

कार्यालय प्रधान मुख्य वन संरक्षक (कक्ष भू-प्रबंध), सतपुड़ा भवन, मध्यप्रदेश, भोपाल

क्रमांक/एफ-1/829/2021/10-11/945

भोपाल, दिनांक 6/3/22

प्रति,

✓ वन महानिरीक्षक (एफ.सी.)

भारत सरकार, पर्यावरण वन एवं जलवायु परिवर्तन मंत्रालय  
इंदिरा पर्यावरण भवन, अलीगंज, जोरबाग रोड,  
नई दिल्ली-110003

विषय:- वन मंडल दक्षिण शहडोल के परिक्षेत्र बुढ़ार के वन कक्ष RF-827 & RF-828 के रकबा 142.075 हे. वनभूमि तथा विभिन्न खसरो की रकबा 9.020 हे. राजस्व वनभूमि कुल 151.095 हे. वनभूमि में बिक्रम कोल ब्लॉक ओपन कास्ट/भूमिगत कोयला उत्खनन तथा अन्य उपरिसतह उपयोग के व्यपवर्तन का- मेसर्स बिरला कार्पोरेशन लिमिटेड का प्रस्ताव आन लाईन प्रस्ताव क्र. FP/MP/MIN/49537/2020

संदर्भ:- भारत सरकार, पर्यावरण वन एवं जलवायु परिवर्तन मंत्रालय, नई दिल्ली का पत्र क्र./8-34/2021-FC दिनांक 09/03/2022

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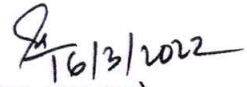
विषयांकित परियोजना के संबंध में आपके द्वारा संदर्भित पत्र क्र./8-34/2021-FC दिनांक 09/03/2022 से 04 बिन्दुओं पर जानकारी चाही गई है। चाही गई जानकारी बिन्दुवार निम्नानुसार प्रस्तुत है:-

क्र.	चाही गई जानकारी	प्रस्तुत जानकारी
i	As per details submitted it is reported that Compensatory Afforestation (5400 no. of plants) has been carried out over an area of 3.177 ha in RF-827 which is now proposed for diversion. The state govt. may explore the possibility of excluding said area from the diversion proposal. The details of the proposal for which this Compensatory Afforestation has been carried out is also required to be submitted.	वन मंडल अधिकारी दक्षिण शहडोल द्वारा दिनांक 30/07/2021 को किये गये स्थल निरीक्षण प्रतिवेदन पत्र 1464 दिनांक 03/08/2021 में लेख है कि प्रस्तावित परियोजना में वन कक्ष क्र. RF-827 है जिसका कुल क्षेत्रफल रकबा 50.835 हेक्टेयर वनभूमि है जिसमें केवल 1388 वृक्ष हैं तथा वन कक्ष क्र. RF-828 में 5944 वृक्ष हैं इस प्रकार दोनों वन कक्षों में वर्तमान में कुल 7332 वृक्ष हैं। वन मंडल अधिकारी, दक्षिण शहडोल का निरीक्षण प्रतिवेदन Annexure-I पर संलग्न है। आवेदक संस्था द्वारा अपने पत्र दिनांक 14/03/2022 से लेख किया गया है कि कोयला मंत्रालय द्वारा अनुमोदित खनन योजना के अनुसार खुली खदान के लिए प्रस्तावित वनभूमि माईनिंग लीज के पूर्वी और मध्य भाग में पड़ता है इसके अलावा खुली खदान की योजना और विकास के लिए इस क्षेत्र को अनदेखा नहीं किया जा सकता है। अतः इस प्रस्तावित 3.177 हेक्टेयर वनभूमि को प्रस्ताव से पृथक करना संभव नहीं है।
ii	In addition a small patch of 0.091 ha outside the mining lease has also been proposed for divestion. The purpose for which it is required and the plan for connectivity may be submitted.	आवेदक संस्था द्वारा पत्र दिनांक 14/03/2022 से अवगत कराया गया है कि उनके रिकार्ड अनुसार माईनिंग लीज के बाहर किसी वनभूमि को सम्मिलित नहीं किया गया है।

iii	The NFL proposed for CA is not free all encumbrances. State Govt./User Agency shall provide the NFL free from all encumbrances for Compensatory Afforestation.	आवेदक संस्था द्वारा अवगत कराया गया है वर्तमान में प्रतिपूर्ति वनीकरण हेतु उनके द्वारा प्रस्तावित भूमि में भूमि स्वामी किसानों द्वारा कृषि कार्य किया जा रहा है, वन विभाग को भूमि सौंपे जाने के समय भूमि सभी बाधाओं से मुक्त होगी। अतः औपचारिक स्वीकृति के पूर्व इस भूमि को रिक्त करवाकर वन विभाग द्वारा प्राप्त किया जावेगा।
iv	The copy of the approved Mine reclamation and Mine closure plan in respect of Open cast and Underground mining areas has not been submitted yet.	आवेदक संस्था द्वारा प्रस्तुत Mine reclamation and Mine closure plan Annexure-II पर संलग्न है।

अतः मेसर्स बिरला कार्पोरेशन लि. के पत्र दिनांक 14/03/2022 से प्राप्त जानकारी संलग्न कर प्रकरण में अनुमति प्रदान करने का अनुरोध है।

संलग्न:- उपरोक्तानुसार

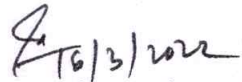
  
(सुनील अग्रवाल)

प्रधान मुख्य वन संरक्षक (भू-प्रबंध)  
मध्यप्रदेश, भोपाल

भोपाल, दिनांक 16/3/22

पृ. क्रमांक/एफ-1/829/2021/10-11/946  
प्रतिलिपि:-

- 1 मुख्य वन संरक्षक, शहडोल वृत्त, शहडोल, मध्य प्रदेश ।
  - 2 वन मण्डल अधिकारी, सामान्य वन मण्डल, दक्षिण शहडोल मध्य प्रदेश
  - 3 मेसर्स बिरला कार्पोरेशन लिमिटेड, इण्डस्ट्री हाउस, द्वितीय तल, 159 चर्चगेट, मुम्बई, महाराष्ट्र ।
- की ओर सूचनार्थ अग्रेषित ।

  
प्रधान मुख्य वन संरक्षक (भू-प्रबंध)  
मध्यप्रदेश, भोपाल

o/c

**Birla Corporation Limited**

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P2 +91 22 2204 3615

**Ref: BCL/Bikram/ FC/ 05/22****दिनांक 14/03/2022**

प्रति,

श्रीमान् प्रधान मुख्य वन संरक्षक (भू-प्रबंध)  
सतपुड़ा भवन, मध्यप्रदेश, भोपाल।

विषय - वनमंडल दक्षिण शहडोल के परिक्षेत्र बुद्धार के वन कक्ष RF-827 & RF-828 के रकबा 142.075 हे. वन भूमि तथा विभिन्न खसरों की रकबा 9.020 हे. राजस्व वनभूमि, कुल 151.095 हे. वनभूमि में बिक्रम कोल ब्लॉक ओपन कास्ट /भूमिगत कोयला उत्खनन तथा अन्य ऊपरीसतह उपयोग के व्यपवर्तन का मेसर्स बिरला कार्पोरेशन लिमिटेड का ऑनलाइन प्रस्ताव क्रमांक FP /MP /MIN /49537 /2020


सन्दर्भ- 1. भारत सरकार, पर्यावरण वन एवं जलवायु परिवर्तन मंत्रालय, नई दिल्ली का पत्र क्रमांक 8-34 /2021-FC दिनांक 09 /03 /2022  
2. आपके कार्यालय का पत्र क्रमांक/एफ-1/829/2021/10-11/918 दिनांक 14.03.2022

महोदय,

विषयांतर्गत संदर्भित पत्र क्रमांक 1 के माध्यम से भारत सरकार, पर्यावरण वन एवं जलवायु परिवर्तन मंत्रालय, नई दिल्ली द्वारा बिक्रम कोल ब्लॉक वनभूमि प्रत्यावर्तन प्रकरण में 04 बिन्दुओ पर चाही गयी बिन्दुवार जानकारी, टेबुलर फार्म में तैयार कर आवश्यक अभिलेखों सहित 02 प्रतियों में आवश्यक कार्यवाही हेतु सादर प्रस्तुत है।

अतः श्रीमान जी से अनुरोध है की बिक्रम कोयला खदान के प्रत्यावर्तन प्रस्ताव में आवश्यक कार्यवाही करने की कृपा करें।

सधन्यवाद !

  
अधिकृत हस्ताक्षरकर्ता  
संदीप कुमार जैन  
बिक्रम कोयला खदान  
मेसर्स बिरला कार्पोरेशन लिमिटेड

संलग्न : - समस्त अनुलग्नकों सहित 2 प्रतियों में।

प्रतिलिपि : 1. मुख्य वन संरक्षक, शहडोल वनवृत्त को सादर सूचनार्थ सम्प्रेषित।  
2. वन मण्डल अधिकारी, दक्षिण शहडोल वनमण्डल की ओर सादर सूचनार्थ सम्प्रेषित।

- Registered Office -

Birla Building, 159 Churchgate, Reclamation, Mumbai - 400 020. IN: 1011322/BIRLA/05/22 | www.birlacorp.com

P: 022-43435400-45689; F: 022-22043615

**Queries raised on FDP proposal FP/MP/MIN/49537/2020 of Bikram Coal Mine of M/s BCL on 09/03/2022 by MoEF & CC, New Delhi.**

Sl.No	Query	Reply
1	As per details submitted it is reported that Compensatory Afforestation (5400 no. of plants) has been carried out over an area of 3.177 ha in RF-827 which is now proposed for diversion. The state govt. may explore the possibility of excluding said area from the diversion proposal. The detail of the proposal for which this Compensatory Afforestation has been carried out is also required to be submitted.	The RF-827 has been fallen within the mining lease. The total area of RF-827 within the mining lease is 50.835 Ha, having 1388 numbers of tree (DFO, South Shahdol letter no 1464 dated 03/08/2021 is enclosed herewith Annexure -I).  As per the approved mining plan by ministry of coal the area proposed for opencast mine is fallen in forest land (eastern & central part of ML). Further, for planning and development of opencast mine this area (forest) cannot be ignored.
2	In addition a small patch of 0.091 ha outside the mining lease area has also been proposed for diversion. The purpose for which it is required and the plan for connectivity may be submitted.	As per our record no forest land has been proposed for diversion outside the mining lease area.
3	The NFL proposed for CA is not free from all encumbrances. State Govt. / User Agency shall provide the NFL free from all encumbrances for Compensatory Afforestation.	At present the proposed land for CA is being used by farmers for agricultural purpose. The land shall be free from all the hindrances/encumbrances at the time of handover to forest department.
4	The copy of the approved Mine reclamation and Mine closure plan in respect of Open cast and Underground mining areas has not been submitted yet.	The mine will be reclaim as per the progressive mine closure plan of approved mining plan by ministry of coal vide letter no 13016-60-2008-CA-I dated 18/04/2011 same is submitted along with this reply (which is enclosed herewith Annexure - II).

**कार्यालय वन मण्डल अधिकारी दक्षिण वनमण्डल शहडोल**  
जिला-शहडोल ४८४००१ (मध्यप्रदेश)

फोन (कार्या-240304) (निवास-241443) (फैक्स-240304) ई-मेल- dfotsshahd@mp.gov.in

क्रमांक/मा.चि./2021/

शहडोल, दिनांक : /2021

प्रति,

मुख्य वन संरक्षक  
वन वृत्त शहडोल

विषय :- वनमण्डल दक्षिण शहडोल अन्तर्गत विक्रम कोल ब्लॉक 142.075 हे० वनभूमि एवं 9.020 हे० राजस्व वनभूमि कुल 151.095 हे० वनभूमि में भूमिगत एवं उपरितल उत्खनन का मेसर्स बिरला कार्पोरेशन लिमिटेड सतना के पक्ष में प्रत्यावर्तन प्रस्ताव ऑनलाईन प्रकरण क्रमांक /एफसी/एमपी/एमआईएन/49537/2020

संदर्भ :- 1-अपर प्रधान मुख्य वन संरक्षक (भू-प्रबंध) मध्यप्रदेश भोपाल का पृ०क्रमांक/एफ-1/शह./2020/10-11/2999 दिनांक 09.09.2020  
2-मे० बिरला कार्पोरेशन लिमिटेड सतना कैम्प बुढ़ार जिला शहडोल का पत्र क्रमांक/एफसी/10/2021 दिनांक 07.06.2021

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निवेदन है कि विषयांकित संदर्भित पत्र क्रमांक-02 से मे० बिरला कार्पोरेशन लिमिटेड सतना कैम्प बुढ़ार जिला शहडोल द्वारा वनमण्डल दक्षिण शहडोल अन्तर्गत वन परिक्षेत्र बुढ़ार के कक्ष क्रमांक आर.एफ. 827, 828 रकवा 142.075 हे० वनभूमि एवं नीचे लिखे अनुसार खसरो की राजस्व वनभूमि रकवा 9.020 हे० कुल 151.095 हे० वनभूमि में भूमिगत एवं उपरितल खनन हेतु आवंटित विक्रम कोयला खदान को वन संरक्षण अधिनियम, 1980 के अन्तर्गत प्रकरण ऑनलाईन कर प्रस्ताव इस कार्यालय को प्रस्तुत किया गया है।

प्राप्त प्रकरण का निरीक्षण मेरे द्वारा दिनांक 30.07.2021 को संयुक्त निरीक्षण आवेदक संस्थान के उपस्थिति में किया गया परियोजना में शामिल वनभूमि का विवरण निम्नानुसार है :-

1- वनभूमि का विवरण :-

क्र०	वन परिक्षेत्र का नाम	ग्राम का नाम	वनखण्ड का नाम	कक्ष क्रमांक	रकवा (हे०)	राजस्व वनभूमि का खसरा नम्बर	रकवा (हे०)
1	बुढ़ार	गोपालपुर	गोपालपुर-2	RF 827	50.835	90, 95, 99, 182, 189, 195, 233	3.514
2	—	बरतरा	गोपालपुर-3ए	RF 828	91.240	751, 770, 779, 788, 809/1, 832, 835, 1428, 1432, 1435, 1437, 1444, 1542, 1546, 1599, 1636	5.506
Total:-					142.075		9.020
G. Total:- (142.075+9.020)= 151.095 Ha.							

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2- वनभूमि के उपयोग का विवरण-

क्र०	कार्य का विवरण	आवेदित क्षेत्रफल हेक्टेयर में
1	कोयला उत्खनन क्षेत्र	151.095

- 3- परियोजना हेतु मांग की गई वनभूमि की प्रशासनिक/सैद्धांतिक स्वीकृति प्रस्ताव में संलग्न है।
- 4- परियोजना में प्रभावित वनभूमि/राजस्व वनभूमि की के.एम.एल. फाईल आवेदक संस्थान द्वारा प्रस्ताव/सी.डी. में संलग्न किया गया है।
- 5- परियोजना में प्रभावित वनभूमि/राजस्व वनभूमि की जी.यो. रिफरेन्स मैप डी.जी.पी.एस. रीडिंग सहित प्रस्ताव में संलग्न है।
- 6- परियोजना की पर्यावरण स्वीकृति हेतु आवेदक संस्थान द्वारा Form-A Part-1 बिन्दु क्रमांक H के अनुसार TOR NO. IA-J-11015/23/2020-IA-II(M) date 16-12-2020 से भारत सरकार पर्यावरण वन एवं जलवायु परिवर्तन मंत्रालय नई दिल्ली को ऑनलाईन आवेदन प्रस्तुत किया गया प्रस्ताव में आवेदन की छायाप्रति संलग्न है।
- 7- अनुसूचित जनजाति एवं अन्य परम्परागत वन निवासी (वन अधिकारों की मान्यता अधिनियम, 2006) के अन्तर्गत अधिकारों की विनिश्चय की कार्यवाही पूर्ण होने संबंधी प्रमाण-पत्र कलेक्टर जिला शहडोल द्वारा जारी किया गया है, रकवा वनभूमि 142.075 हे० एवं राजस्व वनभूमि रकवा 9.020 हे० कुल 151.095 हे० का प्रमाण पत्र प्रस्ताव में संलग्न है।
- 8- परियोजना में प्रभावित वनभूमि/राजस्व वनभूमि की माईनिंग लीज ऐरिया का मैप प्रस्ताव में संलग्न है।
- 9- परियोजना में Transportation हेतु टीप प्रस्ताव में संलग्न है।
- 10- परियोजना की खनन योजना भारत सरकार कोयला मंत्रालय नई दिल्ली द्वारा अपने आदेश क्रमांक/13016-60-2008-CA-1 date 18-04-2011 के द्वारा अनुमोदित की गई है प्रस्ताव में संलग्न है।
- 11- भारत सरकार/मध्यप्रदेश शासन द्वारा निर्धारित की गई राशि एवं अधिरोपित शर्तों को मान्य करने बावत आवेदक संस्थान द्वारा वचन पत्र प्रस्तुत किया गया है, प्रस्ताव में संलग्न है।
- 12- परियोजना में प्रभावित वनभूमि का सर्वे ऑफ इण्डिया 1:50,000 स्केल का मानचित्र प्रस्ताव में संलग्न है।
- 13- परियोजना में प्रभावित वनभूमि की 1:4000 स्केल का मानचित्र डी.जी.पी.एस. रीडिंग सहित प्रस्ताव में संलग्न है।
- 14- आवेदक संस्थान द्वारा प्रस्तावित परियोजना के संबंध में निर्धारित प्रपत्र में काष्ठ बेनिफिट एनालिसिस पत्रक प्रस्ताव में संलग्न किया गया है।
- 15- प्रस्तावित रकवा 151.095 हे० वनभूमि इकोक्लास-IVb जिसका वन घनत्व 0.2 से 0.5 है।
- 16- प्रस्तावित वनक्षेत्र में साल, सागौन, साजा, नीलगिरी, खम्हार एवं मिश्रित प्रजाति के वृक्ष कुल 7332 वृक्ष विद्यमान है। गणना पत्रक प्रस्ताव में संलग्न है।
- 17- परियोजना में प्रभावित राजस्व वनभूमि रकवा 9.020 हे० में कोई भी वृक्ष प्रभावित नहीं हो रहे हैं, उक्त आशय का प्रमाण पत्र तहसीलदार सोहागपुर द्वारा दिया गया है प्रस्ताव में संलग्न है।

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- 18- परियोजना में प्रभावित वनभूमि में खड़े विभिन्न प्रजातियों की गणना कराई गई वनभूमि में मिश्रित प्रजाति के वृक्ष मौके में खड़े पाये गये हैं। वृक्षों की प्रजातिवार साईजवार सूची प्रस्ताव में संलग्न है, खड़े वृक्षों का विवरण निम्नानुसार है।

क्र०	कक्ष क्र०	मार्क वृक्षों की संख्या	अनुमानित वनोपज एवं मूल्य				
			ईमारती घ.मी.	जलारु घ.मी.	खड़े वृक्षों का अनुमानित मूल्य (रु.में)	विदोहन व्यय (रु.में)	अनुमानित मूल्य विदोहन व्यय सहित योग राशि (रु.में)
1	RF 827	1388	446.759	502.149	36364373.00	2500000.00	38864373.00
2	RF 828	5944	1062.004	777.092			
Total:-		7332	1508.763	1279.241	36364373.00	2500000.00	38864373.00

- 19- प्रस्तावित वनभूमि राष्ट्रीय वन्यजीव अभ्यारण/बायोस्फियर रिजर्व/बाघ रिजर्व/हांथी कॉरीडोर /वन्यप्राणी माईग्रेशन कॉरीडोर रिजर्व अन्तर्गत नहीं आता है।
- 20- प्रस्तावित वनक्षेत्र किसी भी संरक्षित क्षेत्र का हिस्सा नहीं है।
- 21- प्रस्तावित वनभूमि में वनस्पति और प्राणिजाति की दुर्लभ संकटापन्न विशिष्ट प्रजातियां नहीं पाई जाती है।
- 22- प्रस्तावित वनक्षेत्र के अन्तर्गत कोई पारम्परिक स्थल/ऐतिहासिक स्थल/रक्षा प्रतिष्ठान नहीं है।
- 23- आवेदक संस्थान द्वारा प्रस्तावित वनभूमि की मांग न्यूनतम की गई है।
- 24- प्रस्ताव में वन संरक्षण अधिनियम, 1980 का उल्लंघन होना नहीं पाया गया है।
- 25- आवेदक संस्थान द्वारा पंजीयन शुल्क/प्रोसेसिंग शुल्क की राशि क्रमशः रूपये 1000/- तथा 50000/- का बैंक ड्राफ्ट नम्बर 996419 दिनांक 05.02.2010 तथा 4000/- एवं 150000/- कर बैंक ड्राफ्ट नम्बर 153174 व 153173 दिनांक 17.04.2013 से जमा किया गया है, उक्त राशि दिनांक 17.12.2010 एवं 25.06.2013 से समायोजित की गई है।
- 26- प्रस्तावित वनभूमि के बदले क्षतिपूर्ति वृक्षारोपण हेतु गैर वनभूमि का चयन जिला रीवा, सागर, शहडोल में किया गया है, जिसकी दूरी वनभूमि से 0 कि.मी. है अर्थात् वनभूमि से लगा है।
- 27- चयनित गैर वनभूमि में 11 वर्षीय क्षतिपूर्ति वनीकरण योजना बनाई गई है जिसकी तकनीकी स्वीकृति उपरान्त स्थलवार व्यय की जानकारी नीचे दर्शाया गया है।

क्र०	जिला	वनमण्डल	ग्राम	रकवा (रु.में)	अनुमोदित राशि (रु.में)
1	शहडोल	दक्षिण शहडोल	छिनमार	55.811	23523610.00
2	रीवा	वनमण्डल सा० रीवा	रोझौही	22.376	24900510.00
3	सागर	वनमण्डल उ० सागर	लक्षनपुरा	36.430	13071630.00
योग :-				114.617	61495750.00

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- 28- आवेदक संस्थान द्वारा परियोजना में ओपन काष्ठ माईन में प्रभावित वनभूमि रकवा 114.372 हे० के ऐक्ज में क्षतिपूर्ति वनीकरण हेतु प्रस्तावित गैर वनभूमि रकवा 114.617 हे० का उपयुक्ता प्रमाण पत्र संबंधित वनमण्डलाधिकारी से प्राप्त किया गया है प्रस्ताव में संलग्न है।
- 29- परियोजना में प्रस्तावित गैर वनभूमि का वनमण्डल शहडोल अन्तर्गत रकवा 55.811 हे०, रीवा वनमण्डल रकवा 22.376 हे०, वनमण्डल सागर के रकवा 36.430 हे० की क्षतिपूर्ति वृक्षारोपण हेतु जी.यो. रिफरेन्स मैप सर्वे आफ इण्डिया 1:50,000 के स्केल, मानचित्र के.एम.एल. फाईल प्रस्ताव में संलग्न है।
- 30- आवेदक संस्थान/विभाग से अन्य किसी प्रोजेक्ट में सी.ए./एन.पी.व्ही. की राशि वसूल करने संबंधी कोई प्रकरण लम्बित नहीं है।
- अतः परियोजना का प्रस्ताव विभागीय कार्यवाही पूर्ण उपरान्त 4 प्रतियों में मय सी.डी. सहित संलग्न कर अग्रिम कार्यवाही हेतु अनुशंसा सहित सम्प्रेषित है।
- संलग्न- उपरोक्तानुसार।

(नेहा श्रीवास्तव)  
(मा.व.से.)  
वनमण्डलाधिकारी  
दक्षिण वनमण्डल शहडोल

शहडोल, दिनांक : 3/8/2021

पृ०क्रमांक/मा.वि./2021/1464

प्रतिलिपि:-

1. कलेक्टर जिला शहडोल की ओर सूचनार्थ सम्प्रेषित।
2. मे० बिरला कार्पोरेशन लिमिटेड सतना कैम्प बुद्धार जिला शहडोल की ओर सूचनार्थ।

वनमण्डलाधिकारी  
दक्षिण वनमण्डल शहडोल



## CHAPTER 14

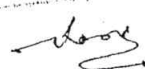
## PROGRESSIVE MINE CLOSURE PLAN

## 14.1 INTRODUCTION

## 14.1.1 Name and address of the owner

## Works &amp; Corporate Office:

Birla Corporation Limited  
 (Cement Division)  
 PO Birla Vikas, Satna  
 Madhya Pradesh - 485 005  
 Ph: (07672) 25 0641 – 43, 25 7844 – 47, 410 300  
 Fax: (07672) 25 7576 / 7456  
 Email: admin@satnacement.com

  
**V. S. RANA**  
 Under Secretary  
 Govt. of India  
 Ministry of Coal  
 Shastri Bhawan, New Delhi

## 14.1.2 Location

Bikram coal block covering an area of 239 Ha represents the northern contiguous area of the Karkati Sector of the Sohagpur Coalfield. The Bikram Block lies to the immediate north of the working Navgaon and Rajendra Mines of Sohagpur Area, SECL. Bikram block is virgin. The block is covered in the Survey of India Toposheet no. 64 E/12, 8 (R. F. 1:50,000) and is bounded by

Latitudes - N 23°11'6" to N 23°11'24"  
 Longitudes - E 81°28'48" to E 81°31'54"

The geological boundary of Bikram coal block is as follows:

North	:	Surface position fault F7-F7, part of fault F5-F5, F3-F3 and an arbitrary line passing through boreholes CMSB-25 & 48.
South	:	An arbitrary line passing through boreholes CMSB-44,34,13 & 22
East	:	An arbitrary line presumably representing Incrop floor of Seam IX. The coordinates of the NE corner are Easting 4010; Northing 4830 and that of SE corner are Easting 4265; Northing 4150.  The National coordinates of NE corner are Lat 23deg 11' 28.73" ; Long 81deg 31' 2.82" and that of SE corner are Lat 23deg 11' 5.94" ; Long 81deg 31' 52.52"

West	:	<p>An arbitrary line passing east of borehole CMSB-46 and touching the northern &amp; southern boundary with coordinates of NW corner are Easting 8030; Northing 4630 and that of SW corner are Easting 8030; Northing 4152.5.</p> <p>The National coordinates of NW corner are Lat 23deg 11' 22.87" ; Long 81deg 28' 39.13" and that of SW corner are Lat 23deg 11' 7.44" ; Long 81deg 28' 38.95"</p>
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The coordinates of the corners are given above. The perimeter of the block is 9.2 km.

#### 14.1.3 Extent of ML area and present land use

The extent of ML area and the present land use is given in Table 14.1.

**TABLE 14.1**  
**AREA DETAILS FOR MINING LEASE APPLIED (in Hec.)**

Land use (Hectares)	Gopalpur	Bartara	RF	Total
Agriculture	20.570	56.271		76.841
Barren	2.549	1.618		4.167
Judpi Gungle (Revenue Forest)	3.514	5.506		9.020
Pond , Road, School etc (Govt. Land)	0.822	5.699		6.521
Boundary (Merh)	0.376	-		0.376
<b>Total</b>	<b>27.831</b>	<b>69.094</b>		
Reserve Forest	50.835	91.240	142.075	142.075
<b>Grand Total</b>				<b>239.000</b>

V.S. ANA  
 Under Secretary  
 Govt. of India  
 Ministry of Coal  
 Shastrichawan, New Delhi

#### 14.1.4 Reasons for closure

Not Applicable as it is a new allotted block.

#### 14.1.5 Statutory obligations

It is a new block allotted hence, there are no statutory obligations imposed by any authority except that there is one allotment letter from the Ministry of Coal.

The allotment Letter No. 38011/2/2007-CA-1, Government of India, Ministry of Coal dated 12<sup>th</sup> August, 2008 is enclosed as Annexure 2-2 of Mining plan.

The main points of the letter are as follows:

1. The annual production of the mine is proposed as about 0.36 MT of grade C to D.

2. A Bank Guarantee worth Rs 4.43 crores will be given within 3 months from the date of issue of the allotment letter.
3. The company shall submit Mining Plan for approval of the competent authority within 6 months after the date of the allotment letter.
4. The allotment letter may be cancelled on unsatisfactory progress of the end user plant or the development of the block.

#### 14.1.6 Closure plan preparation

The Progressive Mine Closure Plan and Mine Closure Plan have the approval of the authorised signatory of the Company and the relevant document is attached as Annexure A-1 of the Mining plan.

### 14.2 MINE DESCRIPTION

#### 14.2.1 Geology

##### a) Topography

The block has a gentle rolling topography with a general slope towards north. The variation in surface elevations, excluding nala cuttings, is from 479 m (above MSL) in the northern part to 493 m (above MSL) in the south-western part of the block. Basic intrusive bodies stand out as E-W trending low ridge to the north-western & south-western corners of the block.

##### b) Geology

Sohagpur Coalfield has been a traditional source of superior quality, low rank, high volatile coal. Such coal has been under active exploitation in the entire tract in south Sohagpur. Bikram Block is located almost in the central part of the Amlai-Burhar sub-basin of Sohagpur Coalfield. The area is mainly covered by thin cover of soil and alluvium, ranging in thickness from 1.75 m to 8.55 m. Rock exposures are largely confined to seasonal nala sections.

The generalized stratigraphic sequence of the block is given in Table 14.2.

*Manoj*  
**श्री. एन. सुभाष. S. RANA**  
 UNDER SECRETARY  
 कोयला/INDIA MINISTRY OF COAL  
 कार्यालय/COAL INDIA  
 भारत सरकार/GOVT OF INDIA  
 नई दिल्ली/NEW DELHI

**TABLE 14.2**  
**STRATIGRAPHIC SEQUENCE IN BIKRAM BLOCK, SOHAGPUR**  
**COALFIELD**

Group	System	Series	Lithology	Thickness	Range (m)
	Recent/ sub-Recent		Soil & Alluvium	1.75 (CMSB-49)	8.55 (CMSB-31,32)
----- Unconformity -----					
	Eocene- Upper Cretaceous	Deccan Trap	Dolerite dykes & sills	0.10 (CMSB-3)	3.05 (MPSB-4)

*SM*

Group	System	Series	Lithology	Thickness	Range (m)
----- Unconformity -----					
	Upper Cretaceous	Lameta	Calcareous sandstone and nodular limestone	10.90 (CMSB-8)	38.90 (CMSB-48)
----- Unconformity -----					
Upper Gondwana	Upper Triassic	Supra Barakars	Pink & buff coloured sandstone and variagated shales	7.20 (CMSB-49)	33.90 (CMSB-31)
Lower Gondwana	Lower Permian	Barakar	Greyish-white coarse grained sandstone with a few coal seams, carb shale and shale bands	79.20 (MPSB-3)	179.75 (CMSB-43)

The geological map of Bikram coal block has been prepared based on surface and sub-surface geological data obtained during exploration campaign. The block is mostly soil covered with some exposures of laterite and weathered Barakar sandstone.

### c) Description of formations

The description of different geological formations encountered in boreholes drilled in Bikram coal block are summarized below:

#### **Soil/Alluvium and weathered mantle**


The Bikram block is covered with soil ranging in thickness from 1.75 m to 8.55 m. Supra Barakars are found in the entire block above Seam IX. Lameta occurs as thin capping over Barakars and Supra Barakars in isolated patches confined in the south-eastern part (around CMSB-8) and north-eastern part (around CMSB-48) of the block. The strata being soft, the depth of the weathering ranges between 8.35 m (CMSB-3) to 31.85m (CMSB-48) below the surface.

#### **Igneous intrusive**

Dolerite has been intersected in boreholes CMSB-3 (0-10 m), MPSB-2 (0.93 m) and MPSB-4(3.05m). Out of these boreholes, MPSB-2 and 4 are located in eastern boundary of the block and CMSB-3 in the north-western part of the block. From these isolated intersections of dolerite body at different locales, the intrusive body is surmised to have a discordant relation with the host rock. However, presence of some more isolated dykes in the area can not be ruled out.

#### **Structural set up of the block**

The entire structural set-up of the area has been worked out on the basis of sub-surface data obtained through drill holes. While deciphering the

  
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 नई दिल्ली/NEW DELHI

geological structure, due weightage has been given to the vast structural elements available from the extensive workings of coal seams in various collieries of the area.

The block can be observed from the floor contour that strike variation is between N40°55'E – S40°55'W in the western and central part of the block, N60°65'E - S60°65'W in the north-eastern part to almost E-W in the south-eastern part and ultimately veer to rarely NS in the eastern most part of the block. This indicates a gentle down warp of the strata along a NNE-SSW axis passing through the central region of the block. The coal beds have a corresponding dip direction and the dip amount varies from about a degree to 6°.

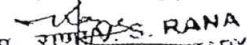
**d) Coal seams**

A study of drill hole data reveals that of the nine correlatable carbonaceous horizons present in Amlai-Burhar sub-basin, only seven coal seams viz VI Bottom alongwith two splits – VIB (B) & VIB (T), VI Top, VII, VIII & IX in ascending order have attained identifiable thickness in Bikram block.

The correlation of the coal seams, their thickness range and range of intervening parting between the coal seams in Bikram coal block is furnished in Table 14.3 and their graphic presentations is given in Plate VI.

**TABLE 14.3  
SEQUENCE OF COAL SEAMS OF BIKRAM COAL BLOCK**

Coal Seam	Thickness Range (m)		General thickness range (m)	No. of boreholes intersecting full seam thickness	Remarks
	Min.	Max.			
Seam IX	0.42 (CMSB-11)	3.75 (CMSB-56)	1.20-3.0	34	Excluding CMSB-25 where only carb. Shale intersected
Parting	9.8 (CMSB-3)	17.07 (CMSB-10)	12.0-15.50	34	
Seam VIII	0.10 (CMSB-18)	2.30 (CMSB-44)	0.90-2.00	34	Excluding CMSB-11 where only carb. Shale intersected
Parting	53.15 (CMSB-18)	64.93 (CMSB-43)	54.0-60.0	32	Excluding MPSB-1, where the interseam parting has thickness reduction and CMSB-44 has splitted seam.
Seam VII	0.55 (CMSB-48)	4.79 (CMSB-43)	1.2-4.0	33	Excluding CMSB-6 where faulted coal seam thickness intersected
Seam VII T	2.27 (CMSB-44)				Parting range between Seam VII & VIB (C)/VIB(T) is 28.26m (CMSB-20) to 34.96 (CMSB-34)

  
 B.D. SHARMA  
 RQP  
 2.27  
 DEPT. OF MINES  
 NEW DELHI

Coal Seam	Thickness Range (m)		General thickness range (m)	No. of boreholes intersecting full seam thickness	Remarks
	Min.	Max.			
Parting	1.32 (CMSB-44)		1.32	1	
Seam VII B	2.14 (CMSB-44)		2.14	1	
Parting	8.32 (CMSB-13)	24.59 (CMSB-36)		18	Parting between VII and VI Top
Seam VI Top	0.05 (CMSB-14)	3.36 (CMSB-43)	0.90-1.50	18	
Parting	8.05 (CMSB-36)	26.81 (CMSB-23)		15	Parting between VI Top and VI Bot. (Comb.) and also VI Top & VI Bot.(T)
Seam VI B(C)	2.04 (CMSB-7)	3.78 (CMSB-13)	2.0-3.0	10	
Seam VIB(T)	0.38 (CMSB-28)	2.05 (CMSB-10)	0.90-1.50	16	
Parting	1.20 (CMSB-57)	11.00 (CMSB-28)	<2.0-7.0	15	
Seam VIB (B)	0.11 (CMSB-20)	1.8 (CMSB-4)	0.90-1.50	17	

\*Thickness of weathered seam not considered

#### 14.2.2 Reserves

##### a) Category of reserves

All the reserves for Seam IX, VIII and VII (including Top and Bot) have been included under 'Proved Category', though for the seams VI Bot (Comb) and VI Bot (B) reserves have been estimated both for 'proved' and 'indicated' categories.

The coal reserves are assessed based on detailed study and geological mapping, where 61 boreholes were drilled. A total 'net' coal reserves (proved and indicated) available for underground exploitation have been assessed at 20.975 MT. The share of seam IX, VIII, VII along with top and bottom splits, VI Bot (Comb.) and VI Bot (B) in the total reserves are 6.494, 3.220, 6.420, 3.586 and 1.255 MT respectively. Out of the total reserves of 20.975 MT, 10.897 MT of coal is found under the forest and remaining 10.078 MT is found outside of the forest area. The details of reserves are given below in Table 14.4.

Additionally, 1.041 MT net geological reserves will be available in patches of seam VI (T) and VI Bot (T).

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RQP

TABLE 14.4  
SEAM-WISE AND GRADE WISE RESERVES (IN MILLION TONNES)

Thickness Range	Within Forest						Total	Outside Forest						Total	Grand Total		
	IX HCL		VIII	VII	VIB(B)	VIB (Comb.)		IX HCL		VIII	VII	VIIT	VIIB			VIB(B)	VIB (Comb.)
	<15	>15						<15	>15								
PROVED																	
Incrop-F	-	-	-	-	-	-	-	0.053	-	-	-	-	-	-	0.053	0.05	
A	-	-	0.001	-	-	-	0.001	-	-	0.001	-	-	-	-	0.001	0.00	
B	-	-	0.330	0.280	-	-	0.626	-	-	0.170	0.080	-	-	-	0.249	0.86	
C	-	-	1.225	2.209	0.534	0.081	4.045	-	-	0.904	0.593	-	-	0.014	1.511	5.56	
<b>Total (1)</b>			<b>1.560</b>	<b>2.490</b>	<b>0.534</b>	<b>0.081</b>	<b>4.663</b>			<b>1.074</b>	<b>0.673</b>	-	-	<b>0.014</b>	<b>1.814</b>	<b>6.47</b>	
D	-	-	0.212	0.569	0.331	1.136	2.248	-	-	0.317	2.244	0.049	0.048	0.083	1.389	4.130	
E	0.628	0.133	0.050	-	0.064	0.141	1.016	0.077	-	0.001	0.347	-	-	0.165	0.590	1.60	
F	2.106	0.690	0.006	-	-	-	2.802	0.287	2.010	-	-	-	-	-	2.297	5.09	
G	0.166	-	-	-	-	-	0.166	0.039	0.305	-	-	-	-	-	0.344	0.51	
<b>Total (2)</b>	<b>2.900</b>	<b>0.823</b>	<b>0.268</b>	<b>0.569</b>	<b>0.395</b>	<b>1.277</b>	<b>6.232</b>	<b>0.403</b>	<b>2.315</b>	<b>0.318</b>	<b>2.591</b>	<b>0.049</b>	<b>0.048</b>	<b>0.248</b>	<b>7.361</b>	<b>13.59</b>	
<b>Total (1+2 + Incrop)</b>	<b>2.900</b>	<b>0.823</b>	<b>1.828</b>	<b>3.059</b>	<b>0.929</b>	<b>1.358</b>	<b>10.897</b>	<b>0.456</b>	<b>2.315</b>	<b>1.392</b>	<b>3.264</b>	<b>0.049</b>	<b>0.048</b>	<b>0.262</b>	<b>9.175</b>	<b>20.09</b>	
INDICATED																	
Total														0.064	0.839	0.903	
Grand Total (indicated + Proved)	2.900	0.823	1.828	3.059	0.929	1.358	10.897	0.456	2.771	1.392	3.264	0.049	0.048	0.326	2.228	10.078	

HCL - Hard Cover Line

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The reserves mineable by OC method are given in the following Table 14.5.

**TABLE 14.5**  
**EXTRACTABLE RESERVES BY OPENCAST METHOD**

1	2	3	4	5=2-3-4	6=97% of 5	7
Seam IX	Total coal	OC barrier	OC batter	Net mineable reserve of OC	OC extractable reserve of 3% mining losses	Grade
(i) <15m Hard cover line	3.303					
(ii) >15m hard cover line	3.138					
outcrop	0.053					
<b>TOTAL</b>	<b>6.494</b>	<b>0.166</b>	<b>1.218</b>	<b>5.110</b>	<b>4.957</b>	<b>F</b>
Seam VIII	3.220	0.0927	0.739	2.388	2.317	C
Seam VII	6.323	0.268	2.915	3.140	3.046	C-D
Seam VII B	0.048			0.048	0.047	D
Seam VIIT	0.049			0.049	0.048	D
Seam VIB (T)	1.255	0.0123	0.386	0.857	0.831	C-D
Seam VIB (B) combined	3.586	0.1295	2.644	0.813	0.788	C-D
<b>Total coal reserves</b>	<b>20.975</b>	<b>0.669</b>	<b>7.902</b>	<b>12.405</b>	<b>12.032</b>	

Total excavation	: 239.30 mcum
Av. Weighted Coal density for the block as a whole is	: 1.54
Coal volume (12.032 MT/1.54)	: 7.81 mcum
OB waste volume (239.3-7.81)	: 231.49
OB: Coal ratio (231.49/12.032)	: 19.24

A perusal of the above table shows that 3.303 MT (15.75%) of the reserves, lying at shallow depth of less than 15m hard cover, which is not possible to be mined by UG method can be extracted through opencast mining. The reserves mineable by UG mining method are given in Table 14.6.

**TABLE 14.6**  
**EXTRACTABLE RESERVES BY UNDERGROUND METHOD**

1.	The total net reserves as per GR	20.975
2.	(-) Reserves in 0.5-01.2m thickness	1.892
3.	(-) Reserves in <15m hard cover	3.303
4.	Balance reserves for UG mining (1-2-3)	15.78
5.	Extractable by UG mining (about 40% of 4)*	6.312
6.	Life @ 0.36 MTPA	17.53 years

\* Besides 0.41 MT extractable from seam VI T and VI Bot (T) patches.

A perusal of the above table shows that 3.303 MT coal lying at shallow depth near the outcrop of seam IX cannot be mined by under ground method in line with the Mines Act / Mines Rules as the hard cover is less than 15m.

The reserves mineable by OC as well as UG method are summarised in the following Table 14.7. It will be possible to extract as much coal as 9.44 MT of reserves (3.758 MT by OC + 5.682 MT by UG method) which account for 45% of the total net geological reserves. This extraction is 15% higher than that by UG method.



TABLE 14.7  
EXTRACTABLE RESERVES BY OPENCAST AND UNDERGROUND METHOD

Seam IX	Total coal as per GR	Reserves for opencast mining			Reserves for underground mining			Grade
		Net geological	Net mineable	Extractable after 3% mining losses	Net geological	Net mineable	Extratrable (40%)	
(i) <15m hard cover line	3.303	3.303	2.766	2.683				F
(ii) >15m hard cover line	3.138				3.138	3.081	1.23	F
outcrop	0.053	0.04	0.027	0.026				
<b>Total Seam IX</b>	<b>6.494</b>	<b>3.343</b>	<b>2.793</b>	<b>2.709</b>	<b>3.138</b>	<b>3.081</b>	<b>1.23</b>	<b>F</b>
Seam VIII	3.220	1.312	1.081	1.049	1.908	1.328	0.53	C
Seam VII	6.323				6.323	5.697	2.28	C-D
Seam VII B	0.048				0.048	0.000		D
Seam VIIT	0.049				0.049	0.000		D
Seam VIB (B).	1.255				1.255	0.639	0.26	C-D
Seam VIB (B) Combined	3.586				3.586	3.459	1.38	C-D
<b>Total coal reserves</b>	<b>20.975</b>	<b>4.655</b>	<b>3.874</b>	<b>3.758</b>	<b>16.307</b>	<b>14.204</b>	<b>5.682</b>	
<b>Total OC OB</b>			<b>36.81</b>	<b>36.81</b>				
<b>OB : Coal</b>			<b>9.50</b>	<b>9.80</b>				

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## 14.2.3 Mining method

## 14.2.3.1 Opencast mining of Seam-IX and VIII upto 15m hard cover line

Seams IX & VIII will be worked by mechanized opencast method comprising shovel/dumper combination in OB and coal. The maximum depth of OC is expected to be around 60m. The gradient of seams will vary from 0° to 6°. Seams beyond 60m hard cover line are envisaged to be mined by underground method. It may be observed that drilling and blasting is envisaged. The surface transport of coal will be done by Coal Tippers to the pit head despatch point or to the railway siding.

Mining and transport of coal and OB will be fully mechanised. The details of equipment are given in Table 14.8.

TABLE 14.8  
LIST OF PRODUCTION AND AUXILIARY EQUIPMENT

Sl. No.	Particulars	Unit	Quantity
I.	Heavy Earth Moving Machinery		
A.	Coal		
a)	0.9-1.1 M <sup>3</sup> shovel/backhoe (Diesel operated)	Nos.	1
b)	10 T.R.D. Trucks (Diesel Operated)	Nos.	4
c)	R.B.H Drills 110/115 mm (Diesel Operated)	Nos.	1
d)	Dozer 275-320 HP (Tyre mounted dozer with ripper attachment)	Nos.	1
B.	Overburden		
a)	Hydraulic Shovel 2.5-3.3 m <sup>3</sup>	Nos.	2
b)	35 T.R.D. trucks (Diesel Operated)	Nos.	10
c)	R.B.H drills 110/160 mm (Diesel Operated)	Nos.	2
d)	Dozer 410 HP (Diesel Operated)	Nos.	2
e)	Dozer 275-320 HP (Diesel Operated)	Nos.	2
II.	Auxiliary & Service Equipment		
a)	3.5 m <sup>3</sup> front end loader (Coal) (Diesel Operated)	Nos.	1
c)	Graders 145 HP (Diesel Operated)	Nos.	1
d)	Diesel Bouser	Nos.	1
e)	Construction backhoe -0.9 CUM (Diesel Operated)	Nos.	1
f)	Water sprinkler (26 KL) (Diesel Operated)	Nos.	3
g)	TOW truck on 50T truck chassis (Diesel Operated)	Nos.	1
h)	100 T tractors (Diesel Operated)	Nos.	-
i)	Rough terrain crane - 40T mobile (Diesel Operated)	Nos.	1
J)	Service trucks	Nos	3
k)	Explosive van (Diesel Operated)	Nos.	1
l)	Portable air compressor	Nos.	1
m)	Tyre handler	Nos.	1
III.	Reclamation		
	2.5 cum front end loader	Nos.	1
	10 T Truck	Nos.	4
	0.9-1.2 cum hydraulic excavator	Nos.	1

All material handling will be carried out on contract basis & other jobs will be done departmentally.

### 14.2.3.2 Underground mining

There will be no coal production from UG mining for the 1<sup>st</sup> two years. The underground mining will be carried out by two sets of inclines from surface. The drivage of 1<sup>st</sup> set of inclines will be started in the western half portion of the block from SRL 481m, which will touch the floor of seam IX at FRL 442m. The same incline will continue down at the same gradient and meet the seam VIII at 426.5m FRL. Once the incline touches the seam, a set of dip drives along the floor of the seams will be driven and panels will be created for development and production.

The floor of the seam appears to be good and gradient is found to be gentle all through the mine. It has been proposed to use simple board and pillar system with solid blasting in panel development using Load Haul Dump (LHD) with chain and belt conveyor.

The target output will be 0.20 MTPA. The life of the underground mine will be 31 years (with production from 3<sup>rd</sup> year to 31<sup>st</sup> year). Additionally, there will be construction activities for two years prior to start of production (during 1<sup>st</sup> and 2<sup>nd</sup> year). The combined calendar programme of production from opencast as well as underground mining is given in Table 14.9.

**TABLE 14.9  
COMBINED CALENDER PROGRAMME OF PRODUCTION  
FROM OC AND UG**

Year	COAL (MT) PROG.		
	OC	UG	TOTAL
1*	0.15	0.00	0.15
2	0.36	0.00	0.36
3	0.16	0.20	0.36
4	0.16	0.20	0.36
5	0.16	0.20	0.36
6-10**	0.80	1.00	1.8
11-15***	0.80	1.00	1.8
16-20	0.80	1.00	1.8
21-23	0.368	0.60	0.968
24-25	0.00	0.40	0.4
26-30	0.00	1.00	1.00
31		0.082	0.082
<b>Total</b>	<b>3.758</b>	<b>5.682</b>	<b>9.44</b>

- \* The construction activities of 1<sup>st</sup> set of inclines will start from 1<sup>st</sup> year itself
- \*\* The drivage of 2<sup>nd</sup> set of inclines will start from 9<sup>th</sup> year
- \*\*\* The production from 1<sup>st</sup> set of inclines will exhaust by 11<sup>th</sup> year and it will be made up by the production from the 2<sup>nd</sup> set of inclines in the 12<sup>th</sup> year.
- \* Additionally 0.41 MT extractable reserves will be available in patches of seam VI (T) and VI Bot (T) which will increase the life by another 1.14 years

**14.2.4 Mineral beneficiation**

No coal beneficiation is required as the coal is utilizable directly as produced. Hence no provision of washery etc. has been made.

**14.3 CLOSURE PLAN****14.3.1 Mined out land****i. Land degradation control measures**

Land degradation is one of the major adverse outcomes of opencast mining activities and any effort to control adverse impacts is considered incomplete when appropriate land reclamation strategy is not adopted. Since the land degradation in this mine is partly in the form of excavated void and partly in the form of external and internal dumps, the reclamation strategy must include a programme for the reclamation of the disturbed land.

**a) Mined area reclamation**

The lessee will have to take necessary steps to keep the area under disturbance at any stage of mining operation to a minimum. This can be achieved by carrying out the reclamation programme simultaneously with excavation. The gap can be reduced between degradation and the reclamation by this programme. The post mining land use of the core zone shows that all the disturbed areas will be reclaimed before abandoning the mine, excluding the void.

**b) Reclamation procedure**

Reclamation procedure has been described stage wise in the following paragraphs. Year wise reclamation programme is as shown in Table 14.10.

**TABLE 14.10  
RECLAMATION PROGRAMME OF EXCAVATED AND BACKFILLED  
AREA (CUMULATIVE)**

Upto the end of Year	Area mined (Ha.)	Backfilled area (Ha.)	Planted area (Ha.)
1 <sup>st</sup>	7.67	0.000	0.00
2 <sup>nd</sup>	20.20	7.352	0.00
3 <sup>rd</sup>	27.30	10.120	7.64
4 <sup>th</sup>	34.34	14.106	11.17
5 <sup>th</sup>	41.54	19.945	16.52
Conceptual (23 <sup>rd</sup> )	118.60	79.533	

**ii. Post reclamation land use**

The first step in a successful reclamation programme is to decide the post reclamation land use. The post mining land use with environment management is given in Table 14.11.

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TABLE 14.11  
POST MINING LAND USE WITH ENVIRONMENT MANAGEMENT WITHIN ML

Sl. No.	Description of area	Land use (Ha.)				
		Plantation	Water body	Public use	Undisturbed	Total
I.	<b>ML Area</b>					
1.	Top soil dump	3.00	0.00	0.00	0.00	3.00
2.	Surface dump	0.00	0.00	0.00	0.00	0.00
3.	a) Excavation	79.53	39.07	0.00	0.00	118.60
	b) Surface water reservoir	0.00	1.60	0.00	0.00	1.60
4.	Facilities	2.00	0.00	0.00	0.00	2.00
5.	Roads	0.00	0.00	3.00	0.00	3.00
6.	Green belt	6.89	0.00	0.00	0.00	6.89
7.	Undisturbed area by OC	0.00	0.00	0.00	103.91	103.91
	<b>Total</b>	<b>91.42</b>	<b>40.67</b>	<b>3.00</b>	<b>103.91</b>	<b>239.00</b>
II	<b>Out side the ML area</b>					
	Surface dump	0.00	0.00	0.00	0.00	0.00
	Facilities	0.00	0.00	0.00	0.00	0.00
	<b>Grand Total I +II</b>	<b>91.42</b>	<b>40.67</b>	<b>3.00</b>	<b>103.91</b>	<b>239.00</b>

In case of this mine, it would be appropriate to restore the lands to the original land use to the extent possible due to following reasons:

Whole of the excavated area is proposed to be developed into a picnic spot due to the formation of water body created as a result of the left out void. The water body will be used for irrigation, watering the forest at earlier stages and it will also attract avifauna. The plan showing the mine at the abandoned stage is given as Plate XIX in the Mining Plan.

### iii. Soil conservation measures

The following control measures to prevent soil erosion and wash off of fines from freshly excavated benches and dumps will be adopted:

- Garland drains will be provided around the mine whenever required to arrest any soil from the mine area being carried away by the rain water.
- The bench levels will be provided with water gradient against the general pit slope to decrease the speed of storm water and prevent its uncontrolled descent.

Special local stone paved chutes and channels will be provided wherever required, to allow controlled descent of water, especially from external dumps.

Gullies formed, if any, on side of the benches shall be provided with check dams of local stone or sand filled bags.

- The inactive dump slopes will be planted with bushes, grass, shrubs and trees to prevent soil erosion after applying top soil.

- Retaining walls (with gabion, concrete or local stone) will be provided wherever required, to support the benches or any loose material and also to arrest sliding of loose debris.

iv. Afforestation

**Compensatory afforestation**

Compensatory plantation will be provided in line with the prevailing rules of the Forest Department.

**Plantation during mining**

A plantation program over life of the mine has been planned in a phase wise manner. The plantation will be started from first year of mining along the boundary of ML area from south to north. A 7.5 m width of green belt development around the ML area will be carried out and more width of green belt will be taken up wherever space is available. Plantation over backfilled area will be commenced from 2nd year of mining.

A thick plantation is proposed to be provided and maintained around the mining area and along the roads. The yearly requirement of plants during the various years and stages of the mining project is as shown in the Table 14.12.

TABLE 14.12  
REQUIREMENT OF PLANTS (YEAR/STAGE WISE AND LOCATION WISE)

Year	Requirement of plants for mine reclamation/afforestation & green belt						No. of trees @ 2500/Ha
	Area (Ha.)						
	Green belt	Surface dump	Backfill	Facilities	Virgin	Total	
1 <sup>st</sup>	1.378	3.48	0.00	0.00	0.00	4.858	12145
2 <sup>nd</sup>	1.378	4.75	0.00	0.00	0.00	6.128	15320
3 <sup>rd</sup>	1.378	0.00	7.64	0.00	0.00	9.018	22545
4 <sup>th</sup>	1.378	0.00	3.53	0.00	0.00	4.908	12270
5 <sup>th</sup>	1.378	0.00	5.35	0.00	0.00	6.728	16820
Conceptual	0.000	0.00	63.01	2.00	0.00	65.01	162525
<b>Total</b>	<b>6.890</b>	<b>8.23</b>	<b>79.53</b>	<b>2.00</b>	<b>0.00</b>	<b>96.65</b>	<b>241625</b>

To fulfill the requirements of nursery plants, a nursery will be established at the site. During peak requirements, additional plants will be transported from Govt. / Forest nurseries, located around the area. The common species used for plantation in the region are Sal, Mahua, Gulmohar, Neem, Siris, Acacia, Casuarina, Mango, China rose, Kaner, etc.

The plan showing the mine at the abandoned stages is given in Plate XIX.

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 भारत सरकार  
 नई दिल्ली  
 GOVT. OF INDIA  
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### 14.3.2 Water quality management

The general land slope of the study area is towards north. The maximum and minimum elevation of the block is 493 m AMSL in the south-western part of the block and 479 m AMSL in the northern part.

There is no prominent drainage pattern developed in the block. Only seasonal streamlets drain the area. However, Baisaha nala flowing in the west and Nargara nala in the east constitute the main drainage of the area. These two along with a number of seasonal streamlets drain the area and finally discharge their water into the river Son near village Nahalpur about 12 km NW of the Bikram Block.

#### a) Water balance

Total requirement of water for mining and allied activities are estimated as 444 m<sup>3</sup>/day. The break up of the required water for different activities is shown in Table 14.13.

**TABLE 14.13  
WATER BALANCE**

Sprinkling @ 30 cum per km per day of haul road for 3 km	=	90.00
Plantation @ 20 cum/hect. for 5 Ha	=	100.00
Vehicles washing @ 2.0 m <sup>3</sup> /vehicle/day for 10 vehicles considering 50% recirculation	=	10.00
Drinking at working place @ 45 lpd/head for 701+50=751 (workers and visitors)	=	34.00
For colony {total manpower in mine 701 out of which colony provision has been made for 50% (351) i.e. 351 x 4 x 135 lpd=190 K/LD		190.00
For peripheral villages (potable)	=	20.00
<b>Total</b>		<b>444.00</b>

#### Effluent from mine

- i. To prevent surface and ground water contamination by oil/grease and sewage waste, following control measures are proposed to be implemented:
  - Leak proof containers will be used for storage and transportation of oil/grease. In the store also, the container containing oil/grease will be kept in empty safe open containers of higher volume than the containers to avoid oil/grease spillage. The area over which oil/grease is handled will be kept effectively impervious. Any wash off from the oil/grease handling area or workshop will be drained through impervious drains, collected in specially constructed pit and treated appropriately to remove any oil/grease and the water

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- will be recycled. The oil grease will be sold to authorized vendors and sludge disposed off in specially constructed pit.
- The sewage waste generated will be drained by underground impervious drains, lead to appropriately designed septic tanks and soak pits to prevent any pollution of surface or ground water.
  - ii. The surface and ground water in and around the mine, loading plant and infrastructure will be regularly tested and appropriate control measures adopted in case of any pollutant is detected above the prescribed limit.
  - iii. All stacking and loading areas will be provided with proper garland drains equipped with baffles to prevent wash offs from reaching the downstream natural channels.
  - iv. A domestic waste water treatment plant will be provided in colony so that the water after treatment can be reused.

### **Storm water**

Control measures to be adopted are briefly discussed below:

- Check dams will be provided to prevent solids from wash off and screen if any from the mine related activities.
- Peripheral bunds will be erected on the outer edge of the abandoned benches before reclamation so that the soil is not carried away by storm water.
- A water gradient of about 1 in 100 will be kept at every bench towards inside of the bench to prevent formation of gullies in the bench slopes causing serious erosion.
- Chutes will be constructed by using local stone or masonry to guide the water in areas with loose soil to prevent erosion and uncontrolled descent of water wherever necessary.
- Construction of garland drains around freshly excavated and dumped areas so that flow of water with loose material is prevented. The mine water will be passed through specially constructed settling ponds to arrest any loose material being carried away with water.
- Any areas with loose debris within the lease hold will be planted.

### **Measures to minimise adverse effects on water regime**

During the process of mine rehabilitation and with the completion of backfilling, a water body will be created in the mined out pit which will act as water reservoir improving the ground water recharge, source of attraction for fauna and will help in the maintenance of afforested areas. To enhance aesthetic appearance, parks and lawns will be made around the water body.

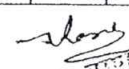


## 14.3.3 Air quality management

Ambient air quality monitoring was undertaken at 7 different stations within the study area during summer season. The monitoring results indicated that the air quality is good and conforms to the standards stipulated for rural areas.

The test results are given in Table 14.14 below and details are shown in Annexure 13-5 of Mining plan.

TABLE 14.14  
AIR QUALITY OF THE STUDY AREA

	RPM	SPM	SO <sub>2</sub>	NO <sub>x</sub>	CO	RPM	SPM	SO <sub>2</sub>	NO <sub>x</sub>	CO	RPM	SPM	SO <sub>2</sub>	NO <sub>x</sub>	CO
	Core zone					Chooradih (BA1)					Ahirgaon (BA2)				
Min.	32	90	6.1	6.1	182	34	96	6.1	7.2	181	35	96	6.8	8.8	180
Max.	45	128	7.9	7.9	217	47	132	7.9	9.5	219	50	142	8.9	11.5	224
Avg.	39	111	6.9	6.9	198	41	115	6.8	8.4	200	42	119	8.0	9.8	199
98%tile	44	125	7.9	7.9	217	47	132	7.9	9.5	217	50	142	8.9	11.5	222
	1.5km N of Sangwar (BA3)					Saraikapa (BA4)					Karkati (BA5)				
Min.	33	95	6.0	8.4	186	36	102	8.3	9.7	204	37	103	7.9	10.1	202
Max.	47	132	8.2	11.1	228	50	141	12.0	14.0	242	53	149	12.0	14.0	241
Avg.	41	117	7.2	9.7	210	44	123	10.4	12.4	222	46	129	10.0	12.2	223
98%tile	47	131	8.2	11.1	228	50	140	12.0	13.9	242	53	149	11.9	13.9	240
	Nuagaon (BA6)					 श्री एस. राना MEMBER SECRETARY कोयला विभाग MINISTRY OF COAL भारत सरकार GOVT. OF INDIA नई दिल्ली NEW DELHI									
Min.	38	107	8.6	10.7	206										
Max.	54	151	12.0	13.7	253										
Avg.	45	127	10.1	12.1	233										
98%tile	52	147	12.0	13.7	250										

Although all pollutants are generated during blasting and while operating diesel equipment, these will be kept at minimum levels by ensuring good blast design and good equipment maintenance. Adequate arrangement for water sprinkling has been planned to prevent and suppress dust due to mining and transportation. Part of the operations is proposed to be carried out by UG method, which is comparatively less polluting.

The control measures to be adopted are mentioned in the following paragraphs:

i. Controlling fugitive dust

Dust particles, which are normally generated during mining operation and transportation, deteriorate the ambient air quality. Adequate control measures are, therefore, proposed to be taken during mining operations, transportation and crushing/loading operations. These control measures are discussed as follows:

### Mines

- a) Dust suppression systems (like water spraying) will be adopted at:
  - Faces before and after blasting
  - Faces while loading
- b) Dust extraction systems will be used in drill machines and coal handling systems.
- c) Dust generation will also be reduced by using sharp drill bits for drilling holes, drills with flushing system.

### Haul roads and stock-piles

- Dust suppression system (like water spraying) would be adopted at roads, which are used for transportation. Fixed sprinklers (Whirling) have been proposed with timers to be installed along the haul roads and coal transportation roads to suppress the dust.
- Transport vehicles shall be maintained leak proof.
- Suitable dust suppression systems such as mist sprays with or without chemical will be provided at appropriate places for preventing dust pollution during handling and stockpiling of coal.
- Transfer points of coal will be provided with appropriate hoods/chutes to prevent fugitive dust emission.

### ii. Preventing dispersal of air borne dust

In addition to the control measures proposed during mining and transportation operations, following steps will be taken to prevent air pollution due to airborne dust:

- Dense tree belts will be planted around the mine and sites housing handling/ loading facilities.
- Plantation over already mined out area will be done after backfilling as per schedule (with minimum gap between excavation and afforestation)
- Dust masks will be provided as safety measure to the workers, engaged at dust generation points like drills, loading/unloading points, crushers etc.

### iii. Measures to mitigate CO levels

It has already been discussed that the concentration of CO in the ambient air is negligible and is far below the prescribed limit of CPCB and is not anticipated to exceed it in future. Still all heavy and light vehicles shall be tested for pollutants concentration in their exhausts regularly and well maintained. Strict vigil will be kept in and around the operational area for any fire which shall be immediately controlled.

iv. Measures to mitigate NO<sub>x</sub> levels

The main reasons of production of NO<sub>x</sub> gases are:

- a. Poor quality of explosive having large oxygen imbalance which can be due to following reasons:
  - Manufacturing defect
  - The use of expired explosives in which disintegration of ingredients has taken place.
- b. Incomplete detonation is caused mainly due to low primer: column ratio.

To ensure that NO<sub>x</sub> levels do not increase during the proposed mining operations, the following control measures will be adopted:

- a. Good quality explosives will be used for which the oxygen balance will be checked from time to time. The expired explosives will not be used for which a strict vigil will be kept on the date of manufacture. Even as a normal procedure, all explosives will be subjected to a visual inspection and if disintegrated ingredient are spotted, the explosives will not be used even if it is within expiry date.
- b. Primer: Column ratio will be rationalised. The ratio thus established, for producing minimum NO<sub>x</sub> will be adhered to.

The mine ambient air quality will be regularly tested to detect the presence of any pollutants above prescribed limits and appropriate measures will be adopted.

14.3.4 Waste management

a) Nature of top soil and overburden/waste

In this mine, main waste is overburden in the form of top soil, alluvium and weathered mantle. The area is mainly covered by thin cover of soil and alluvium ranging in thickness from 1.75 m to 8.55 m. Only 0.6m average thickness of top soil has been considered for separate removal and stacking for use in mine reclamation later.

Rock exposures are largely confined to seasonal nala sections. The strata being soft, the depth of the weathering ranges between 8.35m (CMSB-3) to 31.85m (CMSB-48) below the surface.

Only 0.6m average thickness of top soil has been considered for separate removal and stacking for use in mine reclamation later.

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b) *Year/stage wise waste generation*

The year/stage wise waste generation is given in Table 14.15.

**TABLE 14.15**  
**WASTE GENERATION (TOPSOIL & OVERBURDEN) IN M.CUM (BANK)**

Year	Excavated area (Ha.)	Topsoil generated	Pure OB generated	Total waste generated	
				Progressive	Cumulative
1 <sup>st</sup> year	7.67	0.05	1.78	1.83	1.83
2 <sup>nd</sup> year	12.53	0.08	3.00	3.08	4.91
3 <sup>rd</sup> year	7.10	0.04	1.98	2.02	6.93
4 <sup>th</sup> year	7.04	0.04	1.81	1.85	8.78
5 <sup>th</sup> year	7.20	0.04	1.80	1.84	10.62
Conceptual (23 yr.)	77.06	0.46	25.73	26.19	36.81
<b>Total</b>	<b>118.60</b>	<b>0.71</b>	<b>36.10</b>	<b>36.81</b>	

c) *Waste disposal sites*

There is one waste disposal site and one top soil disposal site as follows:

i. *The surface dump located inside the ML area*

The Surface dump of OB generated during the 1<sup>st</sup> year will be made on the non-forest zone over the opencast mining area within the block along the center of its boundary.

The height of the dump achieved will be 50m. This OB will be re-handled from the start of 6<sup>th</sup> year at a rate of 0.37 MCum per year.

ii. *Backfill dump*

Backfilling will start from 2<sup>nd</sup> year of the project operation with a quantity of 3.03 MCum, 2.02 MCum, 1.83 MCum and 1.83 MCum in 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup>, and 5<sup>th</sup> year respectively. The total generated OB will be simultaneously backfilled from 2<sup>nd</sup> year onwards (Refer Table 14.16).

iii. *Top soil dump*

The total topsoil generated {0.71 MCum} will be used for the development of mine will be stacked separately in a soil stack pile in non-forest area in the southern side of the block. It will be used for growing plants along the fringes of the site roads and reclamation of external dump and backfilled area. The top soil stockpiles will be low height not exceeding 3 m and will be grassed to retain fertility. Besides this topsoil stack, there would be temporary stacks near the excavation area and area to be reclaimed which will be made use of for concurrent filling without bringing the topsoil to the soil stack near the OB dump.

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d) *The void*

The remaining void area of the excavated pit will ultimately become a water reservoir, having a maximum depth of about 60 m. This void area will also be suitably sloped, bunded and fenced. The Conceptual plan and conceptual mine section have been shown in Plate XIX and Plate XX in the Mining Plan, which shows the final stage at the end of mine operations with external dump and final void.

The generation and disposal of total waste quantities for the life of mine are shown in Table 14.16.

TABLE 14.16  
WASTE DISPOSAL (PURE OB) IN MCUM (BANK) - PROGRESSIVE

Year	Total surface dump	Topsoil dump	Total backfill	Total bund	Total OB disposal
1 <sup>st</sup> year	1.78	0.02	0.00	0.00	1.80
2 <sup>nd</sup> year	0.00	0.03	3.01	0.00	3.03
3 <sup>rd</sup> year	0.00	0.04	1.98	0.00	2.02
4 <sup>th</sup> year	0.00	0.02	1.81	0.00	1.83
5 <sup>th</sup> year	0.00	0.03	1.80	0.00	1.83
Conceptual (23 <sup>rd</sup> Year)	0.00	0.58	25.73	0.00	26.31
<b>Total</b>	<b>1.78</b>	<b>0.71</b>	<b>34.31</b>	<b>0.00</b>	<b>36.81</b>
Rehandling in 6 <sup>th</sup> to 10 <sup>th</sup> year	-1.78	0	1.78	0	1.78
<b>Grand total</b>	<b>0</b>	<b>0.71</b>	<b>36.09</b>	<b>0.00</b>	<b>38.59</b>

## 14.3.5 Topsoil management

The average topsoil thickness over the whole pit area envisaged for mining is proposed to be removed to the extent of about 0.60 m. About 0.71 Mcum B of topsoil will have to be handled from areas to be excavated. About 0.14 Mcum stock (max.) of the topsoil will be kept over an area of 3.0 Ha. Extra generation of top soil will be utilised in two ways, part of the surplus top soil will be used for reclamation annually, whereas the rest will be stacked at pit head temporarily for consecutive laying over backfilling. Usually about 0.5 m thick layer of topsoil will be laid for afforestation. Topsoil availability and utilisation are shown in Table 14.17.

TABLE 14.17  
AVAILABILITY/REQUIREMENT OF TOPSOIL FOR RECLAMATION  
STAGES (MCUM) CUMULATIVE (LOOSE)

End of year	Top soil available	Topsoil utilised	Topsoil stack
1	0.053	0.02	0.04
2	0.139	0.05	0.09
3	0.188	0.09	0.10
4	0.237	0.12	0.12
5	0.287	0.15	0.14
Conceptual (23 <sup>rd</sup> )	0.82	0.82	0.00

### 14.3.6 Infrastructure

Bikram Block represents the northern contiguous area of the Karkati Sector of the Sohagpur Coalfield. The Bikram Block lies to the immediate north of the working Navgaon and Rajendra Mines of Sohagpur Area, SECL. The Shahdol-Amarkantak Highway No. 14 passes 7 km due NE of the block area. The block can be approached from this road by an all-weather feeder road. The nearest railway station is Burhar, on the Bilaspur-Katni Section of S.E. railway, it is located at a distance of about 9 km due NE of the Block. Baisaha nala flowing in the west and Nargara nala in the east constitute the main drainage of the area.

The only village falling within the block boundary is Bartara. Almost half of the block is covered by Burhar Reserve forest. Out of the remaining area, area in the western part of the block is covered by partially cultivated land.

Initially, the coal will be transported by road to Satna Cement Plant via Shahdol. Shahdol is 18 km from the block and Satna is 230 km from Shahdol.

Subsequently, the company intends to transport coal by railways by taking a siding at Burhar. The railway transportation distance to Satna will be about 285 km via Shahdol and Katni.

No approach road is required to be made from outside the block as a feeder road already exists. Any roads will only be internal roads i.e. roads inside the block. No new routes will be required to be created for transport. No diversion or closure of existing roads needed.

No transmission line will be required to be diverted. A power line of 11 KV will be drawn from Burhar sub station of MPSEB to the local sub-station from where the power will be supplied to the mine and other functional buildings. An emergency arrangement for power supply will be made by providing a set of 2x500 KVA DG sets which will take care of ventilation and pumping.

Infrastructure like canteen, first aid centre, rest shelter and site office will be available at site while the main facilities will be within the ML area.

It is a new proposed Greenfield project hence, there are no existing facilities of the mine within the ML area. Dismantling of some of the pit head facilities will only be involved in the post mining stage.

### 14.3.7 Disposal of mining machinery

It is a new proposed mine and hence any dismantling of the machinery will be involved only after exhausting the mine life. The machinery will be disposed of within 2 years after the OC operations cease.

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## 14.3.8 Safety and security

The life of the OC mine operations is 23 years. During the tenure of mining operations, the following safety precautions will be implemented:

- i. Erecting barbed wire fencing around the areas being excavated
- ii. Erecting barbed wire fencing around the areas being dumped
- iii. Erecting bunds/ toe walls around the surface dumps to prevent damage to property or injury to persons by rolling stones

After finishing the mining operations, all areas which will be inaccessible and dangerous (excavated, dumps etc) will be fenced. In the post mining scenario, proper approach to the water body will be made for men and animals and the route will be thrown open for the public.

## 14.4 ECONOMIC REPERCUSSIONS OF CLOSURE OF MINE AND MANPOWER RETRENCHMENT

Not applicable as it is a new proposed mine.

## 14.5 TIME SCHEDULING FOR ABANDONMENT

Not Applicable as it is a new proposed mine.

## 14.6 ABANDONMENT COST

Out of 239 ha area of ML, the following area as tabulated in Table 14.18 will be disturbed by various activities during the life of mine:

TABLE 14.18  
AREA TO BE DISTURBED BY MINING

Sl. No.	Description of area	Land use (Ha.)				
		Plantation	Water body	Public use	Undisturbed	Total
<b>I.</b>	<b>ML Area</b>					
8.	Top soil dump	3.00	0.00	0.00	0.00	3.00
9.	Surface dump	0.00	0.00	0.00	0.00	0.00
10.	a) Excavation	79.53	39.07	0.00	0.00	118.60
	b) Surface water reservoir	0.00	1.60	0.00	0.00	1.60
11.	Facilities	2.00	0.00	0.00	0.00	2.00
12.	Roads	0.00	0.00	3.00	0.00	3.00
13.	Green belt	6.89	0.00	0.00	0.00	6.89
14.	Undisturbed area by OC	0.00	0.00	0.00	103.91	103.91
	<b>Total</b>	<b>91.42</b>	<b>40.67</b>	<b>3.00</b>	<b>103.91</b>	<b>239.00</b>
<b>II</b>	<b>Out side the ML area</b>					
	Surface dump	0.00	0.00	0.00	0.00	0.00
	Facilities	0.00	0.00	0.00	0.00	0.00
	<b>Grand Total I +II</b>	<b>91.42</b>	<b>40.67</b>	<b>3.00</b>	<b>103.91</b>	<b>239.00</b>

The economic involvement will be as follows:

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In line with the Guidelines, it has been estimated by MOC that typically closure cost of an OC mine will be about Rs 6 lakhs / ha and of an UG mine it will be Rs 1 lakh/ ha.

The area disturbed by OC mining and related surface activities = (91.42 + 40.67 + 3.00) ha = 135.09 ha  
 The rest area used for UG mining = 103.91 ha  
 Total = 239.00 ha

Total cost to be deposited in Escrow account in 25 years (as the life of the OC mine will be 23 years and it will be 33 years including the UG operations) will be as follows:

For OC mining: 135.09 ha x Rs 6.0 lakhs = Rs 810.54 lakhs  
 For UG mining: 103.91 ha x Rs 1.0 lakh = Rs 103.91 lakhs  
 Total at base cost of Aug. 2009 = Rs 914.45 lakhs

The cost in the 1<sup>st</sup> year to be deposited = Rs 914.45 / 25 = Rs 36.58 lakhs

The cost to be deposited in every subsequent year will be 5% higher than the cost of the previous year and so on as follows:

Year	Amount to be deposited in Escrow Account ( Rs Lakhs)
1	36.58
2	38.41
3	40.33
4	42.35
5	44.46
6	46.69
7	49.02
8	51.47
9	54.05
10	56.75
11	59.58
12	62.56
13	65.69
14	68.98
15	72.43
16	76.05
17	79.85
18	83.84
19	88.03
20	92.44
21	97.06
22	101.91

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Year	Amount to be deposited in Escrow Account ( Rs Lakhs)
23	107.01
24	112.36
25	117.97
26	123.87
27	130.07
28	136.57
29	143.40
30	150.57
31	158.10
<b>Total</b>	<b>2513.44</b>


Thus the total amount which will be deposited upto the end of post mine closure plan will be Rs. 25.13 crores which will be used for technical and biological reclamation, landscaping, plantation, water coursing, dismantling of unwanted structures, creating safe and beautiful ambience etc

#### 14.7 FINANCIAL ASSURANCE

- i. The mining company shall open an Escrow account, with the Coal Controller Organisation (on behalf of the Central Govt.) as executive beneficiary. The mining company shall cause payments to be deposited in such Escrow account at the rate computed as indicated in table given above.
- ii. When implementation of the final mine closure scheme is undertaken by the mine owner starting 5 years before the scheduled closure of the mining operations, the Coal Controller may permit withdrawals (4 year before final mine closure date) from the Escrow account proportionate to the quantum of the work carried out as reimbursement. The withdrawn amount each year will not exceed 20% of the total amount deposited in the account.
- iii. An agreement, outlining the detailed terms and conditions of operating the Escrow account, shall be executed between the Mining company, Coal Controller and the concerned bank in order to give effect to this. The agreement will be executed before the grant of the permission by the Coal Controller to open the mine.

#### 14.8 RESPONSIBILITY OF THE MINE OWNER

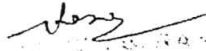
It is the responsibility of the mine owner to ensure that the protective measures contained in the Mine Closure Plan including reclamation and rehabilitation works have been carried out in accordance with the approved Mine Closure Plan and Final Mine Closure Plan.

  
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The owner shall submit an yearly report to the Coal Controller before 1<sup>st</sup> July of every year setting forth the extent of protective and rehabilitative works carried out as envisaged in the approved mine closure plan (Progressive and Post mine Closure Plan).

**14.9 PROVISION FOR MINE CLOSURE**

The mine owner will be required to obtain a mine closure certificate from Coal Controller to the effect that the protective, reclamation and rehabilitation works in accordance with the approved mine closure plan/ Final mine Closure Plan have been carried out by the mine owner for surrendering the reclaimed land to the State Govt. concerned.

  
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