illegible]	[illegible]	24 Sep 16	752/-	Cord EAR Plug	100	-	-	100	
2	4/10/16	-	-	-	-	-	-do-	-	100	25	75	[illegible]
3	13/10/16	-	-	-	-	-	-do-	-	75	1	74	[illegible]
4	27/10/16	-	-	-	-	-	-do-	-	74	3	71	[illegible]
5	-"-	-	-	-	-	-	-do-	-	71	2	69	[illegible]
6	10/11/16	-	-	-	-	-	-do-	-	69	5	64	[illegible]
7	11/01/17	-	-	-	-	-	-do-	-	64	1	63	[illegible]
8	25/01/17	-	-	-	-	-	-do-	-	63	15	48	[illegible]



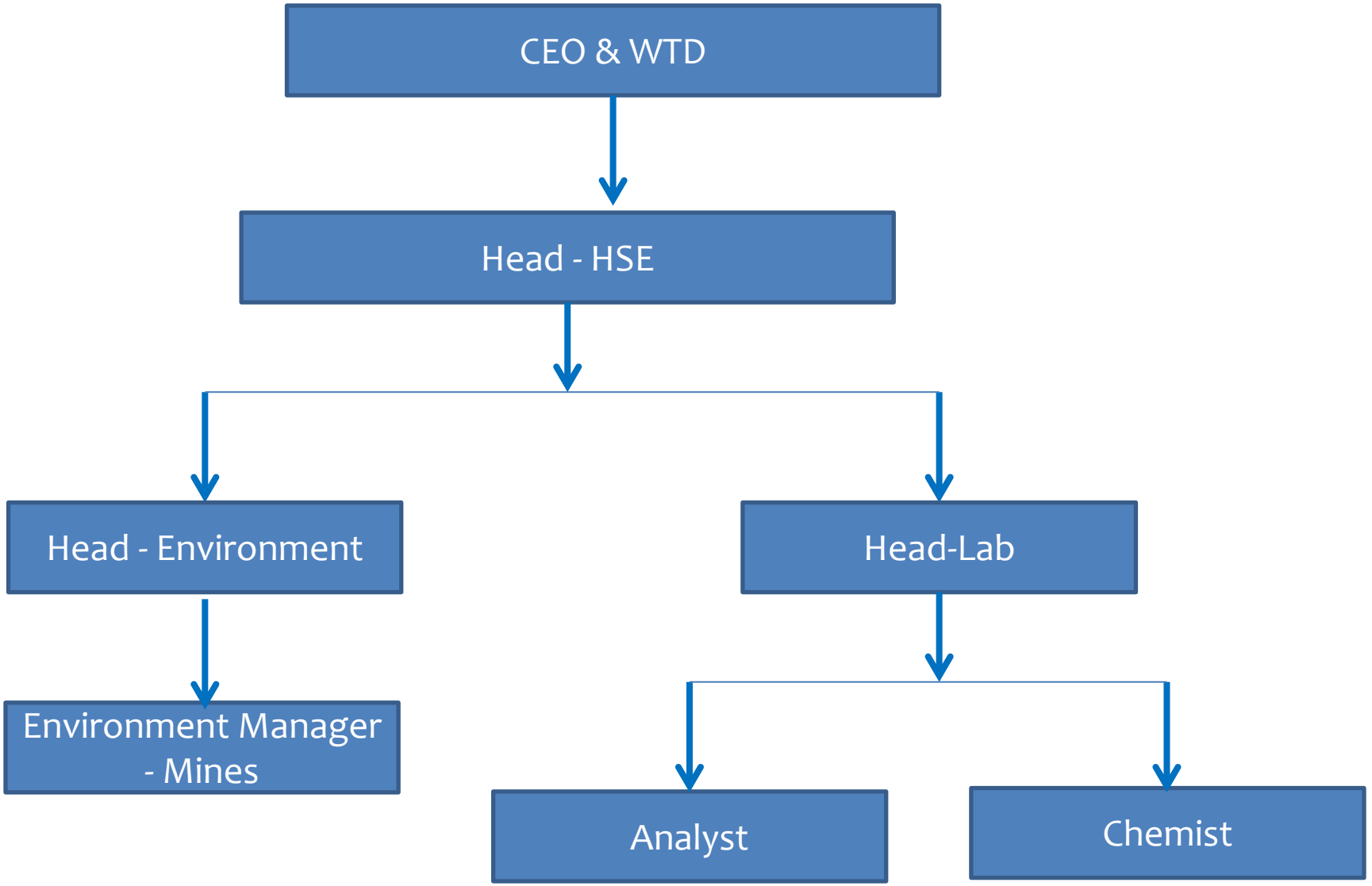
Ear Plug- Stock register

Nose Mask-Stock register

General Condition-ix

SN	CONDITION	COMPLIANCE STATUS as per RO, MoEF&CC, Nagpur	Compliance Status as on 8th July, 2017
ix.	A separate Environmental Management Cell with suitable qualified personnel shall be set up under the control of a Senior Executive, who will report directly to the Head of the Organization.	Complied with It is observed that Environmental Management cell has been constituted and is headed by senior executive, who is reporting to the CEO. A team of trained professionals in respective fields In environment. Safety and occupational health has been incorporated in the Environment Cell. The Cell is also assisted by environmental laboratory having trained man power for carrying out monitoring and analysis of various samples collected in and around project sites. Organizational setup of the environmental management cell is given next slide.	**Complied with**

General Condition-ix Environment Cell



General Condition-x

SN	CONDITION	COMPLIANCE STATUS as per RO, MoEF&CC, Nagpur	Compliance Status as on 8th July, 2017
x.	The project proponent shall submit six monthly reports on the status of compliance of the stipulated environmental clearance conditions including results of monitored data (both in hard copies as well as by e-mail) to the Ministry of Environment and Forests, its Regional Office Bhopal, the respective Zonal Office of Central Pollution Control Board the State Pollution Control Board. The proponent shall upload the status of compliance of the environmental clearance conditions, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the Regional Office of the Ministry of Environment and Forests, Bhopal, the respective Zonal Office of Central Pollution Control Board and the State Pollution Control Board	Partially Complied with It is observed that six monthly compliance report is submitted regularly to the Regional office of MoEF & CC Reports are also been uploaded to the Company's website Web link of the PP's company i.e., http://balcoindia.com/sustainability/pdf/MainpatMines.pdf at as accessed on 24.02.2017 at 12:32 PM revealed that regular uploading of the compliance reports on the website of the company is not being done by the PP. The latest compliance report on 27.10.2015 was uploaded on the website of the company.	**Complied with** **Latest Compliance report– May-2017 uploaded on the website of the company.**

General Condition-x Balco India website

Bharat Aluminium Comp

www.balcoindia.com/sustainability/environment_compliance/

Apps | Knowledge is Power | Try Google Input Too | New Railways in Chha | UTM to Latitude and | CSIR UGC NET 2013 : | Copper Prices Foreca | IGNOU Online

vedanta transforming elements | balco

Mainpat Mines

Location : Kesra, Kudardih & Sapnadar Tehsil : Sitapur, District : Surguja
Capacity : 7.5 LTPA
Environmental Clearance : Obtained
Half yearly Compliance Status : Last submitted May 2017
Yearly Environment Statement : Last submitted Sep 2016
More..

General Condition-xi, xii

SN	CONDITION	COMPLIANCE STATUS as per RO, MoEF&CC, Nagpur	Compliance Status as on 8th July, 2017
xi.	The project authorities shall inform to the Regional Office of the Ministry located at Bhopal regarding date of financial closures and final approval of the project by the concerned authorities and the date of start of land development work.	Being complied with	**Being complied with**
xii.	The funds earmarked for environmental protection measures shall be kept in separate account and shall not be diverted for other purpose. Year wise expenditure shall be reported to the Ministry and its Regional Office located at Bhopal.	Being complied with It is informed that for year 2015-16 total expenditure on environment protection measure was Rs. 11.20 lakhs (Plantation check dams, environment monitoring etc.) details of expenditure incurred by the PP on environmental protection measures are given on follow up slide.	**Being complied with**

General Condition-xii Expenditure Towards Environment Management

Year	Expenditure (in Rs Lakhs)
2015-16	11.50
2014-15	24.43
2013-14	21.03
2012-13	44.91
2011-12	47.27
2010-11	65.62
2009-10	59.95

General Conditions-xiii, xiv

SN	CONDITION	COMPLIANCE STATUS as per RO, MoEF&CC, Nagpur	Compliance Status as on 8th July, 2017
xiii.	The project authorities shall inform to the Regional Office located at Bhopal regarding date of financial closures and final approval of the project by the concerned authorities and the date of start of land development work.	Complied with	**Complied with**
xiv.	The Regional Office of the Ministry located at Bhopal shall monitor compliance of the stipulated conditions. The project authorities shall extend full cooperation to the officer(s) of the Regional Office by furnishing the requisite data / information / monitoring reports.	The PP has agreed to this condition	**The PP has agreed to this condition**

General Conditions-xv

SN	CONDITION	COMPLIANCE STATUS as per RO, MoEF&CC, Nagpur	Compliance Status as on 8th July, 2017
xv.	A copy of this extension of validity of environmental clearance letter will be marked to concerned Panchayat / local NGO, if any, from whom suggestion / representation has been received while processing the proposal.	Complied with. A copy of the letter dated 30.10.2015 of the PP conveying the extension of validity of environmental clearance to concerned Panchayat / local NGO is given on next slide.	**Complied with**

General Condition-xv Receipt for copy of EC submitted to the local body

BHARAT ALUMINIUM COMPANY LIMITED

P.O. Balco Nagar, Korba (C.G.) INDIA Pin- 495684
Phone : (07759) 242005, 242001 Fax : (07759) 242169

Mainpat Mines:EC/Apr/2010/ Date: 30.10.2015

To
Manav Sansadhan Sanskriti Vikas Parishad (MSSVP)
Darripara, Ambikapur,
Chhattisgarh-497001

Sub: Submission of extension of validity of Environment Clearance (EC) of Mainpat Bauxite Mines for the production capacity of 0.75 MTPA

Dear Sir,

This is with reference to the subject mentioned matter. M/s Bharat Aluminium Company Limited (BALCO) is operating Bauxite mines in villages of Kesra, Kudaridih and Sapnadar, Mainpat Tehsil, Surguja district, Chhattisgarh state with the production capacity of 0.75 MTPA. The Mining lease over an area of 639.169 Ha was initially granted to BALCO vide order no. 3/74/89/12307 dated 27.03.1992 by Govt. of Madhya Pradesh for a period of 20 years from 09.07.1992 to 08.07.2012. Prior to the expiry of validity of Mining Lease, BALCO has applied for its renewal to the State Government.

The mining lease period was extended upto 08.07.2042 under provision of 8 (A) 5 of the MMDR Amendment Act, 2015. Subsequent to this, the MoEF&CC extended the validity of Environmental Clearance (EC) for period up to 16.09.2038, vide its letter No F. No. J-11015/235/2007.IA-II (M) dated 27.10.2015.

So, we are hereby submitting the copy of the Environment Clearance letter J-11015/235/2007.IA-II (M) dated 27.10.2015 to your good office.

Thanking You,

For Bharat Aluminium Company Limited

30/10/15

Yours faithfully,

Received

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General Conditions-xvi

SN	CONDITION	COMPLIANCE STATUS as per RO, MoEF&CC, Nagpur	Compliance Status as on 8th July, 2017
xvi.	State Pollution Control Board shall display a copy of this extension of validity of environmental clearance letter at the Regional office, District Industry Centre and Collector's office / Tehsildar s Office for 30 days.	The PP has informed that condition has been complied. However, the same could not be verified as no representative from the CECB was present during the inspection.	

General Condition-xvii

S.NO	CONDITION	COMPLIANCE STATUS as per RO, MoEF&CC, Nagpur	Compliance Status as on 8th July, 2017
xvii	The project authorities shall advertise at least in two local newspapers widely circulated, one of which shall be in the vernacular language of the locality concerned, within 7 days of the issue of this extension of validity of environmental clearance letter informing that the validity of environmental clearance has been extended up to 8th July,2012 and a copy of this extension letter is available with the State Pollution Control Board and also at web site of the Ministry of Environment and Forests at ***http://envfor.nic.in*** and a copy of the same shall be forwarded to the Regional Office of the Ministry located in Bhopal.	Complied with. Copy of the advertisement published in the local newspapers is given on the following slide.	**Complied with.**

General Condition-xvii-Notice Published regarding grant of EC

Bharat Aluminium Co. Ltd.
Korba, Chhattisgarh

PUBLIC NOTICE

This is to inform the general public that Ministry of Environment and Forests (MOEF) Govt. of India has Extended the validity of the Environmental Clearance for Mainpat Bauxite Mine of Bharat Aluminium Company Limited (BALCO) for Production Capacity 0.75 MTPA up to lease period of the mine i.e. upto 6th July 2012. A copy of the clearance letter no. J-11015/235/2007 IA.II (M) dt. October 26, 2010 is available with Chhattisgarh Environment Conservation Board and also at website of MOEF http://envfor.nic.in.

For Bharat Aluminium Co. Ltd.
Korba, Chhattisgarh.

Central Chronicle Raipur
31/10/10 Pg. 4.

भारत एल्यूमिनियम कम्पनी लिमिटेड
कोरबा, छत्तीसगढ़

सर्वसाधारण को सूचित किया जाता है कि पर्यावरण एवं वन मंत्रालय, भारत सरकार द्वारा भारत एल्यूमिनियम कम्पनी लिमिटेड (बालको) की मैनपाट बाक्साइट खदान की उत्खनन क्षमता 0.75 मिलियन टन प्रति वर्ष के लिए प्रदत्त पर्यावरण स्वीकृति की वैधता लीज् अवधि, जुलाई 8, 2012 तक बढ़ा दी गई है. अनुमति पत्र क्रमांक जे-11015/235/2007-आई ए. II (एम) दिनांक अक्टूबर 26, 2010 की प्रति छत्तीसगढ़ पर्यावरण संरक्षण मंडल और पर्यावरण एवं वन मंत्रालय की वेबसाईट http://envfor.nic.in में उपलब्ध है.

कृते भारत एल्यूमिनियम कम्पनी लिमिटेड
कोरबा, छत्तीसगढ़

नवभारत बिलासपुर
31/10/10 कोरबा पृष्ठ 3.

General Conditions-5,6

S.NO	CONDITION	COMPLIANCE STATUS as per RO, MoEF&CC, Nagpur	Compliance Status as on 8th July, 2017
5.	The Ministry or any other competent authority may alter/modify the above conditions or stipulate any further condition in the interest of environment protection.	The PP has consented to this condition	**The PP has consented to this condition**
6.	Concealing factual data or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of Environment (Protection) Act, 1986.	The PP has consented to this condition	**The PP has consented to this condition**

General Conditions-7,8

S.NO	CONDITION	COMPLIANCE STATUS as per RO, MoEF&CC, Nagpur	Compliance Status as on 8th July, 2017
7.	Any appeal against this extension of validity of environmental clearance shall lie with the National Environment Appellate Authority, if preferred, within a period of 30 days as prescribed under Section 11 of the National Environment Appellate Authority Act,1997.	The PP has consented to this condition	**The PP has consented to this condition**
8.	The above conditions will be enforced inter-alia, under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986 and the Public Liability Insurance Act,1991 along with their amendments and rules.	The PP has consented to this condition	**The PP has consented to this condition**