

OFFICE OF THE DIVISIONAL FOREST OFFICER, KEONJHAR DIVISION

Ph. No. 06766-254315, Fax No. 06766-254315 E.mail- dfokjr.od@gov.in

No. 6502 / Mining

Dated, Keonjhar, the 20-10-2017

To

The General Manager,
Bolani Ore Mines (5.10 Sq Miles) of M/s SAIL
At/ P.O- Bolani, Dist- Keonjhar

Sub: Proposal for diversion of balance 87.09 ha of Sabik Kissam forest land as on 25.10.1980 in addition to already diverted forest land of 1225.78 ha for iron ore mining in their Bolani Ore Mines of 1321.45 Ha (5.10 sq miles) in Keonjhar district, Odisha by M/s Steel Authority of India Limited (SAIL).

X-Sub: Submission of compliance of Stage-I stipulations imposed by MoEF&CC, Govt. of India.

Ref: Letter No. 8-17/2016-FC dated 12.09.2017 of MoEF&CC, Govt. of India, and No. 20296/F&E dated 03.10.2017 of Special Secretary to Govt. of Odisha, Forest & Environment Department, Bhubaneswar (Copy enclosed).

Sir,

This is to apprise that Govt. of India, Ministry of Environment and Forests and Climate Change has accorded Stage-I approval in respect of the aforementioned project vide letter No. 8-17/2016-FC dated 12.09.2017 for diversion over 87.09 ha of Sabik Kissam forest land as on 25.10.1980 in addition to already diverted forest land of 1225.78 ha in respect of Bolani Ore Mines of M/s. M/s Steel Authority of India Limited subject to fulfillment of 28 no. of conditions. The letter No8-17/2016-FC dated 12.09.2017 of MoEF&CC, Govt. of India, and No. 20296/F&E dated 03.10.2017 of Special Secretary to Govt. of Odisha, Forest & Environment Department, Bhubaneswar is enclosed herewith for your reference. In addition, 3 nos. additional conditions have been imposed by the State Govt. F&E Department. In this context, you are requested to submit the compliance of the stipulation as aforementioned to this office at the earliest possible along with undertakings, documents and schemes as depicted hereunder against the conditions mentioned through the Range Officer, Barbil Range for necessary action at this end.

Conditions imposed vide Stage-I approval order	Required undertakings/ documents/ schemes
2(i), 2(vii), 2(xiii), 2(xiv), 2(xvii), 2(xviii), 2(xix), 2(xx), 2(xxi), 2(xxii), 2(xxvi), 2(xxvii), 2(xxviii)	Undertakings
2(iv), 2(vi), 2(x), 2(xi), 2(xii), 2(xv), 2(xvi), 2(xxiii) and additional condition of State Govt. (A), (B), (C)	Documents
2(ii), 2(iii), 2(viii) (a, b, c, d and e), 2(ix), 2(xxiv), 2(xxv)	Schemes
2(v)	Deposit of funds as per demand by this office

Encl: As above.

Yours faithfully,


Divisional Forest Officer,
Keonjhar Division.



स्टील अथॉरिटी ऑफ इण्डिया लिमिटेड
STEEL AUTHORITY OF INDIA LIMITED
रॉ मेटेरियल्स डिवीजन
RAW MATERIALS DIVISION
बोलानी अयस्क खदान
BOLANI ORES MINES

Ref.No : GM/B/HO-2213
Dt. - 22.12.2017

To

Divisional Forest Officer
Keonjhar

Through : The Forest Range Officer, Barbil Forest Range, Barbil

- Sub : Proposal for diversion of 87.09 ha. Land recorded as forest as on 25.10.1980 in addition to already diverted forest land of 1225.78 ha for iron ore mining in their Bolani Ore Mines of 1321.45 Ha (5.10 sq miles ML) in Keonjhar district of Odisha by M/s Steel Authority of India Limited(SAIL).
- X-Sub : Submission of compliance schemes and undertaking there of
- Ref : Memo 6503 dt 20.10.2017 of DFO Keonjhar

Sir,

In connection with the memo and reference cited above, this is to mention that necessary schemes/plans have already been prepared for the whole of 5.10 sq miles ML area and approved by RCCF Rourkela vide his Memo nos 135/3F(Dis-K)-218/2011 dt 17.01.2012 and memo no 30553F(Dis-K)-218/2011 dt 03.09.2012 and are under regular implementation , as follows :

- a) **Condition no.- viii(a)** : This condition is already complied . Already a scheme containing appropriate mitigative measures for minimizing soil erosion and choking of streams for the whole ML area with financial outlay of Rs.2,25,000,00/- has been technically approved by the RCCF, Rourkela vide his Memo nos 135/3F(Dis-K)-218/2011 dt 17.01.2012 and memo no 30553F(Dis-K)-218/2011 dt 03.09.2012 . The copy of the same is attached herewith . The scheme is under regular implementation . Out of the approved amount , an amount of Rs 186.17 Lakhs has been expended towards execution of the activities as mentioned in the approved scheme. The statement of expenditure and activities taken up were furnished in the Annual Self monitoring Reports and the proforma prescribed by DFO Keonjhar . Copy of the same is enclosed herewith vide Annexure - A (page 1 to 5).
- b) **Condition no.- viii(b)** : This condition is already complied . Already a scheme for Planting of adequate drought hardy plant species and sowing of seeds in the appropriate area within the mining lease to arrest soil erosion for the whole ML area with financial outlay of Rs.90,40,000/- has been technically approved by the RCCF, Rourkela vide his Memo nos 135/3F(Dis-K)-218/2011 dt 17.01.2012 and memo no 30553F(Dis-K)-218/2011 dt 03.09.2012 . The copy of the same is attached herewith . The scheme is under regular implementation . An amount of Rs. 262.99 Lakhs in excess of the approved amount has been expended towards execution of the activities as mentioned in the approved scheme. The statement of expenditure and activities taken up were furnished in the Annual Self monitoring Reports and the proforma prescribed by DFO Keonjhar . Copy of the same is enclosed herewith vide Annexure - A (page 5).

- c) **Condition no.- viii(c)** : This condition is already complied . Already a scheme for Construction of check dams, retention/toe walls to arrest sliding down of the excavated materials along the contour has been approved with a financial outlay of Rs.72,93,000/- by the RCCF, Rourkela vide his Memo nos 135/3F(Dis-K)-218/2011 dt 17.01.2012 and memo no 30553F(Dis-K)-218/2011 dt 03.09.2012 and an amount of Rs. 140.10 Lakhs in excess of the approved amount has been expended towards execution of the activities as mentioned in the approved scheme. The statement of expenditure and activities taken up were furnished in the Annual Self monitoring Reports and the proforma prescribed by DFO Keonjhar . Copy of the same is enclosed herewith vide Annexure - A (page 6 to 7).
- d) **Condition no.- viii(d)** : This condition is already complied . Already a Scheme for Stabilization of overburden dumps has been approved with a financial outlay of Rs.1,29,06,000/- by the RCCF, Rourkela vide his Memo nos 135/3F(Dis-K)-218/2011 dt 17.01.2012 and memo no 30553F(Dis-K)-218/2011 dt 03.09.2012 and an amount of Rs. 50.72 Lakhs out of the approved amount has been expended towards execution of the activities as mentioned in the approved scheme and job amounting to Rs 43.47 lakhs is already in progress . The statement of expenditure and activities taken up were furnished in the Annual Self monitoring Reports and the proforma prescribed by DFO Keonjhar . Copy of the same is enclosed herewith vide Annexure - A (page 7 to 8).
- e) **Condition no.- viii(e)** : This condition is already complied . Already a Scheme for management of Top Soil has been prepared and approved with a financial outlay of Rs. 56,24,951/- by the RCCF, Rourkela vide his Memo nos 135/3F(Dis-K)-218/2011 dt 17.01.2012 and memo no 30553F(Dis-K)-218/2011 dt 03.09.2012 . The Top Soil obtained from the earlier mined out area has been used up in plantation and reclamation of back filled area for afforestation and there is no Top Soil left at present as mining is continuing in already excavated areas .
- f) **Condition no.- ix** : This condition is already complied . A Scheme for fencing, protection and afforestation of the safety zone area (7.5 meter strip all along the boundary of the area within ML over 12.80 ha. including sabik forest treated as non forest in HAL records) has been approved with a financial outlay of Rs 343.52 Lakhs by the RCCF, Rourkela vide his Memo nos 135/3F(Dis-K)-218/2011 dt 17.01.2012 and memo no 30553F(Dis-K)-218/2011 dt 03.09.2012 . Out of the approved amount , an amount of Rs. 110.76 Lakhs has been expended towards execution of the activities as mentioned in the approved scheme . The statement of expenditure and activities taken up were furnished in the Annual Self monitoring Reports and the proforma prescribed by DFO Keonjhar . Copy of the same is enclosed herewith vide Annexure - A (page 9 to 10). The scheme is under regular implementation and further actions are being taken for implementation of remaining items.
- g) **Condition no.- xxiv** : This condition is already complied . A Scheme for gap planting and soil & moisture conservation activities to restock and rejuvenate the degraded open forest around the ML area has been approved with a financial outlay of Rs 93.48 Lakhs by the RCCF, Rourkela vide his Memo nos 135/3F(Dis-K)-218/2011 dt 17.01.2012 and memo no 30553F(Dis-K)-218/2011 dt 03.09.2012 . An amount of Rs. 140.35 Lakhs in excess of the approved amount

has been expended towards execution of the activities as mentioned in the approved scheme. The statement of expenditure and activities taken up were furnished in the Annual Self monitoring Reports and the proforma prescribed by DFO Keonjhar. Copy of the same is enclosed herewith vide Annexure - A (page 10 to 11).

- h) **Condition no. – xxv** : A Scheme for De-silting of village tanks within 5 km around the ML area has been approved with a financial outlay of Rs 55.00 Lakhs by the RCCF, Rourkela vide his Memo nos 135/3F(Dis-K)-218/2011 dt 17.01.2012 and memo no 30553F(Dis-K)-218/2011 dt 03.09.2012. An amount of Rs. 37.20 Lakhs out of the approved amount has been expended towards execution of the activities as mentioned in the approved scheme. The statement of expenditure and activities taken up were furnished in the Annual Self monitoring Reports and the proforma prescribed by DFO Keonjhar . Copy of the same is enclosed herewith vide Annexure - A (page 11). The scheme is under regular implementation and further actions are being taken for implementation of remaining items .

The copy of the above said approval letter of RCCF Rourkela and copies of submission of statement of expenditure and details of implementation furnished in the proforma prescribed by DFO Keonjhar along with necessary undertaking are submitted herewith for compliance of the concerned conditions of Stage-I grant order of MoEF & CC,GOI , as stipulated vide memo under reference . We request you to kindly forward the above compliance . for further necessary action .

Thanking you,

Yours faithfully,

General Manager(M)
Bolani Ores Mines, M/s SAIL

महाप्रबंधक (खनन) / General Manager (Mines)
सेल - आर एम डी - बोलानी-अयस्क खदान
SAIL-RMD-Bolani Ores Mines
बोलानी-758 037, कर्णहार, ओडीशा
Bolani-758 037, Keonjhar, Odisha

Encls.: compliance schemes, documents.

OFFICE OF THE FOREST RANGE OFFICER BARBIL RANGE, BARBIL

Memo No 770 / Date 22-12-2017

To,

The Divisional Forest Officer,
Keonjhar Division, Keonjhar

Sub: -

Proposal for diversion of 87.09 ha. Land recorded as forest as on 25.10.1980 in addition to already diverted forest land of 1225.78 ha for iron ore mining in their Bolani Ore Mines of 1321.45 Ha (5.10 sq miles ML) in Keonjhar district of Odisha by M/s Steel Authority of India Limited(SAIL).

X-Sub

Submission of compliance of Stage-I stipulations imposed by MOEF & CC Govt of India

Ref

Your memo no- 6503 dt 20.10.2017

Sir,

On the captioned subject in obedience to your memo under reference, I am to report your good self that the General Manager (M) , Bolani Ore Mines of M/s SAIL , vide his letter no GM/B/HD-2213 dt 22.12.2017 has sub mitted the compliances & schemes against the conditions imposed vide Stage-I approval order of MOEF&CC, Govt of India vide their letter no- 8-17/2016 - FC dt 12.09.2017, for diversion of 87.09 ha Sabik kisam forest land as on 25.10.1980 in addition to already diverted Forest Land of Bolani Ores Mines of M/s SAIL .

Now I am enclosing herewith the said letter of user agency with the required compliance, schemes and undertaking for favour of your perusal and necessary action at your end .

Yours faithfully,

[Signature]
22/12/2017
Forest Range Officer
Barbil Range

Encls : As above

Received
[Signature]
22/12/2017
O/o the Divisional Forest Officer
Keonjhar Division

**COMPLIANCE OF CONDITIONS OF STAGE-I GRANT ORDER VIDE F. NO. 8-17/2016-FC DT.12.09.2017
FOR DIVERSION OF 87.09 HA SABIK KISAM FOREST LAND WITHIN 5.10 sq MILES ML OF BOLANI
ORES MINES, M/S SAIL**

Sl. No.	CONDITION	COMPLIANCE
I	Legal status of the diverted forest land shall remain unchanged	Legal status of the diverted forest land is not changed. An undertaking to this effect is attached as Annexure-I .
II	Compensatory afforestation over the degraded forest land, twice in extent to the area of forest land proposed to be diverted shall be raised on the identified forest land within a period of three years with effect from the date of issue of Stage-II clearance and maintained thereafter in accordance with the approved Plan in consultation with the State Forest Department at the cost of the user agency;	Degraded forest land over 169.72 ha., twice in extent of 84.86 ha. of virgin forest land being diverted, has been identified in 2 RFs viz. 70.72 ha DFL within Gurhiali Reserve Forest & 99.0 ha DFL within Chhatam RF of Rajgangpur Forest Range of Rourkela Forest Division and the said area was surveyed, demarcated in field by posting RCC Pillars and map was prepared and submitted to MoEF & CC, GOI along with necessary shape files. The site specific Compensatory Afforestation scheme has been technically approved by Addl. PCCF, Forest Diversion and Nodal Officer, FC Act vide his memo no. 24140 dated 13.11.2017.
III	Additional degraded forest land of 5.18 ha as CA land along with shape files shall be provided and the plantation area in the 169.00 ha of CA land may be excluded and equivalent additional degraded forest area shall be submitted for CA	Additional Degraded forest land over 5.18 ha has been identified in Rebena Reserved Forest of Brahmanipala Forest Range of Keonjhar WL Division, Anandapur. Site Specific CA scheme over 5.18 ha DFL prepared at a cost of Rs 21,01,090/- has been forwarded to DFO Keonjhar vide memo no 3346 dt 12.12.2017 of DFOKeonjhar(WL) Division Anandpur wherein with Maps with Key Plans on SOI Toposheet of 1:50,000 Scale along with shapefiles were also attached. The plantation area to the extent of 3.3 Ha in the Gudiali RF (out of 169.72ha of CA land) has been excluded and equivalent degraded forest land has been identified in the adjoining area within same Gudiali RF of Rajgangpur Forest Range of Rourkela Forest Division. The map along with GPS co-ordinates and shapefiles of the equivalent degraded forest land has been forwarded to DFO Keonjhar Division vide memo no 7751/4F dt 01/12/2017 of DFO Rourkela.
IV	The land identified for the purpose of CA shall be clearly depicted on a Survey of India topo-sheet of	The land identified for the purpose of CA has been clearly depicted on the SOI topo-

**COMPLIANCE OF CONDITIONS OF STAGE-I GRANT ORDER VIDE F. NO. 8-17/2016-FC DT.12.09.2017
FOR DIVERSION OF 87.09 HA SABIK KISAM FOREST LAND WITHIN 5.10 sq MILES ML OF BOLANI
ORES MINES, M/5 SAIL**

Sl. No.	CONDITION	COMPLIANCE
	1:50000 scale	sheet of 1:50,000 scale as key plan on the submitted map of CA Land . Copy of the same is attached as Annexure – II .
V	The User Agency shall transfer the cost of raising and maintaining the compensatory afforestation at the current wage rate in consultation with State Forest Department in the account of Ad-hoc CAMPA of the concerned State through online portal. The scheme may include appropriate provision for anticipated cost increase for works scheduled for subsequent years	The cost of raising and maintaining compensatory afforestation as per the approved scheme amounting to Rs 2,20,64,000.00/- (Two Crores Twenty Lakhs Sixty Four Thousand only) has been transferred through online portal in the account of Ad-hoc CAMPA vide e-PayOrder Number CNAAGSPFD8 on 21-Dec-2017 i.e ORRISA CAMPA/1S0825817936563, FCS BANGALORE / FCS BANGALORE/CORP0000633, UTR no-SBIN617355279824 . The copy of proof of deposition of amount is enclosed as Annexure-III .
VI	The User Agency shall transfer online, the Net Present Value (NPV) of the forest land being diverted under this proposal, as per the orders of the Hon'ble Supreme Court of India dated 28.03.2008, 24.04.2008 and 09.05.2008 in Writ Petition (Civil) No. 202/1995 and the guidelines issued by this Ministry vide its letter No. 5-3/2007-FC dated 05.02.2009. The requisite funds shall be transferred through online portal into Ad-hoc CAMPA account of the State Concerned	Net Present Value (NPV) amounting to Rs 6,35,75,700/- (i.e. Six Crores Thirty Five Lakhs Seventy Five Thousand Seven Hundred only) for the 87.09 ha land recorded as forest as on/after 25.10.1980 within the 5.10 sq. miles ML has been deposited as per applicable rate of Rs. 7.30 lakhs per ha in RTGS/NEFT , by the thenprevailing mode in Compensatory Afforestation Fund (CAF), Orissa SB Accounts no - 344902010105428 of UNION Bank of India, Sunder Nagar New Delhi-110003, IFSC No - UBIN 0534498 on 08.03.2016 through UTR No SBINR5201630826953046 . This is worthwhile to mention that Net Present Value (NPV) of entire forest land of 1225.78 ha in the mining lease as per applicable rate of Rs. 7.30 lakhs per ha amounting to Rs. 89,48,19,400/- was deposited in favour of the designated Adhoc-CAMPA Account No.1S8S in Corporation Bank, Lodhi Road, New Delhi vide Cheque No.597654 dt. 8.4.2010 for Rs. 76,73,38,280/- and Cheque No. S97672 dt. 3.7.2010 for Rs.12,74,81,120.
VII	At the time of payment of the Net Present Value (NPV) at the then prevailing rate, the User	An undertaking to this effect is attached as

**COMPLIANCE OF CONDITIONS OF STAGE-I GRANT ORDER VIDE F. NO. 8-17/2016-FC DT.12.09.2017
FOR DIVERSION OF 87.09 HA SABIK KISAM FOREST LAND WITHIN 5.10 sq MILES ML OF BOLANI
ORES MINES, M/S SAIL**

Sl. No.	CONDITION	COMPLIANCE
	Agency shall furnish an undertaking to pay the additional amount of NPV, if so determined, as per the final decision of the Hon'ble Supreme Court of India .	Annexure-I.
VIII	Following activities shall be undertaken by the user agency at the project cost and appropriate cost of the plan/scheme shall be deposited in Adhoc CAMP A Account	<p>The desired compliance has been complied with in respect of the same conditions stipulated in Stage-I and Stage-II approval order of MoEF & CC,GOI for diversion of 122S.78 ha forest land . Necessary Technical Plans/schemes have already been prepared for the activities stipulated below for the 5.10sqmiles ML, with provision of fund for for implementation at Project cost by Bolani Ores Mines,M/sSAIL and approved by RCCF Rourkela vide his Memo nos 13S/3F(Dis-K)-218/2011 dt 17.01.2012 and memo no 30S53F(Dis-K)-218/2011 dt 03.09.2012. Copies of approvals are attached .</p> <p>The schemes are under regular implementation by Bolani Ores Mines, M/s SAIL as follows :</p>
a	Mitigative measures to minimize soil erosion and choking of stream shall be implemented within a period of three year with effect from the issue of Stage-II clearance in accordance with the approved Plan in consultation with the State Forest Department	<p>This condition is already under compliance . A scheme containing appropriate mitigative measures for minimizing soil erosion and choking of streams for the whole ML area with financial outlay of Rs.2,25,000,00/- has been technically approved by the RCCF, Rourkela vide his Memo nos 135/3F(Dis-K)-218/2011 dt 17.01.2012 and memo no 30S53F(Dis-K)-218/2011 dt 03.09.2012 . The copy of the same is attached herewith in Annexure – IV(A) . The scheme is under regular implementation . Out of the approved amount, an amount of Rs 186.17 Lakhs has been expended towards execution of the activities as mentioned in the approved scheme. The statement of expenditure and activities taken up were furnished in the Annual Self monitoring Reports and the proforma prescribed by DFO Keonjhar . Copy of the same is enclosed herewith vide Annexure - A (page 1 to 5).</p>

**COMPLIANCE OF CONDITIONS OF STAGE-I GRANT ORDER VIDE F. NO. 8-17/2016-FC DT.12.09.2017
FOR DIVERSION OF 87.09 HA SABIK KISAM FOREST LAND WITHIN 5.10 sq MILES ML OF BOLANI
ORES MINES, M/S SAIL**

Sl. No.	CONDITION	COMPLIANCE
b	Planting of adequate drought hardy plant species and sowing of seeds, in the appropriate area within the mining lease to arrest soil erosion in accordance with the approved scheme	This condition is already under compliance . A scheme for Planting of adequate drought hardy plant species and sowing of seeds in the appropriate area within the mining lease to arrest soil erosion for the whole ML area with financial outlay of Rs.90,40,000/- has been technically approved by the RCCF, Rourkela vide his Memo nos 135/3F(Dis-K)-218/2011 dt 17.01.2012 and memo no 30553F(Dis-K)-218/2011 dt 03.09.2012 . The copy of the same is attached herewith in Annexure – IV(B) . The scheme is under regular implementation . An amount of Rs. 262.99 Lakhs in excess of the approved amount has been expended towards execution of the activities as mentioned in the approved scheme. The statement of expenditure and activities taken up were furnished in the Annual Self monitoring Reports and the proforma prescribed by DFO Keonjhar . Copy of the same is enclosed herewith vide Annexure - A (page 5) .
c	Construction of check dams, retention /toe walls to arrest sliding down of the excavated material along the contour in accordance with the approved scheme	This condition is already under compliance . A scheme for Construction of check dams, retention/toe walls to arrest sliding down of the excavated materials along the contour has been approved with a financial outlay of Rs.72,93,000/- by the RCCF, Rourkela vide his Memo nos 135/3F(Dis-K)-218/2011 dt 17.01.2012 and memo no 30553F(Dis-K)-218/2011 dt 03.09.2012 . The copy of the same is attached herewith in Annexure – IV(C) . An amount of Rs. 140.10 Lakhs in excess of the approved amount has been expended towards execution of the activities as mentioned in the approved scheme. The statement of expenditure and activities taken up were furnished in the Annual Self monitoring Reports and the proforma prescribed by DFO Keonjhar . Copy of the same is enclosed herewith vide Annexure - A (page 6 to 7) .
d	Stabilize the overburden dumps by appropriate grading/benching, in accordance	This condition is already under compliance . A Scheme for Stabilization of overburden

**COMPLIANCE OF CONDITIONS OF STAGE-I GRANT ORDER VIDE F. NO. 8-17/2016-FC DT.12.09.2017
FOR DIVERSION OF 87.09 HA SABIK KISAM FOREST LAND WITHIN 5.1D sq MILES ML OF BOLANI
ORES MINES, M/S SAIL**

Sl. No.	CONDITION	COMPLIANCE
	with the approved scheme, so as to ensure that angles of repose at any given place is less than 28 degree; and	dumps has been approved with a financial outlay of Rs.1,29,06,000/- by the RCCF, Rourkela vide his Memo nos 135/3F(Dis-K)-218/2011 dt 17.01.2012 and memo no 30553F(Dis-K)-218/2011 dt 03.09.2012 . The copy of the same is attached herewith in Annexure – IV(D) . An amount of Rs. 50.72 Lakhs out of the approved amount has been expended towards execution of the activities as mentioned in the approved scheme and job amounting to Rs 43.47 lakhs is already in progress . The statement of expenditure and activities taken up were furnished in the Annual Self monitoring Reports and the proforma prescribed by DFO Keonjhar . Copy of the same is enclosed herewith vide Annexure - A (page 7 to 8) .
e	No damage shall be caused to the top-soil and the user agency will follow the top soil management plan	This condition is already under compliance . A Scheme for management of Top Soil has been prepared and approved with a financial outlay of Rs. 56,24,951/- by the RCCF, Rourkela vide his Memo nos 135/3F(Dis-K)-218/2011 dt 17.01.2012 and memo no 30553F(Dis-K)-218/2011 dt 03.09.2012 . The copy of the same is attached herewith in Annexure – IV(E) . The Top Soil obtained from the earlier mined out area has been used up in plantation and reclamation of back filled area for afforestation and there is no Top Soil left at present as mining is continuing in already excavated areas .
IX	Fencing, protection and regeneration of the safety zone area [7.5 meters strip shall be kept within the mining lease boundary and area of the safety zone shall be part of the total area of mining lease as per the Ministry's guidelines dated 27.05.2015) shall be done within three year at the project cost from the issue of Stage-II Clearance. Besides this afforestation on degraded forest land to be selected elsewhere measuring one & a half times the area under safety zone shall also be done at the project cost; The degraded forest land (DFL) so selected	The desired compliance has been complied with in respect of the same conditions stipulated in Stage-I and Stage-II approval order for diversion of 1225.78 ha forest land. A Scheme for fencing, protection and afforestation of the safety zone area (7.5 meter strip all along kept within the mining lease boundary) has been approved with a financial outlay of Rs 343.52 Lakhs by the RCCF, Rourkela vide his Memo nos 135/3F(Dis-K)-218/2011 dt 17.01.2012 and memo no 30553F(Dis-K)-218/2011 dt

**CDMPLIANCE OF CDNDITIONS DF STAGE-I GRANT ORDER VIDE F. NO. 8-17/2016-FC DT.12.09.2017
FDR DIVERSION OF 87.09 HA SABIK KISAM FOREST LAND WITHIN 5.10 sq MILES ML OF BOLANI
ORES MINES, M/S SAIL**

Sl. No.	CONDITION	COMPLIANCE
	will be informed to the MOEF & CC with shape files and afforestation will be done within three years from the date of Stage-II clearance and maintained thereafter in accordance with the approved Plan in consultation with the State Forest Department	<p>03.09.2012 . The copy of the same is attached herewith in Annexure – IV(F). Out of the approved amount , an amount of Rs. 110.76 Lakhs has been expended towards execution of the activities as mentioned in the approved scheme .</p> <p>The statement of expenditure and activities taken up were furnished in the Annual Self monitoring Reports and the proforma prescribed by DFO Keonjhar . Copy of the same is enclosed herewith vide Annexure - A (page 9 to 10). The scheme is under regular implementation and further actions are being taken for implementation of remaining items.</p>
X	Period of diversion of the said forest land under this approval shall be for a period co-terminus with the period of the mining lease proposed to be granted under the MMDR Amendment Act, 2015, as amended and the Rules framed there-under	The 1 st RML was granted for 20 years from 10.04.1990 to 09.04.2010 vide letter No. III (A) SM-1/97-10731/SM, Bhubaneswar dated 25.11.1999. The 2nd renewal has also been granted for a period of 20 years with effect from 11-04-2010 till 10-04-2030 vide express order no III(A)SM-1/97-10731/SM. Bhubaneswar dated 29-05-2014. The 2 nd R.M.L Deed was executed on 14-11-2014. Hence Period of diversion of 87.09 Ha the said forest land under this approval shall be co-terminus with the 2nd renewal period for a period of 20 years with effect from 11-04-2010 till 10-04-2030. An undertaking to this effect is attached as Annexure-I.
XI	Any fund received from the user agency under the project and deposited in the State Forest Department account, except the funds realized for regeneration/ demarcation of safety zone, shall be transferred through online portal into Ad-hoc CAMPA account of the State Concerned	Noted. Documents to this effect are enclosed as Annexure-III.
XII	The User Agency shall obtain the Environment Clearance as per the provisions of the Environmental (Protection) Act, 1986, if required .	Environmental clearance has been obtained as per provisions of EP Act, 1986 vide letter No. J-11015/418/2008 - IA II (M) dated 21.12.2012 for enhanced production of Iron Ore up to 12.0 MTPA. The same is enclosed as Annexure-V.

**COMPLIANCE OF CONDITIONS OF STAGE-I GRANT ORDER VIDE F. NO. 8-17/2016-FC DT.12.09.2017
FOR DIVERSION OF 87.09 HA SABIK KISAM FOREST LAND WITHIN 5.10 sq MILES ML OF BOLANI
ORES MINES, M/S SAIL**

Sl. No.	CONDITION	COMPLIANCE
XIII	No labour camp shall be established on the forest land	An undertaking to this effect is attached as Annexure-I
XIV	The User Agency shall provide fuels preferably alternate fuels to the labourers and the staff working at the site so as to avoid any damage and pressure on the nearby forest areas	The alternative fuel such as , Fire wood requirement for the contractual labourers is met with from the depot of OFDC Ltd at the project cost. Till date 1348 quintals of firewood has been distributed among local labourers free of cost at an expenditure of Rs 5.17 lakhs. The effort will be continued in future. An undertaking to this effect is attached as Annexure-I .
XV	The boundary of the, as applicable, shall be demarcated on ground at the project cost, by erecting four feet high reinforced cement concrete pillars, each inscribed with its serial number, distance from pillar to pillar and GPS co-ordinates	Bolani Ore Mines has already demarcated the boundary of forest land to be diverted, mining lease and safety zone in the field by erecting four feet high RCC pillars and serial number, GPS coordinates and forward & backward bearings has been inscribed on the pillars .
XVI	The User Agency shall undertake mining in a phased manner after taking due care for reclamation of the mined over area. The concurrent reclamation plan as per the approved mining plan shall be executed by the User Agency from the very first year, and an annual report on implementation thereof shall be submitted to the Nodal Officer, Forest (Conservation) Act, 1980, in the concerned State Government and the concerned Regional Office of the Ministry. If it is found from the annual report that the activities indicated in the concurrent reclamation plan are not being executed by the User Agency, the Nodal Officer or the Addl. Pr. Chief Conservator of Forests (Central) may direct that the mining activities shall remain suspended till such time, such reclamation activities area satisfactorily executed	No mining of Ore is being undertaken in the sabik kisam forest land within the 5.10 sq. mile ML. Concurrent reclamation plan in respect of 87.09 ha sabik kisam forest land was prepared and enclosed in DRP. An undertaking for implementation of the same is enclosed as Annexure – I(A) .
XVII	The layout plan of the mining plan/ proposal shall not be changed without the prior approval of the Central Government	Agreed. An undertaking to this effect is attached as Annexure-I .
XVIII	The forest land shall not be used for any purpose other than that specified in the proposal	Agreed. An undertaking to this effect is attached as Annexure-I .
XIX	The forest land proposed to be diverted shall under no circumstances be transferred to any	Agreed. An undertaking to this effect is attached as Annexure-I .

**COMPLIANCE OF CONDITIONS OF STAGE-I GRANT ORDER VIDE F. NO. 8-17/2016-FC DT.12.09.2017
FOR DIVERSION OF 87.09 HA SABIK KISAM FOREST LAND WITHIN 5.10 sq MILES ML OF BOLANI
ORES MINES, M/S SAIL**

Sl. No.	CONDITION	COMPLIANCE
	other agency, department or person without prior approval of the Central Government	
XX	No damage to the flora and fauna of the adjoining area shall be caused	Agreed. An undertaking to this effect is attached as Annexure-I .
XXI	Any tree felling shall be done only when it is unavoidable and that too under strict supervision of the State Forest Department	Agreed. An undertaking to this effect is attached as Annexure-I .
XXII	The user agency will abide by the applicable recommendations of the State Government	Agreed. An undertaking to this effect is attached as Annexure-I .
XXIII	The State Government shall complete settlement of rights, in terms of the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006, if any, on the forest land to be diverted and submit the documentary evidence as prescribed by this Ministry in its letter No. 11-9/1998-FC (pt.) dated 03.08.2009 read with 05.07.2013, in support thereof	<p>The formalities for complete compliance of settlement of rights, in terms of the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006, has been completed for the sabik forest land to be diverted .</p> <p>The certificate of Collector, Keonjhar is awaited .</p>
XXIV	User agency either himself or through the State Forest Department shall undertake gap planting and soil & moisture conservation activities to restock and rejuvenate the degraded open forests (having crown density less than 0.40), if any, located in the area within 100 m. from outer perimeter of the mining lease. The plan for plantation and SMC activities will be prepared and submitted to MoEF &CC before Stage-II Clearance	<p>The desired compliance has been complied with in respect of the same condition stipulated in Stage-I and Stage-II approval order for diversion of 1225.78 ha forest land . A Scheme for gap planting and soil & moisture conservation activities to restock and rejuvenate the degraded open forest around the ML area has been approved with a financial outlay of Rs 93.48 Lakhs by the RCCF, Rourkela vide his Memo nos 13S/3F(Dis-K)-218/2011 dt 17.01.2012 and memo no 30SS3F(Dis-K)-218/2011 dt 03.09.2012 . The copy of the same is attached herewith in Annexure – IV(G). An amount of Rs. 140.35 Lakhs in excess of the approved amount has been expended towards execution of the activities as mentioned in the approved scheme. The statement of expenditure and activities taken up were furnished in the Annual Self monitoring Reports and the proforma prescribed by DFO Keonjhar. Copy of the same is enclosed herewith vide Annexure - A (page 10 to 11).</p>
XXV	The User Agency shall prepare a list of existing village tanks and other water bodies with GPS	The desired compliance has been complied with in respect of the same condition

**COMPLIANCE OF CONDITIONS OF STAGE-I GRANT ORDER VIDE F. NO. 8-17/2016-FC DT.12.09.2017
FOR DIVERSION OF 87.09 HA SABIK KISAM FOREST LAND WITHIN 5.10 sq MILES ML OF BOLANI
ORES MINES, M/S SAIL**

Sl. No.	CONDITION	COMPLIANCE
	co-ordinates located within five km from the mine lease boundary. This list is to be duly verified by the concerned Divisional Forest Officer. The User Agency shall regularly undertake desilting of these village tanks and other water bodies so as to mitigate the impact of siltation of such tanks/water bodies A detailed plan for desilting of identified ponds and water bodies to be prepared in consultation with forest department and shall be submitted to MoEF & CC before Stage-II approval	stipulated in Stage-I and Stage-II approval order for diversion of 1225.78 ha forest land. A Scheme for De-silting of village tanks within 5 km around the ML area has been approved with a financial outlay of Rs 55.00 Lakhs by the RCCF, Rourkela vide his Memo nos 135/3F(Dis-K)-218/2011 dt 17.01.2012 and memo no 30553F(Dis-K)-218/2011 dt 03.09.2012. The copy of the same is attached herewith in Annexure – IV(H) . An amount of Rs. 37.20 Lakhs out of the approved amount has been expended towards execution of the activities as mentioned in the approved scheme. The statement of expenditure and activities taken up were furnished in the Annual Self monitoring Reports and the proforma prescribed by DFO Keonjhar . Copy of the same is enclosed herewith vide Annexure - A (page 11) . The scheme is under regular implementation and further actions are being taken for implementation of remaining items.
XXVI	The User Agency shall submit the annual self - compliance report in respect of the above stated conditions to the State Government, concerned Regional Office and to this Ministry by the end of March every year	Agreed. An undertaking to this effect is attached as Annexure- I.
XXVII	Any other condition that the concerned Regional Office of this Ministry may stipulate, from time to time, in the interest of conservation, protection and development of forests & wildlife; and	Agreed.. An undertaking to this effect is attached as Annexure-I.
XXVIII	The user agency shall comply all the provisions off the all Acts, Rules, Regulations, Guidelines, Hon'ble Court Order (s) and National Green Tribunal Order(s) pertaining to this project, if any, for the time being in force, as applicable to the project	Agreed. An undertaking to this effect is attached as Annexure- I.

**GENERAL MANAGER
BOLANI ORES MINES, M/s SAIL**

महाप्रबंधक (खनन) / General Manager (Mines)
सेल - आर एम डी - बोलानी-उदयखंड खदान
SAIL-RMD-Bolani Ores Mines
बोलानी-758 037, क्वॉइर, ओड़ीसा
Bolani-758 037, Keonjhar, Odisha

**COMPLIANCE OF ADDITIONAL CONDITIONS IMPOSED BY
FOREST & ENVIRONMENT DEPARTMENT, GOVERNMENT OF ODISHA**

Sl. No.	CONDITION	COMPLIANCE
A	Details of benefit to be accrued for this project (as shown in C: B Ratio) shall be given.	Details of benefit to be accrued for this project is as enclosed in DRP ,at Annexure-VI
B	The Collector, Keonjhar shall furnish the complete compliance of FRA guidelines pertaining 87 .09 ha of Sabik kisarn forest land of the ML area.	The complete compliance of settlement of rights, in terms of the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006, if any, on the forest land to be diverted will be taken up and the documentary evidence as prescribed by this Ministry in its letter No.11-9/1998-FC (pt.) dated 03.08.2009 read with 05.07.2013, in support thereof will be submitted by the State Government. To this effect the letter of The Collector Keonjhar vide No2475 Dt.28.11.2016 is attached as Annexure-XXX
C	Signed hard copy of Part I of the application from shall be furnished by user agency.	Signed hard copy of Part I of the application was already furnished in DRP , is enclosed as Annexure-VII .


GENERAL MANAGER
BOLANI ORES MINES, M/s SAIL
 महाप्रबंधक (खनन) / General Manager (Mines)
 सेल - आर एम डी - बोलानी - अयस्क खदान
 SAIL-RMD-Bolani Ores Mines
 बोलानी-758 037, ब्लॉक, ओडीशा
 Bolani-758 037, Keonjhar, Odisha

Annexure-I



स्टील अथॉरिटी ऑफ इण्डिया लिमिटेड
STEEL AUTHORITY OF INDIA LIMITED
रॉ मटेरियल्स डिवीजन
RAW MATERIALS DIVISION
बोलानी अयस्क खदान
BOLANI ORES MINES

Date: 21.12.2017

UNDERTAKING

I, on behalf of Bolani Ores Mines, M/s SAIL, hereby undertake to comply the following conditions as stipulated in Stage-I FC Order vide F.No.8-17/2016-FC Dt.12.09.2017 granted by MoEF & CC,GOI:

1. That the legal status of diverted Forest land will remain unchanged.
2. That the additional amount of Net Present Value(NPV), if so determined, as per the final decision of Hon'ble Supreme Court of India shall be paid by Bolani Ores Mines, M/s SAIL to the State Govt. of Odisha.
3. That no labour camp will be established on the above forest land.
4. That alternate fuels will be provided to the labourers and staff of BOM working at the site so as to avoid any damage and pressure on the nearby forest areas.
5. That no Changes in layout plan of the mining plan/ proposal shall be done without prior approval of the Central Government.
6. That the forest land will not be used for any purpose other than that specified in the proposal.
7. That the forest land proposed to be diverted will not be transferred to any other agency, department or person without prior approval of the Central Government.
8. That no damage to the flora and fauna of the adjoining area will be caused.
9. That any tree felling will be done only when it is unavoidable and that too under strict supervision of the Odisha State Forest Department.
10. That Bolani Ores Mines will abide by the applicable recommendations of the Odisha State Government.
11. That the annual self - compliance report in respect of the conditions stipulated in the Stage-I FC Grant Order will be submitted to the State Government, concerned Regional Office and to the Ministry by the end of March every year.
12. That additional conditions stipulated by Regional Office of Ministry, from time to time, in the interest of conservation, protection and development of forests & wildlife will be complied.
13. That Bolani Ores Mines shall comply all the provisions of the all Acts, Rules, Regulations, Guidelines, Hon'ble Court Order(s) and National Green Tribunal Order(s) pertaining to the project, if any, for the time being in force, as applicable to the project.

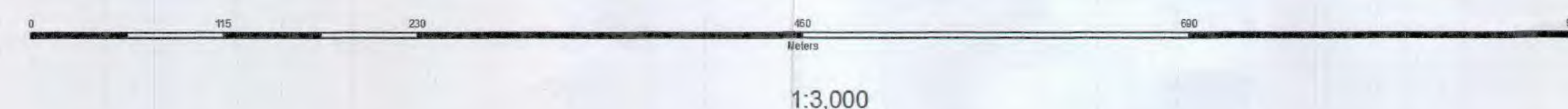
General Manager(M)

Bolani Ores Mines, M/s SAIL
महाप्रबंधक (खनन) / General Manager (Mines)
सेल - आर एम डी - बोलानी-अयस्क खदान
SAIL-RMD-Bolani Ores Mines
बोलानी-758 037, क्योझर, ओड़ीसा
Bolani-758 037, Keonjhar, Odisha

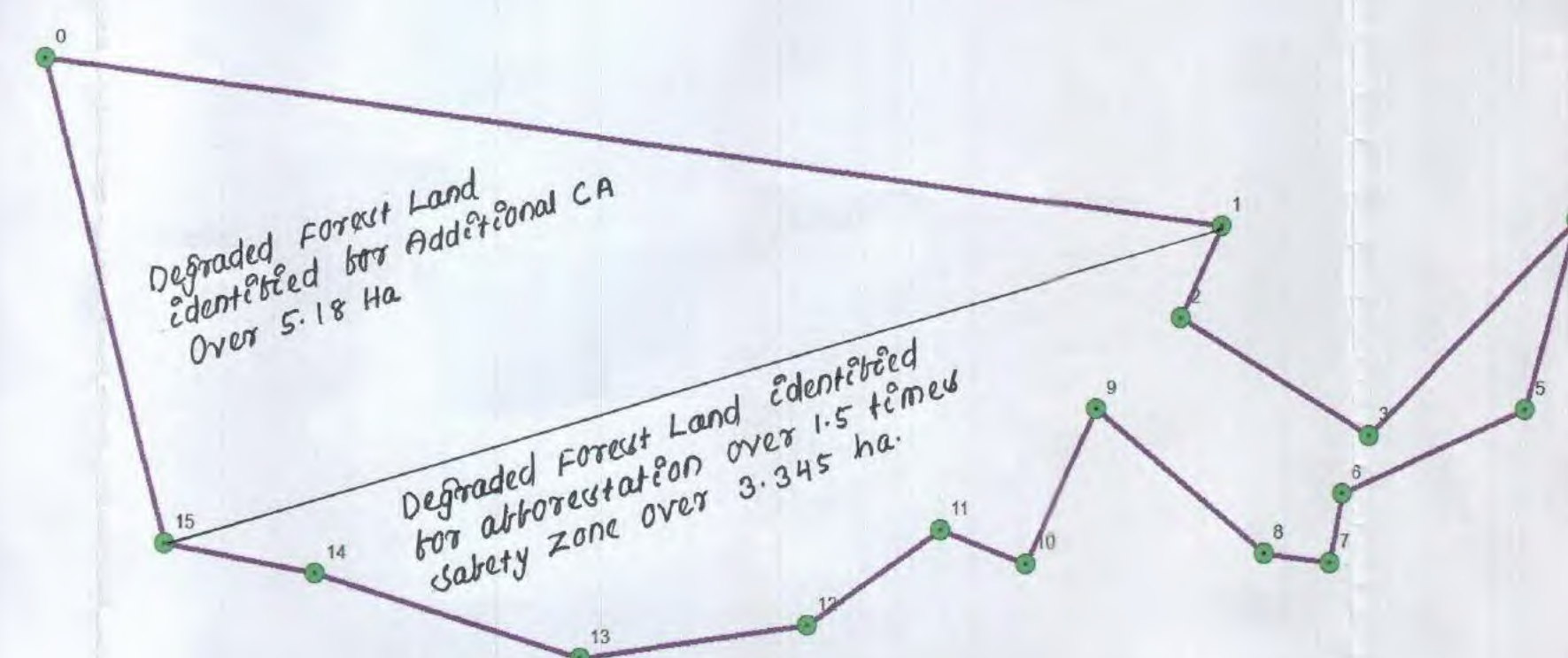
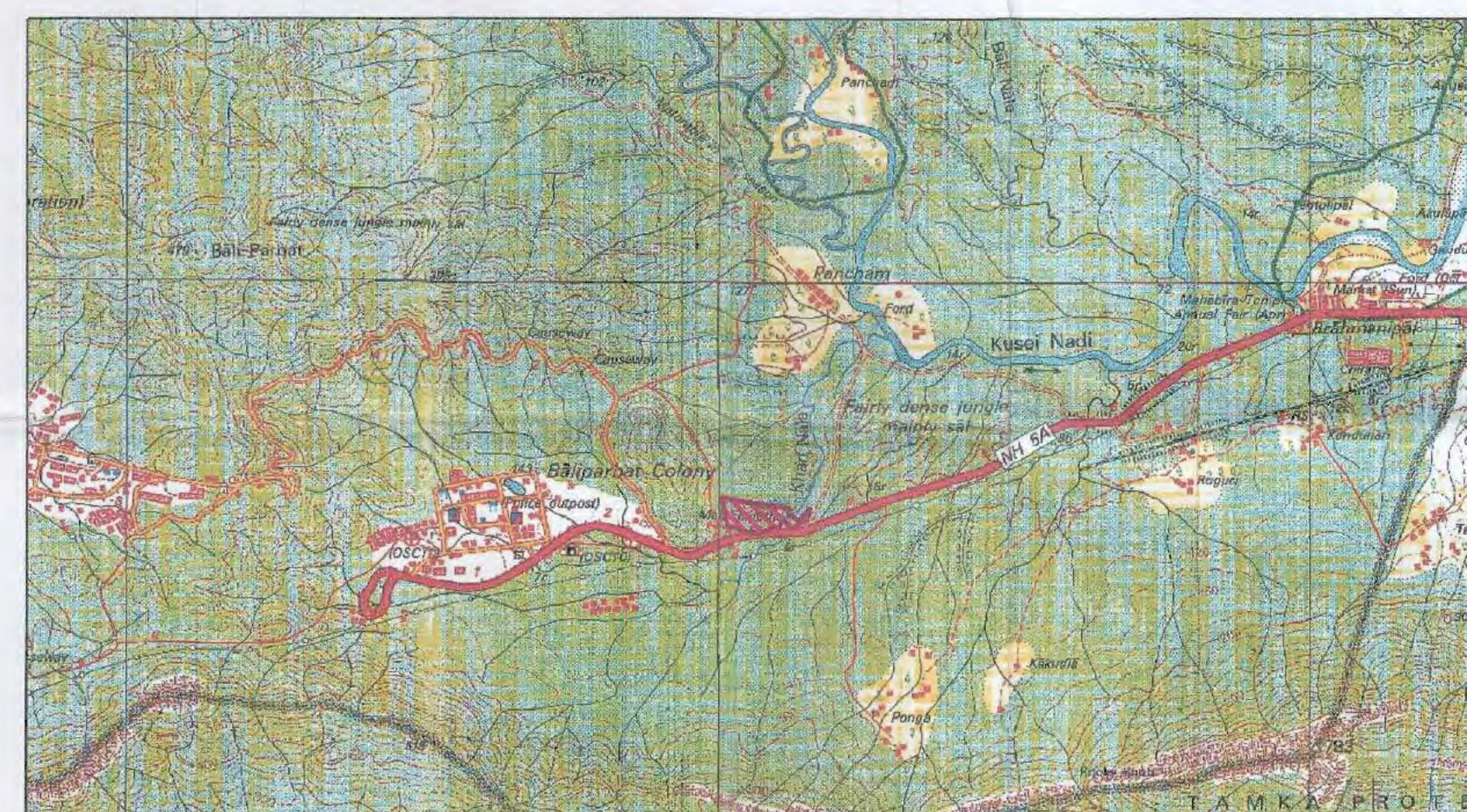
स्टील अथॉरिटी ऑफ इण्डिया, लिमिटेड रॉ मटेरियल्स डिवीजन, बोलानी अयस्क खदान, पो० - बोलानी - ७५८०३७, जिला - क्योझर, उड़ीसा
Steel Authority of India Ltd., Raw Materials Division, Bolani Ores Mines, PO. : Bolani - 758037, Dist. Keonjhar, Odisha
दूरभाष / Telephone : 06767 - 260211 (O) फैक्स / Fax 06767 - 260172, Email : rmdbom@gmail.com, Website : www.sail.co.in

Annexure-II

MAP SHOWING SUITABLE LAND FOR COMPENSATORY AFFORESTATION
IDENTIFIED IN ANANDAPUR FOREST DIVISION FOR
DIVERSION OF SABIK FOREST LAND
WITHIN 5.10 SQ MILES ML OF BOLANI ORES MINES OF M/S SAIL.



KEY PLAN
TOPOSHEET NO : F45N16
Scale : 1:50,000



FIELD NOTES

CO-ORDINATES AROUND 9.18 HA DEGRADED FOREST LAND FOR COMPENSATORY AFFORESTATION
IDENTIFIED IN BRAHMANIPAL RANGE (REBENA RF, near Baiparbat, patch-IX) ANANDAPUR FOREST
DIVISION FOR DIVERSION OF SABIK FOREST LAND(87.09 Ha) WITHIN 5.10 SQ MILES ML OF
BOLANI ORES MINES OF M/S SAIL.

SI No/PillarID	Longitude	Latitude	Easting	Northing
0	85°52'30.43"	21°06'36.00"	383172.4202	2334734.698
1	85°52'47.89"	21°06'33.52"	383676.1152	2334654.945
2	85°52'47.28"	21°06'32.18"	383658.4298	2334613.849
3	85°52'50.09"	21°06'30.46"	383739.0359	2334560.813
4	85°52'53.18"	21°06'33.59"	383828.4238	2334656.239
5	85°52'52.43"	21°06'30.85"	383806.1366	2334571.9
6	85°52'49.69"	21°06'29.63"	383727.2698	2334535.274
7	85°52'49.51"	21°06'28.62"	383721.5992	2334504.039
8	85°52'48.54"	21°06'28.76"	383693.3864	2334508.636
9	85°52'46.02"	21°06'30.85"	383621.9694	2334573.817
10	85°52'44.98"	21°06'28.66"	383590.9489	2334506.393
11	85°52'43.72"	21°06'29.16"	383554.663	2334521.535
12	85°52'41.74"	21°06'27.79"	383497.4162	2334479.631
13	85°52'38.35"	21°06'27.29"	383399.8717	2334465.373
14	85°52'34.43"	21°06'28.51"	383287.0035	2334504.237
15	85°52'32.20"	21°06'28.98"	383222.203	2334518.568

TOTAL AREA : 9.18 hectes

DETAILS OF SUITABLE LAND IDENTIFIED FOR COMPENSATORY AFFORESTATION IN ANANDPUR WILDLIFE DIVISION FOR
DIVERSION OF SABIK FOREST LAND WITHIN 5.10 SQ MILES ML OF BOLANI ORES MINES OF M/S SAIL .

SI No	Ranges of Rourkela Division	RF	Patch	Area in Ha	Remarks
1	Brhmanipal Range	Rebena RF	Patch-IX(Baliparbat)	9.18Ha	
			TOTAL	9.18 Ha	

SITE IDENTIFIED FOR COMPENSATORY AFFORESTATION
OVER 9.18 HA DEGRADED FOREST LAND
IN REBENA RESERVED FOREST
UNDER BRAHMANIPAL RANGE OF ANANDPUR DIVISION

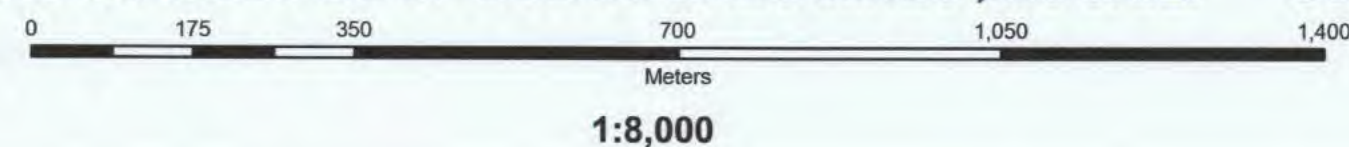
for the Diversion Proposal (87.09 Ha sabik forest) of Mining Project of
BOLANI ORES MINES OF M/S SAIL.
5.10 SQ MILES ML OF BOLANI ORES MINES OF M/S SAIL.

Forrest Officer
Bramanipal Range

Forrest Officer
Bramanipal Range

Forrest Officer
Koonjhar (WL) Division
Anandapur

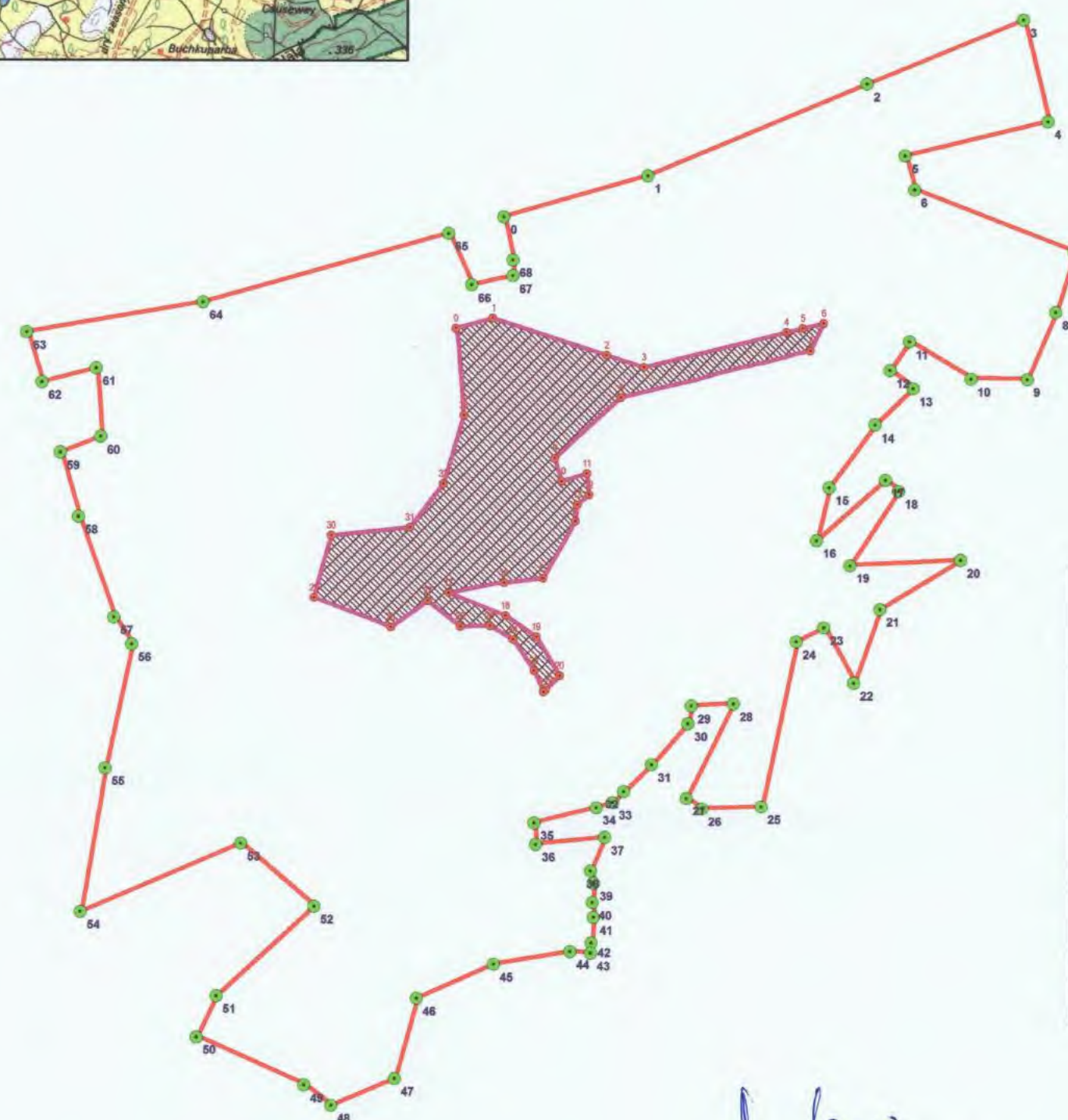
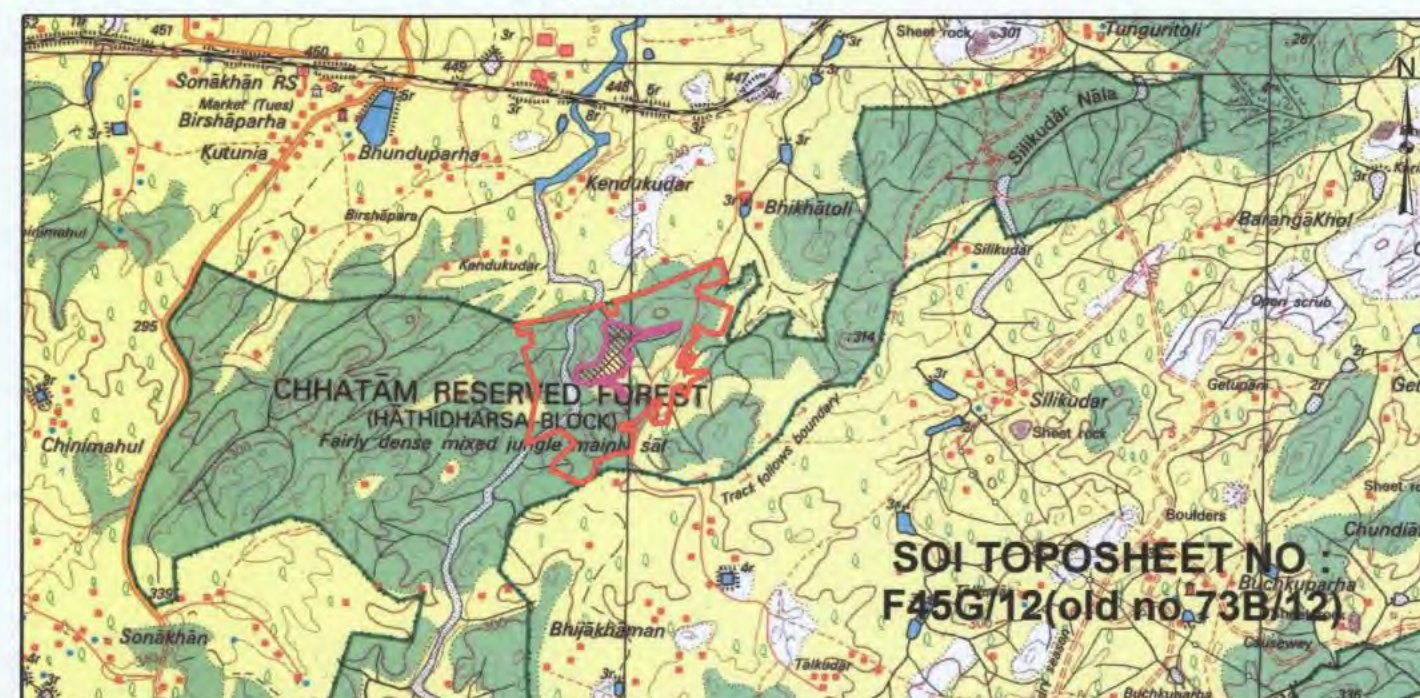
MAP SHOWING LAND FOR COMPENSATORY AFFORESTATION OVER 99.0 HA DEGRADED FOREST LAND WITHIN CHHATAM RESERVED FOREST (HATHIDHARSA BLOCK) OF RAJGANGPUR FOREST RANGE (ROURKELA FOREST DIVISION) FOR DIVERSION OF 87.09 HA NON FOREST LAND RECORDED AS FOREST AS ON 25.10.1980 INSIDE 5.10 SQ MILES ML OF BOLANI ORES MINES ,M/s SAIL. Scale : 1:8,000



SOI TOPOSHEET NO : F45G/12(old no 73B/12)



KeyPlan, 1:50,000



Legend

Points around excluded boundary

Points around Total/Gross area



Area Excluded from gross area (10.0Ha)



Net Area for CA over 99.0 ha (109.0ha-10.0 ha)

FIELD NOTES

CO-ORDINATES AROUND CA SITE OVER 99.0 HA

Pillar Id	Longitude	Latitude	EASTING	NORTHING
0	84°32'26.18"	22°09'07.08"	246334.578	2451701.138
1	84°32'25.12"	22°09'09.07"	246334.528	2451759.170
2	84°32'43.65"	22°09'13.41"	246858.316	2451887.806
3	84°32'51.17"	22°09'16.46"	247075.232	2451978.383
4	84°32'52.43"	22°09'11.87"	247109.270	2451836.282
5	84°32'45.54"	22°09'10.19"	246910.555	2451787.787
6	84°32'46.02"	22°09'08.66"	246924.003	2451740.675
7	84°32'53.83"	22°09'05.97"	247146.248	2451654.206
8	84°32'52.97"	22°09'03.23"	247120.417	2451570.219
9	84°32'51.69"	22°09'00.18"	247081.014	2451477.085
10	84°32'48.93"	22°09'00.15"	247002.594	2451477.561
11	84°32'45.91"	22°09'01.79"	246917.386	2451529.283
12	84°32'45.00"	22°09'00.47"	246890.567	2451489.159
13	84°32'46.14"	22°08'59.66"	246922.730	2451463.830
14	84°32'44.33"	22°08'58.00"	246870.035	2451413.419
15	84°32'42.17"	22°08'55.15"	246806.719	2451326.813
16	84°32'41.60"	22°08'52.75"	246789.415	2451283.217
17	84°32'44.87"	22°08'55.54"	246884.342	2451337.392
18	84°32'45.53"	22°08'55.05"	246903.018	2451322.168
19	84°32'43.24"	22°08'51.63"	246835.718	2451218.023
20	84°32'44.59"	22°08'51.97"	246898.355	2451225.848
21	84°32'44.73"	22°08'49.64"	246877.494	2451156.010
22	84°32'43.53"	22°08'46.27"	246841.446	2451052.924
23	84°32'42.04"	22°08'48.75"	246799.948	2451129.760
24	84°32'40.72"	22°08'48.09"	246761.648	2451102.212
25	84°32'38.16"	22°08'40.55"	246713.355	2450878.824
26	84°32'36.29"	22°08'40.41"	246630.864	2450875.859
27	84°32'35.53"	22°08'40.88"	246609.485	2450890.845
28	84°32'32.71"	22°08'45.24"	246614.588	2451033.880
29	84°32'35.69"	22°08'45.10"	246616.193	2451020.605
30	84°32'35.55"	22°08'44.29"	246611.684	2450995.645
31	84°32'34.84"	22°08'42.40"	246591.597	2450958.293
32	84°32'32.51"	22°08'41.14"	246522.840	2450903.616
33	84°32'31.96"	22°08'40.62"	246507.067	2450884.495
34	84°32'31.19"	22°08'40.37"	246484.732	2450877.093
35	84°32'28.19"	22°08'39.61"	246398.289	2450805.265
36	84°32'28.28"	22°08'38.64"	246400.359	2450825.280
37	84°32'31.62"	22°08'39.02"	246496.339	2450835.285
38	84°32'30.95"	22°08'37.40"	246476.523	2450788.454
39	84°32'31.11"	22°08'36.37"	246480.672	2450771.123
40	84°32'31.07"	22°08'36.05"	246479.064	2450744.241
41	84°32'31.13"	22°08'35.38"	246480.536	2450723.536
42	84°32'31.04"	22°08'34.21"	246477.431	2450687.705
43	84°32'31.01"	22°08'33.78"	246476.422	2450673.696
44	84°32'30.03"	22°08'33.80"	246448.371	2450675.536
45	84°32'26.33"	22°08'33.18"	246341.843	2450608.005
46	84°32'23.63"	22°08'31.58"	246244.995	2450540.133
47	84°32'21.62"	22°08'27.90"	246204.220	2450487.672
48	84°32'18.56"	22°08'26.62"	246115.757	2450460.070
49	84°32'17.23"	22°08'27.54"	246078.201	2450488.840
50	84°32'12.08"	22°08'29.43"	245929.460	2450505.579
51	84°32'12.92"	22°08'31.51"	245956.760	2450613.032
52	84°32'17.56"	22°08'35.65"	246091.831	2450788.213
53	84°32'13.97"	22°08'38.45"	245996.178	2450826.061
54	84°32'08.38"	22°08'35.13"	245788.094	2450705.587
55	84°32'07.30"	22°08'41.80"	245802.316	2450902.119
56	84°32'08.54"	22°08'47.43"	245839.113	2451104.973
57	84°32'07.65"	22°08'48.65"	245814.088	2451142.719
58	84°32'05.85"	22°08'53.24"	245764.893	2451284.478
59	84°32'04.92"	22°08'56.12"	245739.530	2451373.800
60	84°32'06.85"	22°08'56.84"	245795.322	2451395.027
61	84°32'06.57"	22°08'59.30"	245788.865	2451489.480
62	84°32'05.95"	22°08'59.31"	245781.844	2451470.119
63	84°32'03.17"	22°09'01.49"	245682.143	2451539.843
64	84°32'11.69"	22°09'02.98"	245936.986	2451581.948
65	84°32'23.52"	22°09'06.38"	246277.843	2451607.811
66	84°32'24.67"	22°09'03.98"	246309.763	2451606.478
67	84°32'26.67"	22°09'04.41"	246367.316	2451619.000
68	84°32'26.66"	22°09'05.14"	246367.320	2451641.262

Pillar Id	Longitude	Latitude	EASTING	NORTHING
0	84°32'23.96"	22°09'02.01"	246288.3482	2451546.182
1	84°32'25.74"	22°09'02.49"	246339.6027	2451560.166
2	84°32'31.28"	22°09'00.80"	246497.5887	2451508.783
3	84°32'33.08"	22°09'00.38"	246549.0142	2451492.002
4	84°32'39.96"	22°09'02.09"	246746.9246	2451541.36
5	84°32'40.73"	22°09'01.29"	246769.5891	2451546.579
6	84°32'41.76"	22°09'02.54"	246796.7795	2451554.982
7	84°32'41.13"	22°09'01.37"	246779.9568	2451535.636
8	84°32'31.99"	22°08'59.01"	246517.0016	2451450.231
9	84°32'28.86"	22°08'56.22"	246425.7667	2451465.958
10	84°32'26.20"	22°08'55.11"	246435.2454	2451334.745
11	84°32'30.42"	22°08'55.57"	246470.2787	2451345.194
12	84°32'30.55"	22°08'54.62"	246473.5238	2451315.763
13	84°32'30.00"	22°08'54.17"	246457.4138	2451302.131
14	84°32'28.92"	22°08'53.43"	246454.7442	2451279.566
15	84°32'28.40"	22°08'50.77"	246410.0354	2451198.443
16	84°32'26.53"	22°08'50.54"	246356.1386	2451192.033
17	84°32'23.84"	22°08'50.03"	246278.9141	2451177.591
18	84°32'26.63"	22°08'49.02"	246356.371	2451145.451
19	84°32'28.13"	22°08'48.10"	246400.8823	2451116.429
20	84°32'29.30"	22°08'46.34"	246433.4376	2451061.683
21	84°32'28.61"	22°08'45.70"	246413.4514	2451042.171
22	84°32'28.54"	22°08'45.61"	246411.2993	2451039.463
23	84°32'28.05"	22°08'46.57"	246397.8383	2451069.2
24	84°32'27.01"	22°08'49.65"	246366.687	2451112.146
25	84°32'25.87"	22°08'48.56"	246336.3749	2451111.442
26	84°32'24.44"	22°08'48.51"	246295.4534	2451130.707
27	84°32'22.85"	22°08'49.63"	246250.2274	2451185.836
28	84°32'21.06"	22°08'48.42"	246198.2918	2451129.463
29	84°32'17.31"	22°08'49.69"	246091.7011	2451170.37
30	84°32'18.09"	22°08'52.58"	246115.3579	2451258.852
31	84°32'17.89"	22°08'53.01"	246124.3913	2451270.287
32	84°32'23.50"	22°08'54.89"	246271.0001	2451330.548
33	84°32'24.41"	22°08'58.06"	246299.335	2451424.506

C. NET AREA = A-B = 109.0 HA - 10.0 HA = 99.0 HA

Forest Range Officer
Rajgangpur Range

Divisional Forest Officer
Rourkela Division

STEEL AUTHORITY OF INDIA LIMITED
BOLANI ORES MINES (5.10 Sq Miles ML),
KEONJHAR, ODISHA

MAP SHOWING DEGRADED FOREST LAND
OVER 99.0 HA IN CHHATAM RF (HATHIDHARSA BOCK)

REVISED MAP ON SOI TOPOSHEET SHOWING LAND FOR COMPENSATORY AFFORESTATION OVER 70.72 HA SUITABLE DEGRADED FOREST LAND WITHIN GURHIALI RESERVED FOREST (near san-Gurhiali, Luhuraberni and Jurajam) OF RAJGANGPUR FOREST RANGE (ROURKELA FOREST DIVISION) FOR DIVERSION OF 87.09 HA NON FOREST LAND RECORDED AS FOREST AS ON 25.10.1980 INSIDE 5.10 SQ MILES ML OF BOLANI ORES MINES ,M/s SAIL. Scale: 50,000

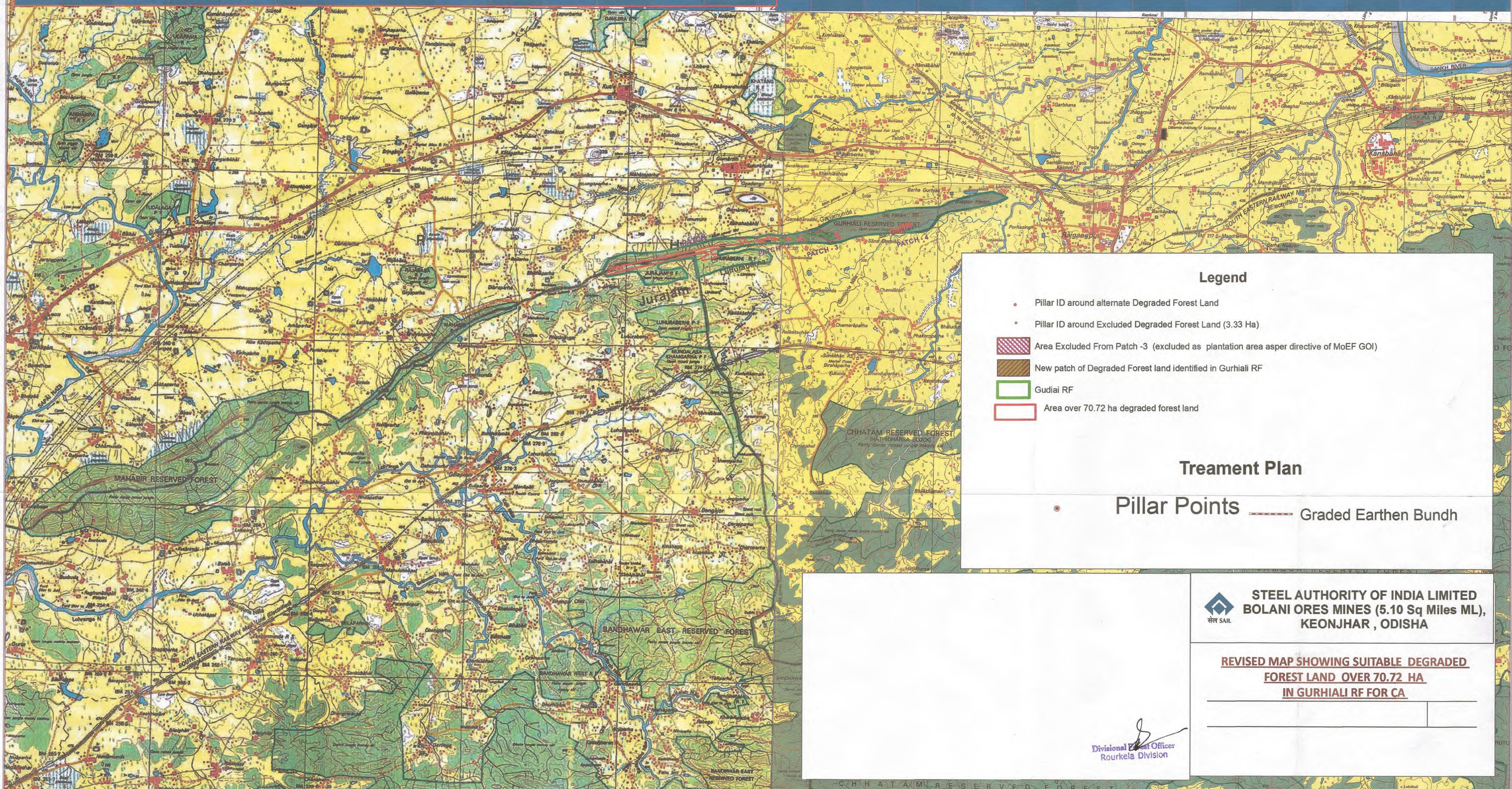
0 2,125 4,250 8,500 12,750 17,000 Meters
1:50,000



SOI TOPOSHEET NO : F45G/8 & F45G/12

SOI TOPOSHEET :
F45G/8

SOI TOPOSHEET :
F45G/12



Legend

- Pillar ID around alternate Degraded Forest Land
- Pillar ID around Excluded Degraded Forest Land (3.33 Ha)
- Area Excluded From Patch -3 (excluded as plantation area asper directive of MoEF GOI)
- New patch of Degraded Forest land identified in Gurhiali RF
- Gudai RF
- Area over 70.72 ha degraded forest land

Treatment Plan

Pillar Points — Graded Earthen Bundh



STEEL AUTHORITY OF INDIA LIMITED
BOLANI ORES MINES (5.10 Sq Miles ML),
KEONJHAR , ODISHA

REVISED MAP SHOWING SUITABLE DEGRADED
FOREST LAND OVER 70.72 HA
IN GURHIALI RF FOR CA

Divisional Forest Officer
Rourkela Division

Annexure-III



e-PayOrder Details

e-PayOrder Number CNAAGSPFD8

Debit Status Success

21-Dec-2017

ORRISA CAMPA

Two Crores Twenty Lakhs Sixty Four Thousand

2,20,64,000.00

only

00000011180766769

BOLANI

DEBASHISH BEHERA

Maker

RAJEEV KUMAR

Authorizer 1

RABINDRA NATH OJHA

Authorizer 2

"CNAAGSPFD8"

Counterfoil Description SAIL RMD BOM

Transaction Type NEFT Funds transfer

Debit Account Details

Account No.	Branch	Amount
00000011180766769	BOLANI	2,20,64,000.00

Credit Account Details

Beneficiary Name/Account No.	Bank/Branch/IFSCCode	Amount	Credit Status	UTR No.
ORRISA CAMPA/150825817936563	FCS BANGALORE/FCS BANGALORE/CORP0000633	2,20,64,000.00	Pending	SBIN617355279824

Annexure-A



स्टील अथोरिटी ऑफ इंडिया लिमिटेड
STEEL AUTHORITY OF INDIA LIMITED
 रॉ मटेरियल्स डिवीजन
 RAW MATERIAL DIVISION
 बोलानी ओर्स माइन्स
 BOLANI ORES MINES

Ref no : - GM/BOM/FCC- 2101

Date : - 31/01/2017

To,

The Divisional Forest Officer,
 Keonjhar Division,
 Keonjhar

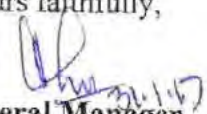
Sub : Self Monitoring Report on Status of implementation of conditions stipulated vide Stage-II approval order and Site Specific Wildlife Conservation Plan (SSWCP) of 5.10 sq. miles ML of Bolani Ores Mines updated as on 31.12.2016

Sir,

In connection with the subject cited above, please find enclosed herewith the Self Monitoring Report on status of implementation of conditions stipulated vide Stage-II approval orders and Site Specific Wildlife Conservation Plan (SSWCP) of 5.10 sq. miles ML of Bolani Ores Mines, updated as on 31.12.2016, for your kind perusal please.

Thanking you,

Yours faithfully,


 General Manager
 Bolani Ores Mines

Encls. : As above

Received

Received

31/1/17

31/1/17

स्टील अथोरिटी ऑफ इंडिया लिमिटेड, रॉ मटेरियल्स डिवीजन, बोलानी ओर्स माइन्स, पोस्ट- बोलानी- 758 037, जिला- क्योंझर, आंध्र प्रदेश
 Steel Authority of India Ltd, Raw Materials Division, Bolani Ores Mines, Po.- Bolani - 758 037, Dist.- Keonjhar, Odisha
 दूरभाष / Telephone : 06767-260211, फैक्स / Fax : 06767-260172, ई-मेल : E-mail : rmdbom@gmail.com, Website : www.sail.co.in

Regd. Office : Ispat Bhawan, Lodi Road, New Delhi- 110003, Phone : 01124367481-86, Fax : 01124367015

हर किसी की जिन्दगी से जुड़ा हुआ है सेल

There's a little bit of SAIL in everybody's life.

STATUS REPORT ON IMPLEMENTATION OF CONDITIONS STIPULATED VIDE STAGE-II APPROVAL ORDER

Sl. no.	Stage-II Approval Letter No. & Date	Sl. No. of the Stipulated Condition	Date of approval of desired scheme against the stipulated condition	Amount Approved (in lakh Rs.) for scheme	Item of Activity	Component of Activity Implemented	Detailed Dimension of component implemented	Year of Implementation	GPS coordinates of the site of implementation on / site details	Expenditure/ WO value/ Job value (in Rs.)	Remark
1	F. No: 8-17/1997 - FC (pt.), Dt.11.12.12	2(i)	-	-	The legal status of the total diverted forest land remains unchanged.						
2	- do -	2(ii)	Memo no.861Dt. 19.01.2011& Revised vide Memo no.16826 Dt. 18.10.2012	72.56 Revised to 83.00 Lakhs	Compensatory Afforestation (CA)	CA over Degraded forest land over 205 ha. identified in one patch within Atef RF of Patna Range of Keonjhar Forest Division	Fund towards CA has been deposited in CAMPA Account no. 344901010070194 in Union Bank of India Sundar Nagar Branch New Delhi on 10.03.2011 (Rs 72,56,000/-) and 18.10.2012 (Rs 10,44,000/-) through RTGS mode.	Ranger Officer of Patna Range is the implementing agency	Atef RF of Patna Range of Keonjhar Division Kalighat and Sadangbahali villages. Map was submitted to division office.	Fund deposited to CAMPA Account	Ranger Officer of Patna Range is the implementing agency
3	- do -	2(iii)	-	-	The condition was duly complied. All the formalities were completed after which MoEF, Govt has granted Stage-II Forest clearance for the total forest land including 317.0 hectares of forest land located in the earlier acclaimed Karo Karampada Corridor within the ML area.						
4	- do -	2(iv)	Memo no.1626 Dt. 31.01.2012 & Memo no.16826 Dt. 18.10.2012	624.92	Additional Compensatory Afforestation over the degraded forest land equal in extent to the diverted forest land	Bolani Ore Mines has deposited the amount in two phases through RTGS i.e. on 01.02.2012 for Rs. 3,29,06,700/- & on 18.10.2012 for Rs. 2,95,85,300/- in favour of designated Account of Adhoc-CAMPA in Union Bank of India, Sundernagar Branch, New Delhi	Benamunda RF (600 ha.), Kalapat RF (352.58 ha.) & Podang DPF (200 ha.) in Telkoi Range of Keonjhar Forest Division	Ranger Officer of Patna Range is the implementing agency	Benamunda RF (600 ha.), Kalapat RF (352.58 ha.) & Podang DPF (200 ha.) in Telkoi Range of Keonjhar Forest Division. GPS map was submitted to division office.	Fund deposited to CAMPA Account	Ranger Officer of Patna Range is the implementing agency

[Signature]
Forest Section Officer
BARBIL SECTION

STATUS REPORT ON IMPLEMENTATION OF CONDITIONS STIPULATED VIDE STAGE-II APPROVAL ORDER

Sl. no.	Stage-II Approval Letter No. & Date	Sl. No. of the Stipulated Condition	Date of approval of desired scheme against the stipulated condition	Amount Approved (in lakh Rs.) for scheme	Item of Activity	Component of Activity Implemented	Detailed Dimension of component implemented	Year of Implementation	GPS coordinates of the site of implementation on / site details	Expenditure/ WO value/ Job value (in Rs.)	Remarks
5	F. No: 8-17/1997 - FC (pt.), Dt.11.12.12	2(v)(a)	Memo no.135 Dt. 17.01.2012 & Memo no.3055 Dt 03.09.2012	225.00 For seven years	(A) Biological Measures/ Afforestation program	(1)Plantation of 30,000 saplings on degraded land within Lease	12 ha. In 5.10 sq. Mile M.L. area (near D-area, In & around F&G area and along safety zone of ML boundary)	2011-12	22° 5'25.53"N 85°17'49.24"E 22° 6'4.89"N 85°17'47.47"E 22° 7'30.31"N 85°20'10.48"E	1426000.00	Includes Plantation inside safety zone Including cost of saplings -do-
	- do -	- do -	- do -		- do -	(2)Plantation of 15000 nos. of tree saplings	5 ha. area (Safety Zone near D area, G-area and GAP plantation near D-area)	2012-13	22° 6'19.12"N 85°17'58.36"E 22° 7'23.88"N 85°20'8.76"E	519000.00	-do-
	- do -	- do -	- do -		- do -	(3)Plantation of 1410 Saplings.	1 Ha area on D-area Dump	2012-13	22° 7'21.72"N 85°20'7.91"E	283414.80	Includes cost of saplings and fencing -do-
	- do -	- do -	- do -		- do -	(4)Development saplings by OFDC and Plantation of 25,000 Plant Saplings	10. Ha degraded land within lease	2016-17	22° 6'27.21"N 85°19'29.20"E 22° 6'33.60"N 85°18'45.49"E 22° 6'28.80"N 85°18'47.97"E	2259000.00	-do-
	- do -	- do -	- do -		(B) Structural Measures	(5)Loose Boulder Checkdams around G Area OB Dump	510 m x 1.5m x 1.5m	2011-12	22° 6'1.62"N 85°18'7.04"E 22° 6'2.02"N 85°17'57.90"E 22° 6'5.56"N 85°18'1.67"E 22° 6'3.03"N 85°18'1.40"E	483000.00	

[Signature]
Section Officer
FOREST SECTION
BARBIL SECTION


STATUS REPORT ON IMPLEMENTATION OF CONDITIONS STIPULATED VIDE STAGE-II APPROVAL ORDER

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5	F. No: 8-17/1997 - FC (pt.), Dt.11.12.12	2(v)(a)	Memo no.135 Dt. 17.01.2012 & Memo no.3055 Dt 03.09.2012		Structural Measures ...contd	(6) Loose Boulder Checkdams around F Area and degraded areas	350m x 1.5m x 1.5m	2012-13	22° 5' 52.06" N 85° 18' 9.29" E 22° 5' 54.04" N 85° 18' 8.20" E 22° 05' 54.5" N 85° 18' 13.2" E 22° 05' 50.3" N 85° 18' 15.6" E 22° 05' 58" N 85° 18' 13" E 22° 05' 58" N 85° 18' 12" E	1747000.00	
	- do -	- do -	- do -		- do -	(7) Dry boulder check dams & staggered trenches in different area of mining lease & degraded areas	4-5m span x 1.5m x 1.5m	2014-15	In between 22° 6' 13.58" N 85° 19' 26.76" E and 22° 6' 9.49" N 85° 19' 18.87" E	835412.00	
	- do -	- do -	- do -		- do -	(8) Nos Masonary Check/ silt retention dams	60m x 1.5m x 1.5m 75m x 1.5m x 1.5m 55m x 1.5m x 1.5m	2011-12	85° 19' 50.85" E 22° 6' 21.42" N 85° 19' 45.64" E 22° 6' 16.64" N 85° 18' 48.32" E 22° 5' 40.01" N 85° 18' 59" E 22° 05' 33" N 85° 18' 55.71" E 22° 5' 43.60" N	1752000.00	
	- do -	- do -	- do -		- do -	(9) Retaining Wall to Arrest Fines from Washing Plant Near Check Gate	30m x 1.5m x 1.5m	2011-12	85° 19' 43.97" E 22° 6' 17.84" N	328000.00	

[Signature]
Forest Section Officer
BARBIL SECTION

STATUS REPORT ON IMPLEMENTATION OF CONDITIONS STIPULATED VIDE STAGE-II APPROVAL ORDER

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5	F. No: 8-17/1997 - FC (pt.), Dt.11.12.12	2(v)(a)	Memo no.135 Dt. 17.01.2012 & Memo no.3055 Dt 03.09.2012		Structural Measures ...contd	(10) Sedimentation ponds across seasonal stretches	6m x 4m x 2m	2011-12 and 2012-13	85°18'15.71"E 22° 5'50.76"N 85°18'36.50"E 22° 6'11.72"N 85°18'4.94"E 22° 6'2.17"N	Departmental	
	- do -	- do -	- do -		- do -	(11) Masonary Retaining boundary to prevent flow of fines from fines loading areas	750 x 2 x 0.3	2013-14	85°19'45.38"E 22° 5'57.94"N 85°19'52.33"E 22° 5'57.41"N 85°19'55.83"E 22° 6'4.42"N	4437500.00	Part of retaining boundary wall around fines dump complex
	- do -	- do -	- do -		Desiltation of seasonal nallahs	(12) Desilting Of Panposh Nalla Near Petrol Pump & from Hospital Culvert To Mount Club, Jhikaria upper stretch	Nallah Stretch	2010-11 & 2011-12	22° 6'26.00"N 85°19'49.98"E 22° 6'54.12"N 85°20'0.34"E	922647.50	
	- do -	- do -	- do -		- do -	(13) De-silting of MIP Dam (Jhikaria Nallah)	Nallah Stretch	2011-12	85°19'14.79"E 22° 5'18.58"N	470000.00	
	- do -	- do -	- do -		- do -	(14) Desilting of panposh nallah from mount club to railway siding culvert, Enga cell check dam & petrol pump check dam	Nallah Stretch	2014-15	22° 6'58.80"N 85°19'58.70"E	727600.00	
	- do -	- do -	- do -		- do -	(15) Desilting of Panposh nallah from Panposh OB dump to Explosives magazine gate of BOM	Nallah Stretch	2014-15	85°19'42.13"E 22° 7'4.71"N 85°19'51.55"E 22° 7'2.26"N	1444170.00	


Forest Section Officer
BARBIL SECTION

STATUS REPORT ON IMPLEMENTATION OF CONDITIONS STIPULATED VIDE STAGE-II APPROVAL ORDER

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5	F. No: 8-17/1997 - FC (pt.), Dt.11.12.12	- do -	Memo no.135 Dt. 17.01.2012 & Memo no.3055 Dt 03.09.2012		Desilting of seasonal nallahs -contd	(16)Desilting of Panposh nallah from Explosives magazine to railway siding culvert, engg cell check dam & petrol pump check dam	Nallah Stretch	2015-16	85°19'53.29"E 22° 7'1.14"N 85°19'33.46"E 22° 6'19.85"N 85°19'49.22"E 22° 6'21.27"N	482928.79	
	- do -	- do -	- do -		Maintenance of previously constructed structures	(17)Check dams in various areas	20 m	2014-15	Various locations	400000.00	
	- do -	- do -	- do -		Contingency including supervision charges	(18) Vehicle Hiring and miscellaneous etc	-	2013-15		100000.00	
6	- do -	2(v)(b)	- do -	90.4	Afforestation on degraded and barren forest lands OB dumps including safety zones	(1) Plantation of 45,000 drought hardy species	Covered under mitigative measures	2011-12 2012-13	Covered under mitigative measures	1945000.00	Details provided section c 2(v)(a)
	- do -	- do -	- do -		- do -	(2)Plantation of drought hardy species	Plantation of 50,000 saplings in 20 ha area in block mode within 5.10 sq. Miles ML area.	2012-13 2013-14	22° 5'25.65"N 85°17'7.73"E	20400564.00	
	- do -	- do -	- do -		- do -	(3)Plantation of drought hardy species	Plantation of 25000 species	2016-17	Covered under mitigative measures	2259000.00	
	- do -	- do -	- do -		Plantation of Agave for 2500 mts	(4)Plantation of AGAVE in Safety Zone	Along Safety zone periphery	2013-14	Along the Safety Zone	Departmental	
	- do -	- do -	- do -		Plantation of Vetiveria zizanioides	(5)Consultation and Plantation of Vetiver slips over Old fines dump	5000 Sq.m over slopes of old fines dump	2013-14	22° 6'11.37"N 85°19'48.15"E	1695000.00	

[Signature]
Section Officer
BARJIL SECTION


STATUS REPORT ON IMPLEMENTATION OF CONDITIONS STIPULATED VIDE STAGE-II APPROVAL ORDER

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7	F. No: 8-17/1997 - FC (pt.), Dt. 11.12.12	2(v)(c)	Memo no.135 Dt. 17.01.2012 & Memo. no.3055 Dt. 03.09.2012	72.93	Erection of Dry Boulder toe/ retaining walls	(1) Dry stone toe wall around D-area OB dump. (2) Near Petrol Pump	75m x 1.5m x 1m 50m x 1.5m x 1m	2011-12	85°20'6.64"E 22° 7'16.56"N 85°19'50.54"E 22° 6'21.87"N	1142480.00	
	- do -	- do -	- do -		- do -	(3) Retaining wall around old fines dump with garland drain	310 m x 1.3 m x 0.8m	2013-14	22° 6'9.89"N 85°19'52.33"E 22° 6'12.44"N 85°19'43.40"E	1314900.00	
	- do -	- do -	- do -		- do -	(4) Retaining wall around OH-5 fines dump area with garland drain and settling tanks	365m x 1.2m x 0.8m	2013-14	22° 6'15.31"N 85°19'39.96"E 22° 6'15.29"N 85°19'33.45"E 22° 6'10.49"N 85°19'35.42"E 22° 6'10.72"N 85°19'40.55"E	753706.38	
	- do -	- do -	- do -		- do -	(5) Concrete check dam across the Balagoda nallah for control of run off from Panposh quarry	80 x 1.2 x 0.8	2014-15	22° 6'36.10"N 85°19'31.24"E 22° 6'35.91"N 85°19'34.12"E	1503782.00	
	- do -	- do -	- do -		- do -	(6) Hume pipe culvert along Panposh nallah near Explosives magazine of Bolani Ores Mines	40 x 10 x 2.5	2014-15	22° 7'0.07"N 85°19'56.22"E	2476296.50	
	- do -	- do -	- do -		- do -	(7) Retaining Wall around 600 TPH stockpile with garland drain and settling tank	100 x 1.2 x 0.8	2014-15	22° 6'11.03"N 85°19'53.79"E	1161315.00	
	- do -	- do -	- do -		- do -	(8) Loose boulder checkdams	Covered under OB dump stabilization measures	2014-15			

[Signature]
Forest Section Officer
BARBIL SECTION

STATUS REPORT ON IMPLEMENTATION OF CONDITIONS STIPULATED VIDE STAGE-II APPROVAL ORDER


Sl. no.	Stage-II Approval Letter No. & Date	Sl. No. of the Stipulated Condition	Date of approval of desired scheme against the stipulated condition	Amount Approved (in lakh Rs.) for scheme	Item of Activity	Component of Activity Implemented	Detailed Dimension of component implemented	Year of Implementation	GPS coordinates of the site of implementation / site details	Expenditure/ WO value/ Job value (in Rs.)	Remarks
7	F. No: 8-17/1997 - FC (pt.), Dt. 11.12.12	2(v)(c)	Memo no. 135 Dt. 17.01.2012 & Memo no. 3055 Dt. 03.09.2012		Erection of Dry Boulder toe/ retaining walls ...contd	(9) Masonary Retaining Wall along with Garland drain and settling tank around Panposh Quarry	500 x 15 x 1.5	2015-16	85°19'34.62"E 22°6'36.14"N	3412191.92	
	- do -	- do -	- do -		- do -	(10) Masonary Retaining boundary to prevent flow of fines from old fines dump in front of Main Gate	260 x 2 x 0.3	2014-15	85°19'47.68"E 22°6'13.40"N 85°19'51.88"E 22°6'10.53"N 85°19'55.97"E 22°6'10.69"N	1555725.30	Part of retaining boundary wall aroun fines dum complex
	- do -	- do -	- do -		Planting on Drainage Line	(11) Native grass species planted on earthen check dams	300 sq. m	2013-14	85°19'42.58"E 22°7'4.02"N	Departmental	
	- do -	- do -	- do -		Maintenance /De-silting/cleaning of previous structures	(12) Annual contract for cleaning of source of jhinkaria, karo source, bottom reservoir & township reservoir	-	2012-13	85°18'51.70"E 22°6'0.62"N	589602.90	
8	- do -	2(v)(d)	Memo no. 135 Dt. 17.01.2012 & Memo no. 3055 Dt. 03.09.2012	129.06	Biological Measures	(1) Plantation of 2000 Saplings on D area and G Area Dumps	1.0 ha	2015-16	22°6'0.82"N 85°18'24.54"E	Departmental	
	- do -	- do -	- do -		- do -	(2) Sowing Stylosanthes Hamata / Thysolaena Maxima grass seeds on Dump Slopes.	2.0 ha	2014-15	85°20'14.35"E 22°7'30.13"N	Departmental	
	- do -	- do -	- do -		Bio-engineering measures	(3) Plantation of Vetiver slips over Old fines dump	0.5 Ha	2013-14	85°19'48.72"E 22°6'11.40"N	Mentioned in 2(v)(b)	


 Section Officer
 Forest Section
 BARBIL SECTION

M. K. - 21

STATUS REPORT ON IMPLEMENTATION OF CONDITIONS STIPULATED VIDE STAGE-II APPROVAL ORDER

Sl. no.	Stage-II Approval Letter No. & Date	Sl. No. of the Stipulated Condition	Date of approval of desired scheme against the stipulated condition	Amount Approved (in lakh Rs.) for scheme	Item of Activity	Component of Activity Implemented	Detailed Dimension of component implemented	Year of Implementation	GPS coordinates of the site of Implementation on / site details	Expenditure/ WO value/ Job value (in Rs.)	Remarks
8	F. No: 8-17/1997 - FC (pt.), Dt.11.12.12	2(v)(d)	Memo no.135 Dt. 17.01.2012 & Memo no.3055 Dt. 03.09.2012		Bio-engineering measures -contd	(4) vertical Extension of retaining wall and construction of garland drain around Panposh OB Dump	160 x 1.5 x 0.8	2016-17	85°19'40.63"E 22° 6'36.96"N 85°19'34.97"E 22° 6'39.85"N	838064.30	
	- do -	- do -	- do -		- do -	(5) Laying of coir-geotextile over slopes of DH-5 and Old fines dump	1.1 ha	2015-16	22° 6'12.68"N 85°19'46.52"E 22° 6'11.95"N 85°19'36.13"E	1901600.00	
	- do -	- do -	- do -		- do -	(6) Laying of coir-geotextile over slopes of D area OB dump	1.3 ha	2016- (WO in process)	85°20'4.21"E 22° 7'14.85"N	2247345.45	Proposal in tender processing
	- do -	- do -	- do -		Structural Measures	(7) Plugging of gullies by loose boulder walls along panposh dump slope(western side)	400m x 1.2m x 0.8m	2014-15	85°19'35.43"E 22° 6'57.88"N	1914827.81	
	- do -	- do -	- do -		- do -	(8) Dry loose Boulder retaining Walls around D-Area OB dump in northern and eastern side	300 x 1.5 x 1.0	2016-17	85°20'5.13"E 22° 7'13.26"N	2100000.00	Proposal in tender processing
	- do -	- do -	- do -		R & D Works	(8) KRG Rain Water Foundation		2014-15		418000.00	
	- do -	- do -	- do -		- do -	(9) Consultancy by IIT Kharagpur for vetiver Grass		2013-14		mentioned in 2(v)(b)	
9	- do -	2(v)(e)	Memo no.135 Dt. 17.01.2012 & Memo no.3055 Dt. 03.09.2012	56.24	All the top soil excavated till date has been utilized for plantation on dumps and degraded lands. No top soil has been generated or stored during 2016-17 as working was confined to already broken areas. The Top soil generated in future during working of Virgin Land will be stored at earmarked site with all measures and will be used immediately in plantations						


Forest Section Officer
BARBIL SECTION

STATUS REPORT ON IMPLEMENTATION OF CONDITIONS STIPULATED VIDE STAGE-II APPROVAL ORDER

Sl. no.	Stage-II Approval Letter No. & Date	Sl. No. of the Stipulated Condition	Date of approval of desired scheme against the stipulated condition	Amount Approved (in lakh Rs.) for scheme	Item of Activity	Component of Activity Implemented	Detailed Dimension of component implemented	Year of Implementation	GPS coordinates of the site of implementation / site details	Expenditure/ Job value/ Job value (in Rs.)	Remarks
10	F. No: 8-17/1997 - FC (pt.), Dt.11.12.12	2(vii)	-	-	SAIL-BOM has deposited Net present value of entire forest land of 1225.78 ha in the mining lease as per applicable rate of Rs. 7.30 lakhs per ha. amounting to Rs 89,48,19,400/-. The said amount has been deposited in favour of the designed. Adhoc-CAMPA Account No.1585 in corporation Bank, Lodhi Road, New Delhi vide Cheque No.597654 dt. 8.4.2010 for Rs. 76,73,38,280/- and Cheque No 597672 dt. 3.7.2010 for Rs. 12,74,81,120/-.						
11	- do -	2(vii)	-	-	Environmental clearance has been granted by Govt. Of India, Ministry of Environment & Forests vide their letter No. J-11015/418/2008 - IA II(M) dated 21.12.2012 for a production of Iron Ore up to 12.0 MTPA.						
12	- do -	2(viii)	-	-	The period of diversion of the said forest land under this approval is co-terminus with the 2nd RML(i.e. 09-04-2030).						
13	- do -	2(ix)	-	-	MoEF, Govt has granted Stage-II Forest clearance for the total forest land including 317.0 hectares of forest land located in the earlier acclaimed Karo Karampada Corridor within the ML. Permission from Govt of India, MoEF was obtained vide order no F No 8-17 /1997 -FC(pt) dated 09-07-2013 for carrying out mining activities inside already broken portion (54.05 Hects) inside 317.0 Ha area within Karo-Karampada Corridor Further, diversion of remaining area of 262.1 ha falling under the earlier acclaimed Karo Karampada Elephant Corridor has been granted by the Ministry vide letter F-no. : 17/1997-FC (vol.) Dt. 12.11.2014 and the reasoned order for the same from State Govt vide no 10F(Cons)-72/2014-4559/F dated 17.03.2015 has also been received.						
14	- do -	2(x)	SSWCP was approved vide: 4506/1 WL(C)SSP-126/2012 Dt. 23.06.2014	1676.41	The decision of the State Government on the earlier acclaimed Elephant Corridor has been complied. Accordingly, the Site Specific Wildlife Conservation plan has been prepared as per guidelines of Chief Wildlife Warden on the basis of findings of Technical Committee appointed by Govt of Odisha. The same was approved by the State Forest and Wildlife Department vide order no 4506/1 WL(C)SSP-126/2012 Dt. 23.06.2014. An amount of 976.04 has been deposited with CAMPA fund for implementation of various activities within impact area. The conditions of Site Specific Wildlife Conservation plan are being implemented (Annexure - III)						
15	- do -	2(xii)	SSWCP was approved vide: 4506/1 WL(C)SSP-126/2012 Dt. 23.06.2014	-	Site specific Conservation Plan along with suggestions of mitigative measures, was approved by PCCF(Wildlife). Subsequently, diversion of remaining area of 262.95 ha falling under the Corridor has been granted by the Ministry vide letter F-no. : 8-17/1997-FC (vol.) Dt. 12.11.2014. Hence the total area of 317.0 hectares forest land within the ML area located within the corridor stands diverted as permission from Govt of India, MoEF was already obtained for diversion of broken up portion (54.05 Hects) inside 317.0 Ha area within Karo-Karampada Corridor vide order no F No - 8-17 /1997 -FC(pt) dated 09-07-2013.						
16	- do -	2(xii)	Memo no.135 Dt. 17.01.2012 & Memo no.3055 Dt. 03.09.2012	343.52	Barbed Wire Fencing	(1)Fencing of outer periphery safety zone of leasehold boundary by barbed wire	17.5 Kms	2011-12	along the Safety Zone	7341127.16	
	- do -	- do -	- do -		- do -	(2)Fencing in Eastern portion(D area) of ML	500 m	2012-13	along the Safety Zone	283414.80	

[Signature]
Forest Section Officer
BARBIL SECTION

STATUS REPORT ON IMPLEMENTATION OF CONDITIONS STIPULATED VIDE STAGE-II APPROVAL ORDER

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16	F. No: 8-17/1997-FC (pt.), Dt. 11.12.12	- do -	Memo no. 135 Dt. 17.01.2012 & Memo no. 3055 Dt. 03.09.2012		Barbed Wire Fencing ...contd	(3) Fencing in Western portion of ML near G area (beyond CISF gate)	500 m	2014-15	along the Safety Zone	293026.00	
	- do -	- do -	- do -		- do -	(4) Fencing of safety zone in western portion of ML	4.70 Km	2015-16	along the Safety Zone	2116406.34	
	- do -	- do -	- do -		RDF Plantation	(5) Plantation of Drought Hardy species	4.0 ha	2012-13 and 2015-16	along the Safety Zone	Departmental	
	- do -	- do -	- do -		- do -	(6) Plantation of Agave along the safety zone length		2013-14	Along the Safety Zone	Departmental	
	- do -	- do -	- do -		Plantation Watchers (5 nos.)	(7) Engagement of protection watchers	05 nos.	2014-15 and 2016-17	All along safety zone	1042269.14	
17	- do -	2(xiii)			Diversion of 73.2 hecta safety zone	has been granted by MoEF, G.O. vide letter F.no. : 8-17/1997-FC (vol.) Dt. 12.11.2014					
18	- do -	2(xiv)	Memo no. 135 Dt. 17.01.2012 & Memo no. 3055 Dt. 03.09.2012	93.48	Demarcation of the Area	(1) Survey of the area		2012-13		Departmental	
	- do -	- do -	- do -		RDF Plantation	(2) Uprooting of bushes	40.0 Ha	2013-14		1361446.46	
	- do -	- do -	- do -		- do -	(3) Fencing with 4 nos of water vats	3.60 km	2014-15		1560489.57	
	- do -	- do -	- do -		- do -	(4) Nursery and plantations	40.0 Ha	2013-14 and 2014-15	22° 6' 58.95" N 85° 20' 4.18" E	2359991.48	
	- do -	- do -	- do -		Plantation Watchers (7 nos.)	(5) R&D Consultation Fees to Ambedkar University, New Delhi	-	2012-15		7496850.50	
	- do -	- do -	- do -		Soil Conservation measures	(6) 3 nos. of series loose boulder check dams (with sand bags) near Eco-Restoration site.	45 x 1.5 x 4 30 x 1.5 x 4 20 x 1.5 x 4	2014-15	22° 7' 6.6" N 85° 20' 5.8" E 22° 7' 8.5" N 85° 20' 5.4" E 22° 7' 7.3" N	593106.25	

Bar Section Officer
Forest Section
BARBIL SECTION

STATUS REPORT ON IMPLEMENTATION OF CONDITIONS STIPULATED VIDE STAGE-II APPROVAL ORDER

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18	F. No: 8-17/1997 - FC (pt.), Dt. 11.12.12	2(xiv)	Memo no.135 Dt. 17.01.2012 & Memo no.3055 Dt. 03.09.2012		Soil Conservation measures ..contd	(7) De-weeding for plantation of native species	3.0 Ha	2016-(in process)	85°20'8.4"E 22° 7'8.2"N 85°20'8.2"E 22° 7'8.3"N 85°20'7.2"E	460000.00	Proposal in process
19	- do -	2(xv)	Memo no.135 Dt. 17.01.2012	55.00	Desilting of Village Ponds/Tanks/ Waterbodies	(1)Cleaning Of Bolani tank(MIP Dam At Bolani Basti)	-	2010-11 and 2011-12	85°19'15.13"E 22° 5'20.56"N 85°19'41.78"E 22° 5'36.86"N	344960.00	
	- do -	- do -	- do -		- do -	(2)Cleaning of Nallah near W-Hutting and tank of Balagoda	-	2011-12	85°20'2.31"E 22° 6'2.33"N	98302.50	
	- do -	- do -	- do -		- do -	(3) Cleaning Of source of Jhinkaria, Karo Source	-	2011-12 and 2012-13	85°18'52.05"E 22° 5'55.70"N	718868.40	
	- do -	- do -	- do -		- do -	(4) Desilting of Ponds at Harmath Chose Bandh & Harmoth Tank In Bolani Panchyat	-	2012-13	85°17'12.11"E 22° 3'51.68"N	739100.00	
	- do -	- do -	- do -		- do -	(5) Desilting of Ponds at Lasarda in Bolani	-	2014-15	85°19'41.41"E 22° 3'11.87"N	569664.08	
	- do -	- do -	- do -		- do -	(6) Desilting of Village Pond of Panduliposi Village	-	2014-15	85°17'20.80"E 22° 3'33.48"N	450000.00	
	- do -	- do -	- do -		- do -	(7) Desilting of Village Pond of Dumurta and Kanardavillage	-	2015-16	85°20'12.30"E 22° 4'41.74"N 85°19'18.20"E 22° 3'24.02"N	800000.00	

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Forest Section Officer
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20	F. No: 8-17/1997 - FC (pt.), Dt.11.12.12	2(xvi)	Memo no.135 Dt. 17.01.2012 & Memo no.3055 Dt. 03.09.2012	185.42	CSR activities in the villages located in the vicinity of CA	(1) Medical camps	For both Kalighai and Sadangabahal Village	2011-12	-	200000.00	
	- do -	- do -	- do -		- do -	(2) Veterinary Camps	For both Kalighai and Sadangabahal Village	2012-13	-	260000.00	
	- do -	- do -	- do -		- do -	(3) VSS Building	For Sadangabahal Village	2013-14	-	1600000.00	WO issued but site not available
	- do -	- do -	- do -		- do -	(4) Solar Lights and home lights	For both Kalighai and Sadangabahal Village	2014-15	-	800000.00	
	- do -	- do -	- do -		- do -	(5) Construction of club building & culvert	For Sadangabahal Village	2015-16		750000.00	
	- do -	- do -	- do -		- do -	(6) Repair of Road, school building, VSS building desilting of pond	For both Kalighai and Sadangabahal Village	2016-17		6000000.00*	* Proposal is in tender processing
21	- do -	2(xvii)	- do -		This is to be read with condition 2 v(d). Details have been mentioned under compliance to Condition -2v(d) of this report.						
22	- do -	2(xviii)	Memo no.135 Dt. 17.01.2012	13.65	Plan to prevent pollution of Jhikaria Nallah & sapua Nallah	(1) Check Dam in Sapua Nallah Jhikaria Nallah Junction near Bolani Basti	55 x 1.2 x 1.5, 45 x 1.8 x 1.5, 62 x 1.8 x 1.5	2011-12	85°19'3.84"E 22°5'28.93"N 85°18'55.76"E 22°5'43.77"N 85°18'55.30"E 22°5'35.69"N	795600.00	Mentioned under scheme for mitigative measures also
	- do -	- do -	- do -		- do -	(2) Dry Loose Boulder Wall Along upper stretch of Jhikaria Nallah, Chapua Nallah	40 x 1.2 x 1.5, 45 x 1.8 x 1.5, 62 x 1.8 x 1.5	2011-12	Various Locations	828932.26	-do-


Forest Section Officer
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22	F. No: 8-17/1997 - FC (pt.), Dt.11.12.12	2(xviii)	Memo no.135 Dt. 17.01.2012		Plan to prevent pollution of Jhikaria Nallah & sapua Nallah ...contd	(3) Dry Boulder Walls In F-Area, G-Area & Degraded Areas Of Bolani Ores Mines.	130 x 3 x 0.3	2012-13	22° 6' 2.97"N 85° 17' 59.15"E 22° 5' 55.79"N 85° 18' 13.23"E	917930.00	-do-
	- do -	- do -			- do -	(4) Dry loose Boulder retaining Walls In G-Area western side	600 x 1.5 x 1.0	2016-17	85° 17' 50.80"E 22° 6' 8.18"N	2000000.00	* Proposal is in tender processing
23	- do -	2(xix)	Memo no.135 Dt. 17.01.2012 & Memo no.3055 Dt. 03.09.2012	56.24	This is to be read with condition 2 V(e). All the top soil excavated till date has been utilized for plantation on dumps and degraded lands. No top soil has been generated or stored during 2016-17 as working was confined to already broken areas. The Top soil generated in future during working of Virgin Land will be stored at earmarked site and will be used as per the technically approved scheme.						
24	- do -	2(xx)	Memo no.135 Dt. 17.01.2012	118.00	Promotion of technical / professional education and skill upgradation	Imparting driving training for motor vehicle for the youth of peripheral villages of Bolani & Balagoda panchayat		2013-14	-	3500000.00	CSR and welfare division
25	- do -	- do -	- do -		- do -	ITI has been established at Bolani	37 students	2014-15	22° 7' 1.24"N 85° 20' 14.30"E	4649000.00	-do-
26	- do -	- do -	- do -		- do -	Students Sponsored By BOM to ITI Rourkela	31 students	2015-16		2500000.00	-do-
27	- do -	- do -	- do -		- do -	Recurring expenditure for ITI annually	Infrastructural establishment and remuneration etc	2014-17	-	6600000.00	-do-
28	- do -	2(xxi)	Memo no.135 Dt. 17.01.2012 & Memo no.3055 Dt. 03.09.2012	2784.56	Implementation of XISS plan	Details are Attached as Annexure - I	Different CSR and welfare activities in peripheral villages	2011-12	-	8507000.00	-do-
	- do -	- do -	- do -		- do -	- do -	- do -	2012-13		85791000.00	-do-
	- do -	- do -	- do -		- do -	- do -	- do -	2013-14		18196300.00	-do-
	- do -	- do -	- do -		- do -	- do -	- do -	2014-15		21180000.00	-do-
	- do -	- do -	- do -		- do -	- do -	- do -	2015-16		77751000.00	-do-

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Forest Section Officer
BARBIL SECTION

STATUS REPORT ON IMPLEMENTATION OF CONDITIONS STIPULATED VIDE STAGE-II APPROVAL ORDER

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29	F. No: 8-17/1997-FC (pt.), Dt.11.12.12	2(xxii)	Memo no.135 Dt. 17.01.2012	203.3	Implementation of reclamation plan	Details attached in Annexure – II					
30	- do -	2(xxiii)	-	-	No labour camp is established inside the forest land.						
31	- do -	2(xxiv)	-	-	Supply of firewood	Purchase from OFDC & disbursement to local labourers	50 quintal	2011-12	-	27000.00	
	- do -	- do -	- do -	- do -	- do -	- do -	40 quintal	2012-13		18720.00	
	- do -	- do -	- do -	- do -	- do -	- do -	312 quintal	2013-14		117936.00	
	- do -	- do -	- do -	- do -	- do -	- do -	260 quintal	2015-16		98280.00	
	- do -	- do -	- do -	- do -	- do -	- do -	676 quintal	2015-16		25528.00	
32	- do -	2(xxv)	-	-	Erection of ML boundary & Safety zone Pillars	130 ML pillars & 90 Safety zone pillars	4 ft height	-	-	-	
33	- do -	2(xxvi)	-	-	The diverted forest land is not used for any purpose other than that specified in the proposal.						
34	- do -	2(xxvii)	-	-	-	Noted and complied regularly	-	-	-	-	
35	- do -	2(xxviii)	-	-	-	Noted and complied regularly	-	-	-	-	
36	- do -	2(xxix)	-	-	-	Noted and complied regularly	-	-	-	-	
	Additional Conditions										
37	F. No: 8-17/1997-FC (vol.), Dt.12.11.14	2(i) & (ii)	-	-	An area over 87.09 Ha Non-forest land has been certified by the Tahasilidar, Barbil to be forest land as on 25.10.1980 as per Gov record out of the total Non Forest land over 95.68 Ha involved in the mining lease. Forest diversion proposal has been submitted to this effect over 87.09 ha. An area over 87.09 Ha Non-forest land has been certified by the Tahasilidar, Barbil to be forest land as on 25.10.1980 as per Govt. record out of the total Non Forest land over 95.68 Ha involved in the mining lease. Forest diversion proposal has been submitted to this effect over 87.09 ha vide Proposal No FP/OR/MIN/17936/2016 St.Sl No. OR-013/2016 dated 08.03.2016.						
38	Memo no 4566/F&E dated 17/03/2015 of F&E Deptt. Govt of Odisha,	-	-	-	1. The approvals has been published in two widely circulated daily newspapers, one in vernacular language (SAMBAD on 23.04.2015) and the other in English language (FINANCIAL EXPRESS on 23.04.2015). 2. The copies of forest clearances have been submitted to the Panchayat Samiti Joda, Zilla Parishad, Barbil Municipality and State Pollution Control Board, Keonjhar. 3. Detailed action taken in compliance to the above order of state government has been intimated to the DFO Keonjhar / RCCF Rourkela/Principal CCF Odisha / F&E Deptt in the self-monitoring report dated 04.07.2015. 4. SAIL BOM has deposited the NPV in respect of forest land involved in Bolani Ore Mines (5.10 Sq. Miles) of M/s SAIL and furnished undertaking as regards deposit of NPVs in respect of mines located in Keonjhar Forest Division.						

12. VALIDITY OF STATUTORY CLEARANCES:

Sl. No.	Statutory Clearance	Grant Order No.	Date	Validity
1.		8-17/1997-FC(Pt.)	11.12.2012	09.04.2030
2.	Forest Clearances	8-17/1997-FC(Pt.)	09.06.2013	09.04.2030
3.		8-17/1997-FC(vol.)	12.11.2014	09.04.2030
4.	Environment Clearance	J-11015/418/2008-IA.II(M)	21/12/2012	09.04.2030
5.	Consent To Operate	4784/IND-I-CON-242	18.03.2016	31.03.2019
6.	Hazardous Waste Authorization	IND-IV-HW-321/7687	07.05.2015	31.03.2020
7.	Mining Plan	314(3)/2009-MCCM(CZ)/MP-23	13.01.2010	09.04.2030
8.	Mining Scheme	MS/FM/31-ORI/BHU/2014-15	03.08.2015	31.03.2020
9.	Lease Deed	-	14-11-2014	09.04.2030

73 17 4- Forest Land within Safety Zone has been diverted vide FC Grant Order No. 8-17/1997-FC(vol.) Dt. 12.11.2014.

- 73.12 Ha Forest Land within Safety Zone has been diverted vide FC Grant Order No. _____ of _____ for
- plantation of Agave Over safety Zone.
- 10,000 saplings have been planted over Safety Zone for regeneration.
- Barbed wire fencing provided in Inner and Outer Boundary of Safety Zone.

14. STATUS OF BOUNDARY DISPUTE WITH ADJOINING LEASE, IF ANY: None/Not Applicable

Date: 13/01/2017
Place: Bolim Ore, Bihar

General Manager (M/Aes)

Bolaní Orés Mipes

WOL **CL**

Forest Officer
BARBUD SECTION

Forecast Range Officer
Barbil Range Office

Annexure-IV-A

OFFICE OF THE REGIONAL CHIEF CONSERVATOR OF FORESTS: ROURKELA
CIRCLE, ROURKELA
PH. No. 0661-2664324, FAX No. 0661-2664325, E.mail: rccfrourkela@gmail.com

Memo No. 2991/3F(Divs.-K)-218/2011.
Dated, Rourkela the, 29th, August, 2012.

To

The Divisional Forest Officer,
Keonjhar Forest Division

Sub:-

Diversion of 1152.58 ha. of Forest land in the 5.10 sq. miles of mining lease of Bolani Ore Mines in favour of M/s SAIL in Bolani Ore mines, in Keonjhar District during 2nd renewal of mining lease (RML) period in Barbil Tahasil - Compliance with the condition of Stage-I approval order reg.-

Ref:-

Letter F.No.8-17/1997 FC(pt) dt.4.4.2011 of Gol, communicated vide Memo No.6255/F&E dt.7.4.2011 of the Govt. of Odisha, F&E Department and Memo No.328 dt.13.01.2012.

The following Schemes prepared at the prerevised wage rate of Rs.90/- were technically approved by the undersigned vide this office Memo No.135 dtd.17.01.2012. Consequent upon revision of the wage rate from Rs.90/- to Rs.125/-, the User Agency has revised the cost of the schemes in accordance with the current wage rate of Rs.125/- per man-day which are technically approved and sent herewith for necessary action at your end. Therefore, you are requested to please realize the amount in respect of the schemes to be implemented by you.

As per condition No.2-iv:

- (a) The scheme for Mitigative Measures to Minimize Soil Erosion and chocking of streams within the Mining lease area over 5.10 Sq. Miles of Bolani Iron Ore Mine of M/s SAIL for Rs.2,25,00,000/- prepared at the present wage rate of Rs.125/- per man-day.
- (b) The Scheme for Planting of Drought Hardy plant species and sowing of seeds within Mining lease to arrest Soil Erosion within the Mining lease area over 5.10 Sq. Miles of Bolani Iron Ore Mine of M/s SAIL for Rs.90,40,000/- prepared at the present wage rate of Rs.125/- per manday.
- (c) The Scheme for Construction of Check Dams, retention Wall/Toe walls to arrest sliding down of the excavated materials along with the Contour within the Mining lease area over 5.10 Sq. Miles of Bolani Iron Ore Mine of M/s SAIL for Rs.72,93,000/- prepared at the present wage rate of Rs.125/- per manday.
- (d) Plan to Stabilize the overburden, dumps by appropriate Grading/ Benching so as to ensure that angles of repose at any given place is less than 28° within the Mining lease area over 5.10 Sq. Miles of Bolani Iron Ore Mine of M/s SAIL for Rs.1,29,06,000/- prepared at the present wage rate of Rs.125/- per manday.

Condition No.2-iv(e) & (xvi):

Plan for Top Soil Management within the Mining lease area over 5.10 Sq. Miles of Bolani Iron Ore Mine of M/s SAIL for Rs.56,24,951/- or Rs.56,25,000/- prepared at the present wage rate of Rs.125/- per manday

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- Condition No.2(x). Scheme for fencing ,protection and regeneration of the safety zone area (7.5 metre strip all along the outer boundary of the area identified to undertake mining) over an area of 175.63 ha. of Forest land within the Mining lease area over 5.10 Sq. Miles of Bolani Iron Ore Mine of M/s SAIL for Rs.3,43,52,000 prepared at the present wage rate of Rs.125/- per man day .
- Condition No.2(xi). Scheme for Gap Plantation and Soil & Moisture Conservation Activities to Restock and Rejuvenate the degraded open Forests (having crown density less than 0.4), if any, located in the area within 100 M from outer perimeter fwithin the Mining lease area over 5.10 Sq. Miles of Bolani Iron Ore Mine of M/s SAIL for Rs.93,48,227/- or Rs.93,48,000/- prepared at the present wage rate of Rs.125/- per man day .

Further, in compliance with condition No. 2 (xvii) the scheme for establishment of ITC at Bolani with a financial outlay of Rs.118.00 lakh submitted by the User Agency is hereby technically approved .

Therefore, the schemes, each in duplicate, are forwarded to you for taking necessary action at your end.

Encl.:Each Scheme in one set.

SA/-
Regional Chief Conservator of Forests,
Rourkela Circle, Rourkela.

Memo No. 2992 /3F(Dis-K)-218/2011. Dated. 29.8.12

Copy forwarded to the Chief Conservator of Forests (Forest Diversion & Nodal Officer, FC Act), O/o the Principal Chief Conservator of Forests, Odisha for favour of information with reference to this office Memo No.136 dt.17.1.2012 & Memo No.329 dt.13.1.2012 of DFO, Keonjhar Forest Division.

Regional Chief Conservator of Forests,
Rourkela Circle, Rourkela.

o/c

OFFICE OF THE REGIONAL CHIEF CONSERVATOR OF FORESTS, ROURKELA
CIRCLE, ROURKELA PH. No.0661-2664324, FAX No.0661-2664325, E.mail:
rccfrourkela@gmail.com.

Memo No. 3055 /3F(Dls-K)-218/2011.
Dated, Rourkela the, 03 th, September, 2012.

To

The Chief Conservator of Forests
(Forest Diversion & Nodal Officer, FC Act),
O/o the Principal Chief Conservator of Forests,
Odisha, Bhubaneswar.

Sub:-

Diversion of 1152.58 ha. of Forest land in the 5.10 sq. miles of mining lease of Bolani Ore Mines in favour of M/s SAIL in Bolani Ore Mines, in Keonjhar District during 2nd renewal of mining lease (RML) period in Barbil Tahasil- Compliance with the condition of Stage-I approval order reg.

Ref:-

Letter F.No.8-17/1997-FC(pt) dtd.4.4.2011 of GoI, MoEF communicated vide Memo No.6255/F&E dtd.7.4.2011 of the Govt. of Odisha, F&E Department and this office Memo No.2351 dtd.10.7.2012 and Memo No. 2992 dtd.29.08.2012.

In continuation of this office memo cited above, this is to inform you that consequent upon revision of the wage rate, the following schemes were submitted by the User Agency after revising them in accordance with the current wage rate of Rs.125/- per man-day which were technically approved by the undersigned and sent to the Divisional Forest Office, Keonjhar for necessary action at his end vide this office Memo No.2991 dt.29.08.2012 and Memo No.3041 dtd.3.9.2012 with copies endorsed to you in the next memos of even date for your kind information.

As per condition No.2-iv:

- (a) A plan containing appropriate mitigative measures to minimize soil erosion and choking of streams within the Mining lease area over 5.10 Sq. Miles of Bolani Iron Ore Mine of M/s SAIL for Rs.2,25,00,000/- prepared at the present wage rate of Rs.125/- per man-day.
- (b) The scheme for planting of adequate drought hardy plant species and sowing of seeds in the appropriate area within the Mining lease to arrest Soil Erosion for Rs.90,40,000/- prepared at the present wage rate of Rs.125/- per manday.
- (c) The scheme for construction of Check Dams, retention /Toe walls to arrest sliding down of the excavated materials along the contour for Rs.72,93,000/- prepared at the present wage rate of Rs.125/- per manday.
- (d) A Plan to stabilize the overburden dumps by appropriate grading/ benching so as to ensure that angles of repose at any given place is less than 28° for Rs.1,29,06,000/- prepared at the present wage rate of Rs.125/- per manday.

- Condition No.2-iv(e) & (xvi): Plan for Top Soil Management and conservation of top soil for 56,24,951/- prepared at the present wage rate of Rs.125/- per manday .
- Condition No.2(x). The Scheme for fencing ,protection and regeneration of the safety zone area (7.5 metre strip all along the outer boundary of the area identified to undertake mining) over an area of 175.63 ha. of Forest land within the Mining lease for Rs.3,43,52,000 prepared at the present wage rate of Rs.125/- per mandays
- Condition No.2-(xiii): A plan to undertake Corporate Social Responsibility (CSR) activities in the villages located in the vicinity of the area identified for Compensatory Afforestation in Patna Forest Range with the jurisdiction of Keonjhar Forest Division over an area of 205.0 ha for Rs.1,85,42,000/- prepared at the present wage rate of Rs.125/- per mandays
- Condition No.2(xi). The scheme for Gap Plantation and Soil & Moisture Conservation Activities to restock and rejuvenate the degraded open Forests(having crown density less than 0.4) , if any, located in the area within 100 M from outer perimeter within the Mining lease for Rs.93,48,227/- or Rs.93,48,000/- prepared at the present wage rate of Rs.125/- per mandays .
- Condition No.2(xviii). The Scheme for implementation of the recommendation of final study report of the XISS, Ranchi with an action plan with a financial out lay of Rs.27,85,00,000/-

As observed from above, the User Agency has complied with the conditions stipulated by Gol, MoEF & State Government and has demonstrated its commitment to fully comply with the statutory stipulations within the prescribed time frame except the condition relating to study of migratory routes of elephants stipulated by the State Government of Odisha. The grant of Stage-II approval in favour of the User Agency is recommended which may be considered.

Regional Chief Conservator of Forests,
Rourkela Circle,Rourkela.

Memo No. 3056 /3F(Dis-K)218/2011. Dated. 03.9.2012

Copy forwarded to the Divisional Forest Officer, Keonjhar Forest Division for information with reference to this office Memo No.2352 dt.10.07.2012.

Regional Chief Conservator of Forests,
Rourkela Circle,Rourkela.

Annexure-IV-B

OFFICE OF THE REGIONAL CHIEF CONSERVATOR OF FORESTS: ROURKELA
CIRCLE, ROURKELA
PH. No. 0661-2664324, FAX No. 0661-2664325, E.mail: rccfrourkela@gmail.com

Memo No. 2991/3F(Divs.-K)-218/2011.
Dated, Rourkela the, 29th, August, 2012.

To

The Divisional Forest Officer,
Keonjhar Forest Division.

Sub:-

Diversion of 1152.58 ha. of Forest land in the 5.10 sq. miles of mining lease of Bolani Ore Mines in favour of M/s SAIL in Bolani Ore mines, in Keonjhar District during 2nd renewal of mining lease (RML) period in Barbil Tahasil - Compliance with the condition of Stage-I approval order reg.-

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The following Schemes prepared at the prerevised wage rate of Rs.90/- were technically approved by the undersigned vide this office Memo No.135 dtd.17.01.2012. Consequent upon revision of the wage rate from Rs.90/- to Rs.125/-, the User Agency has revised the cost of the schemes in accordance with the current wage rate of Rs.125/- per man-day which are technically approved and sent herewith for necessary action at your end. Therefore, you are requested to please realize the amount in respect of the schemes to be implemented by you.

As per condition No.2-iv:

- (a) The scheme for Mitigative Measures to Minimize Soil Erosion and chocking of streams within the Mining lease area over 5.10 Sq. Miles of Bolani Iron Ore Mine of M/s SAIL for Rs.2,25,00,000/- prepared at the present wage rate of Rs.125/- per man-day.
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Condition No.2-iv(c) & (xvi):

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Further, in compliance with condition No. 2 (xvii) the scheme for establishment of ITC at Bolani with a financial outlay of Rs.118.00 lakh submitted by the User Agency is hereby technically approved .

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Encl.:Each Scheme in one set.

SA/-
Regional Chief Conservator of Forests,
Rourkela Circle, Rourkela.

Memo No. 2992 /3F(Dis-K)-218/2011. Dated. 29.8.12

Copy forwarded to the Chief Conservator of Forests (Forest Diversion & Nodal Officer, FC Act), O/o the Principal Chief Conservator of Forests, Odisha for favour of information with reference to this office Memo No.136 dt.17.1.2012 & Memo No.329 dt.13.1.2012 of DFO, Keonjhar Forest Division.

Regional Chief Conservator of Forests,
Rourkela Circle, Rourkela.

OFFICE OF THE REGIONAL CHIEF CONSERVATOR OF FORESTS, ROURKELA
CIRCLE, ROURKELA PH. No.0661-2664324, FAX No.0661-2664325, E.mail:
rccrourkela@gmail.com.

Memo No. 3055 /3F(Dls-K)-218/2011.
Dated, Rourkela the, 03 th, September, 2012.

To

The Chief Conservator of Forests
(Forest Diversion & Nodal Officer, FC Act),
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Sub:-

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As per condition No.2-iv:

- (a) A plan containing appropriate mitigative measures to minimize soil erosion and chocking of streams within the Mining lease area over 5.10 Sq. Miles of Bolani Iron Ore Mine of M/s SAIL for Rs.2,25,00,000/- prepared at the present wage rate of Rs.125/- per man-day.
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Regional Chief Conservator of Forests,
Rourkela Circle,Rourkela.

Memo No. 3056 /3F(Dis-K)218/2011. Dated. 03.9.2012

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Regional Chief Conservator of Forests,
Rourkela Circle,Rourkela.

Annexure-IV-C

OFFICE OF THE REGIONAL CHIEF CONSERVATOR OF FORESTS: ROURKELA
CIRCLE, ROURKELA
PH. No. 0661-2664324, FAX No. 0661-2664325, E.mail: rccfrourkela@gmail.com

Memo No. 2991/3F(Divs.-K)-218/2011.
Dated, Rourkela the, 29th, August, 2012.

To

The Divisional Forest Officer,
Keonjhar Forest Division.

Sub:-

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SA/-
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Regional Chief Conservator of Forests,
Rourkela Circle, Rourkela.

OFFICE OF THE REGIONAL CHIEF CONSERVATOR OF FORESTS, ROURKELA
CIRCLE, ROURKELA PH. No.0661-2664324, FAX No.0661-2664325, E.mail:
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To

The Chief Conservator of Forests
(Forest Diversion & Nodal Officer, FC Act),
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Annexure-IV-D

OFFICE OF THE REGIONAL CHIEF CONSERVATOR OF FORESTS: ROURKELA
CIRCLE, ROURKELA
PH. No. 0661-2664324, FAX No. 0661-2664325, E.mail: rccfrourkela@gmail.com

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- (d) Plan to Stabilize the overburden, dumps by appropriate Grading/ Benching so as to ensure that angles of repose at any given place is less than 28° within the Mining lease area over 5.10 Sq. Miles of Bolani Iron Ore Mine of M/s SAIL for Rs.1,29,06,000/- prepared at the present wage rate of Rs.125/- per manday.

Condition No.2-iv(c) & (xvi):

Plan for Top Soil Management within the Mining lease area over 5.10 Sq. Miles of Bolani Iron Ore Mine of M/s SAIL for Rs.56,24,951/- or Rs.56,25,000/- prepared at the present wage rate of Rs.125/- per manday.

- Condition No.2(x). Scheme for fencing ,protection and regeneration of the safety zone area (7.5 metre strip all along the outer boundary of the area identified to undertake mining) over an area of 175.63 ha. of Forest land within the Mining lease area over 5.10 Sq. Miles of Bolani Iron Ore Mine of M/s SAIL for Rs.3,43,52,000 prepared at the present wage rate of Rs.125/- per man day .
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Further, in compliance with condition No. 2 (xvii) the scheme for establishment of ITC at Bolani with a financial outlay of Rs.118.00 lakh submitted by the User Agency is hereby technically approved .

Therefore, the schemes, each in duplicate, are forwarded to you for taking necessary action at your end.

Encl.:Each Scheme in one set.

SA/-
Regional Chief Conservator of Forests,
Rourkela Circle, Rourkela.

Memo No. 2992 /3F(Dis-K)-218/2011. Dated. 29.8.12

Copy forwarded to the Chief Conservator of Forests (Forest Diversion & Nodal Officer, FC Act), O/o the Principal Chief Conservator of Forests, Odisha for favour of information with reference to this office Memo No.136 dt.17.1.2012 & Memo No.329 dt.13.1.2012 of DFO, Keonjhar Forest Division.

Regional Chief Conservator of Forests,
Rourkela Circle, Rourkela.

OFFICE OF THE REGIONAL CHIEF CONSERVATOR OF FORESTS, ROURKELA
CIRCLE, ROURKELA PH. No.0661-2664324, FAX No.0661-2664325, E.mail:
rccfrourkela@gmail.com.

Memo No. 3055 /3F(Dls-K)-218/2011.
Dated, Rourkela the, 03 th, September, 2012.

To

The Chief Conservator of Forests
(Forest Diversion & Nodal Officer, FC Act),
O/o the Principal Chief Conservator of Forests,
Odisha, Bhubaneswar.

Sub:-

Diversion of 1152.58 ha. of Forest land in the 5.10 sq. miles of mining lease of Bolani Ore Mines in favour of M/s SAIL in Bolani Ore Mines, in Keonjhar District during 2nd renewal of mining lease (RML) period in Barbil Tahasil- Compliance with the condition of Stage-I approval order reg.

Ref:-

Letter F.No.8-17/1997-FC(pt) dtd.4.4.2011 of Gol, MoEF communicated vide Memo No.6255/F&E dtd.7.4.2011 of the Govt. of Odisha, F&E Department and this office Memo No.2351 dtd.10.7.2012 and Memo No. 2992 dtd.29.08.2012.

In continuation of this office memo cited above, this is to Inform you that consequent upon revision of the wage rate, the following schemes were submitted by the User Agency after revising them in accordance with the current wage rate of Rs.125/- per man-day which were technically approved by the undersigned and sent to the Divisional Forest Office, Keonjhar for necessary action at his end vide this office Memo No.2991 dt.29.08.2012 and Memo No.3041 dtd.3.9.2012 with copies endorsed to you in the next memos of even date for your kind information.

As per condition No.2-iv:

- (a) A plan containing appropriate mitigative measures to minimize soil erosion and chocking of streams within the Mining lease area over 5.10 Sq. Miles of Bolani Iron Ore Mine of M/s SAIL for Rs.2,25,00,000/- prepared at the present wage rate of Rs.125/- per man-day.
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As observed from above, the User Agency has complied with the conditions stipulated by Gol, MoEF & State Government and has demonstrated its commitment to fully comply with the statutory stipulations within the prescribed time frame except the condition relating to study of migratory routes of elephants stipulated by the State Government of Odisha. The grant of Stage-II approval in favour of the User Agency is recommended which may be considered.

Regional Chief Conservator of Forests,
Rourkela Circle,Rourkela.

Memo No. 3056 /3F(Dis-K)218/2011. Dated. 03.9.2012

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Regional Chief Conservator of Forests,
Rourkela Circle,Rourkela.

Annexure-IV-E

OFFICE OF THE REGIONAL CHIEF CONSERVATOR OF FORESTS: ROURKELA
CIRCLE, ROURKELA
PH. No. 0661-2664324, FAX No. 0661-2664325, E.mail: rccfrourkela@gmail.com

Memo No. 2991/3F(Divs.-K)-218/2011.
Dated, Rourkela the, 29th, August, 2012.

To

The Divisional Forest Officer,
Keonjhar Forest Division.

Sub:-

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The following Schemes prepared at the prerevised wage rate of Rs.90/- were technically approved by the undersigned vide this office Memo No.135 dtd.17.01.2012. Consequent upon revision of the wage rate from Rs.90/- to Rs.125/-, the User Agency has revised the cost of the schemes in accordance with the current wage rate of Rs.125/- per man-day which are technically approved and sent herewith for necessary action at your end. Therefore, you are requested to please realize the amount in respect of the schemes to be implemented by you.

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Memo No. 3056 /3F(Dis-K)218/2011. Dated. 03.9.2012

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Annexure-IV-F

OFFICE OF THE REGIONAL CHIEF CONSERVATOR OF FORESTS: ROURKELA
CIRCLE, ROURKELA
PH. No. 0661-2664324, FAX No. 0661-2664325, E.mail: rccfrourkela@gmail.com

Memo No. 2991/3F(Divs.-K)-218/2011.
Dated, Rourkela the, 29th, August, 2012.

To

The Divisional Forest Officer,
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Regional Chief Conservator of Forests,
Rourkela Circle,Rourkela.

Annexure-V

BY SPEED POST**No. J-11015/418/2008-IA.II(M)**

Government of India

Ministry of Environment & Forests

534, Paryavaran Bhavan,
C.G.O. Complex, Lodi Road,
New Delhi-110 003.Dated 21st December, 2012

To

M/s Steel Authority of India Ltd.
20th Floor, Scope Minar
Laxmi Nagar, Ditt. Centre
Delhi - 110092**Subject: Bolani Iron Ore Mine along with Beneficiation and Pellet Plant of M/s SAIL located at village Bolani, Tehsil Barbil, District Keonjhar, Odisha - (5.1 Sq. mile) - environmental clearance - regarding.**

Sir,

This has reference to your letter No. RMD/K/E&L/11/265 dated 14.12.2011 on the subject mentioned above. The proposal is for enhancement of production of iron ore from 5.65 million TPA to 12.0 million TPA (ROM) along with installation of a new beneficiation plant of 12 million TPA throughput and pellet plant of 4.0 million TPA capacity. The project was prescribed Terms of Reference (TOR) on 9.2.2009 for undertaking detailed EIA study for the purpose of obtaining environmental clearance (EC) in accordance with the provisions of the EIA Notification.

2. The mine is located between latitudes 22°05'N & 22°08'N and longitudes 85°17' & 85°20'E. The mine lease area is 1321.45 ha, which includes 1225.78 ha of forestland. Stage-I forestry clearance has been obtained on 12.11.2010 for an area of 1152.58 ha. Mine working will be opencast semi-mechanised involving drilling and blasting. The ultimate working depth in the area will be 452 m AMSL. The groundwater table is 451 m AMSL. The mine working will not intersect with the ground water table. The peak water requirement is estimated as 13,400 kld, which will be met from Karo river and Jhikaria and Chapua nallah. No groundwater will be drawn for the project. Partly, recycled water will be utilized. No groundwater will be withdrawn.

3. No National park / Wildlife sanctuary / Biosphere reserve / Tiger reserve / Elephant reserve, etc., are reported to be located in the core and buffer zone of within 10 km of the periphery of the project site. However, Karo Karampada Elephant Corridor is reported at a distance of 8 km from the mine lease and it was reported that leopard, sloth bear, elephant, barking deer, etc. have been observed.

4. It is estimated that 7.5 million m³ of waste is existing. During the expansion phase 13.729 million m³ of waste will be generated. Part of it will be re-handled and a part will be dumped in the existing active dump and as well as two new dumps to be created. It is estimated that 17.73 million m³ of tailings will be generated. Out of this, 2.75 million m³ will

be beneficiated and utilized, 9.25 million m³ will be sold off and balance 5.73 million m³ of tailings will be stored in the tailing pond. The old tailing pond in this mine was discontinued while the new tailing pond will be in the adjoining mine lease. At the end of the mine life an area of 1033.56 ha will be covered under plantation and an area of 10 ha will be covered under water body. It has been reported that there is no population in the core zone, therefore, displacement of population and R&R has not been envisaged

5. Public hearing has been held on 24.10.2011. It was reported that there is no court case pending against the project. An amount of Rs. 54 lakhs has been earmarked for drinking water supply, an amount of Rs. 902 lakhs has been earmarked for roads, Rs. 17.2 lakhs per annum for education, Rs. 208 lakhs per annum for employment, Rs. 100 lakhs have been earmarked for health and hygiene.

6. The Ministry of Environment and Forests has examined the application in accordance with the EIA Notification, 2006 and hereby accords environmental clearance under the provisions thereof to the above mentioned Bolani Iron Ore Mine along with Beneficiation and Pellet Plant of M/s SAIL located at village Bolani, Tehsil Barbil, District Keonjhar, Odisha (5.1 Sq. mile) subject to implementation of the following conditions and environmental safeguards:

- (i) Environmental clearance is subject to obtaining clearance under the Wildlife (Protection) Act, 1972 from the competent authority, as applicable.
- (ii) The project proponent shall obtain Consent to Establish and Consent to Operate from the State Pollution Control Board, Orissa and effectively implement all the conditions stipulated therein.
- (iii) Forest clearance for 73.20 ha of Safety Zone has not been obtained by the project proponent. This environmental clearance subject to the grant of forest clearance for diversion of 73.20 ha of safety zone within one year.
- (iv) The Company shall submit within 3 months their policy towards Corporate Environment Responsibility which should inter-alia provide for (i) Standard operating process / process to bring into focus any infringement / deviation / violation of the environmental or forest norms / conditions, (ii) Hierarchical system or Administrative order of the company to deal with the environmental issues and for ensuring compliance with the EC conditions and (iii) System of reporting of non compliances / violations of environmental norms to the Board of Directors of the company and / or shareholders or stakeholders.
- (v) The mining operations shall be restricted to above ground water table and it should not intersect the groundwater table. In case of working below the ground water table, prior approval of the Ministry of Environment and Forests and the Central Ground Water Authority shall be obtained, for which a detailed hydro-geological study shall be carried out.
- (vi) Mitigation measures to control RSPM levels shall continue to be implemented and air quality data will also be collected during operation of the mines. The data so collected shall be analysed to see the effectiveness of the mitigation measures implemented.

Based on the same, additional safeguard measures, as may be required shall be implemented in the project.

- (vii) The biological survey shall be repeated during October – December and mid May month to see the existence of wildlife corridors, if any. Based on the same, necessary Wildlife Conservation Plan as may be required shall be prepared and implemented in consultation with the State Forest and Wildlife Department.
- (viii) The biological survey shall also be undertaken to identify the trees with orchids, if any. Such trees, so identified shall be protected and if need be, these trees may be relocated.
- (ix) The project proponent shall ensure that no natural watercourse and/or water resources shall be obstructed due to any mining operations.
- (x) The top soil, if any shall temporarily be stored at earmarked site(s) only and it should not be kept unutilized for long. The topsoil shall be used for land reclamation and plantation.
- (xi) The over burden (OB) generated during the mining operation shall be stacked at earmarked dump site(s) only and should not be kept active for long period. In critical areas, use of geo textiles shall be undertaken for stabilization of the dump. Monitoring and management of rehabilitated areas should continue until the vegetation becomes self-sustaining. Compliance status should be submitted to the Ministry of Environment & Forests and its Regional Office located at Bhubaneswar on six monthly basis.
- (xii) Catch drains and siltation ponds of appropriate size should be constructed to arrest silt and sediment flows from mine working, soil, OB and mineral dumps. The water so collected should be utilized for watering the mine area, roads, green belt development etc. The drains should be regularly desilted particularly after monsoon and maintained properly.

Garland drain of appropriate size, gradient and length shall be constructed for both mine pit and OB dump and sump capacity should 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 should also provide adequate retention period to allow proper settling of silt material. Sedimentation pits should be constructed at the corners of the garland drains and desilted at regular intervals.

- (xiii) Dimension of the retaining wall at the toe of dumps and OB benches within the mine to check run-off and siltation should be based on the rainfall data.
- (xiv) Plantation shall be raised in an area of 33.4B7 ha including a 7.5m wide green belt in the safety zone around the mining lease by planting the native species around OB dump, reclaimed area, mine benches, along the roads etc. in consultation with the local DFD/Agriculture Department. The density of the trees should be around 2500 plants per hectare. Greenbelt shall be developed all along the mine lease area in a phased manner and shall be completed within first five years.
- (xv) Effective safeguard measures such as regular water sprinkling shall be carried out in

critical areas prone to air pollution and having high levels of particulate matter such as around crushing and screening plant, loading and unloading point and transfer points. Extensive water sprinkling shall be carried out on haul roads. It should be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard.

- (xvi) The project authority should implement suitable conservation measures to augment ground water resources in the area in consultation with the Regional Director, Central Ground Water Board.
- (xvii) Regular monitoring of ground water level and quality shall be carried out in and around the mine lease by establishing a network of existing wells and installing new piezometers during the operation. The periodic monitoring [(at least four times in a year- pre-monsoon (April-May), monsoon (August), post-monsoon (November) and winter (January); once in each season)] shall be carried out in consultation with the State Ground Water Board/Central Ground Water Authority and the data thus collected may be sent regularly to the Ministry of Environment and Forests and its Regional Office Bhubneswar, the Central Ground Water Authority and the Regional Director, Central Ground Water Board. If at any stage, it is observed that the groundwater table is getting depleted due to the mining activity, necessary corrective measures shall be carried out.
- (xviii) The project proponent shall obtain necessary prior permission of the competent authorities for drawl of requisite quantity of surface water, if any, required for the project.
- (xix) The safeguard measures as suggested by the Central Groundwater Board vide letter No.21-4(231)/CGWA/SER/2010-1010 dated 11.06.2010 shall be effectively implemented.
- (xx) The project proponent shall practice suitable rainwater harvesting measures on long term basis and work out a detailed scheme for rainwater harvesting in consultation with the Central Groundwater Authority and submit a copy of the same to the Ministry of Environment and Forests and its Regional Office, Bhubneswar.
- (xxi) Vehicular emissions shall be kept under control and regularly monitored. Measures shall be taken for maintenance of vehicles used in mining operations and in transportation of mineral. The vehicles should be covered with a tarpaulin and shall not be overloaded.
- (xxii) No blasting shall be carried out after the sunset. Blasting operation shall be carried out only during the daytime. Controlled blasting shall be practiced. The mitigative measures for control of ground vibrations and to arrest fly rocks and boulders should be implemented.
- (xxiii) Drills shall either be operated with the dust extractors or equipped with water injection system.
- (xxiv) Mineral handling area shall be provided with adequate number of high efficiency dust

extraction system. Loading and unloading areas including all the transfer points should also have efficient dust control arrangements. These should be properly maintained and operated.

- (xxv) Sewage treatment plant shall be installed for the colony. ETP shall also be provided for the workshop and wastewater generated during the mining operation.
- (xxvi) Pre-placement medical examination and periodical medical examination of the workers engaged in the project shall be carried out and records maintained. For the purpose, schedule of health examination of the workers should be drawn and followed accordingly.
- (xxvii) Provision shall be made for the housing of construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.
- (xxviii) The project proponent shall take all precautionary measures during mining operation for conservation and protection of endangered fauna namely elephant, sloth bear etc. spotted in the study area. All the safeguard measures brought out in the Wildlife Conservation Plan so prepared specific to this project site and approved by the Chief Conservator of Forests (Wildlife) shall be effectively implemented. A copy of Wildlife Conservation Plan shall be submitted to the Ministry of Environment and Forests and its Regional Office, Bhubaneswar.
- (xxix) The critical parameters such as RSPM (Particulate matter with size less than 10micron i.e., PM_{10}) and NO_x 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.
- (xxx) 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.
- (xxxi) No change in mining technology and scope of working should be made without prior approval of the Ministry of Environment & Forests and no change in the calendar plan including excavation, quantum of mineral iron ore and waste should be made.
- (xxxii) Atleast four ambient air quality-monitoring stations should be established in the core zone as well as in the buffer zone for RSPM (Particulate matter with size less than 10micron i.e., PM_{10}) and NO_x monitoring. Location 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.

- (xxxiii) Industrial waste water (workshop and waste water from the mine) should be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19th May, 1993 and 31st December, 1993 or as amended from time to time. Oil and grease trap should be installed before discharge of workshop effluents.
- (xxxiv) Personnel working in dusty areas should wear protective respiratory devices and they should also be provided with adequate training and information on safety and health aspects.
- (xxxv) Occupational health surveillance program of the workers should be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed.
- (xxxvi) A separate environmental management cell with suitable qualified personnel should be set-up under the control of a Senior Executive, who will report directly to the Head of the Organization.
- (xxxvii) The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year wise expenditure should be reported to the Ministry and its Regional Office located at Bhubaneswar.
- (xxxviii) 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 Bhubaneswar, the respective Zonal Office of Central Pollution Control Board and 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, Bhubaneswar, the respective Zonal Officer of Central Pollution Control Board and the State Pollution Control Board.
- (xxxix) A copy of the clearance letter shall be sent by the proponent to concerned Panchayat, Zila Parishad/ Municipal Corporation, Urban Local Body and the Local NGO, if any, from whom suggestions/ representations, if any, were received while processing the proposal. The clearance letter shall also be put on the website of the Company by the proponent. The State Pollution Control Board should display a copy of the clearance letter at the Regional office, District Industry Centre and the Collector's office/ Tehsildar's Office for 30 days.
- (xl) The project authorities should advertise at least in two local newspapers of the District or State in which the project is located and widely circulated, one of which shall be in the vernacular language of the locality concerned, within 7 days of the issue of the clearance letter informing that the project has been accorded environmental clearance and a copy of the clearance 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 should be forwarded to the Regional Office of this Ministry located at Bhubaneswar.

7. The Ministry or any other competent authority may alter/modify the above conditions or stipulate any further condition in the interest of environment protection.

8. Failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of the Environment (Protection) Act, 1986.

9. 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 made thereunder and also any other orders passed by the Hon'ble Supreme Court of India/ High Court of Orissa and any other Court of Law relating to the subject matter.

10. Any appeal against this environmental clearance shall lie with the National Green Tribunal, if preferred, within a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.


(Dr. Saroj)
Director

Copy to:

- (i) The Secretary, Ministry of Mines, Government of India, Shastri Bhawan, New Delhi.
- (ii) The Secretary, Department of Environment, Government of Orissa, Secretariat, Bhubaneswar.
- (iii) The Secretary, Department of Mines and Geology, Government of Orissa, Secretariat, Bhubaneswar.
- (iv) The Secretary, Department of Forests, Government of Orissa, Secretariat, Bhubaneswar.
- (v) The Chairman, Central Pollution Control Board, Parivesh Bhawan, CBD-cum-Office Complex, East Arjun Nagar, Delhi-110032.
- (vi) The Chief Conservator of Forests, Regional Office (EZ), Ministry of Environment and Forests, A-3 Chandrashekharapur, Bhubaneswar-751023.
- (vii) The Chairman, Orissa State Pollution Control Board, Parivesh Bhawan, A/118 Nilakantha Nagar, Unit-VIII, Bhubaneswar-751012.
- (viii) The Member Secretary, Central Ground Water Authority, A2, W3 Curzon Road Barracks, K.G. Marg, New Delhi-110001.
- (ix) The District Collector, District Keonjhar, Government of Orissa.
- (x) EI Division, Ministry of Environment & Forests, EI Division, New Delhi.
- (xi) Monitoring File.
- (xii) Guard File.
- (xiii) Record File.


(Dr. Saroj)
Director

Annexure-IV-G

OFFICE OF THE REGIONAL CHIEF CONSERVATOR OF FORESTS: ROURKELA
CIRCLE, ROURKELA
PH. No. 0661-2664324, FAX No. 0661-2664325, E.mail: rccfrourkela@gmail.com

Memo No. 2991/3F(Divs.-K)-218/2011.
Dated, Rourkela the, 29th, August, 2012.

To

The Divisional Forest Officer,
Keonjhar Forest Division.

Sub:-

Diversion of 1152.58 ha. of Forest land in the 5.10 sq. miles of mining lease of Bolani Ore Mines in favour of M/s SAIL in Bolani Ore mines, in Keonjhar District during 2nd renewal of mining lease (RML) period in Barbil Tahasil - Compliance with the condition of Stage-I approval order reg.-

Ref:-

Letter F.No.8-17/1997 FC(pt) dt.4.4.2011 of Gol, communicated vide Memo No.6255/F&E dt.7.4.2011 of the Govt. of Odisha, F&E Department and Memo No.328 dt.13.01.2012.

The following Schemes prepared at the prerevised wage rate of Rs.90/- were technically approved by the undersigned vide this office Memo No.135 dtd.17.01.2012. Consequent upon revision of the wage rate from Rs.90/- to Rs.125/-, the User Agency has revised the cost of the schemes in accordance with the current wage rate of Rs.125/- per man-day which are technically approved and sent herewith for necessary action at your end. Therefore, you are requested to please realize the amount in respect of the schemes to be implemented by you.

As per condition No.2-iv:

- (a) The scheme for Mitigative Measures to Minimize Soil Erosion and chocking of streams within the Mining lease area over 5.10 Sq. Miles of Bolani Iron Ore Mine of M/s SAIL for Rs.2,25,00,000/- prepared at the present wage rate of Rs.125/- per man-day.
- (b) The Scheme for Planting of Drought Hardy plant species and sowing of seeds within Mining lease to arrest Soil Erosion within the Mining lease area over 5.10 Sq. Miles of Bolani Iron Ore Mine of M/s SAIL for Rs.90,40,000/- prepared at the present wage rate of Rs.125/- per manday.
- (c) The Scheme for Construction of Check Dams, retention Wall/Toe walls to arrest sliding down of the excavated materials along with the Contour within the Mining lease area over 5.10 Sq. Miles of Bolani Iron Ore Mine of M/s SAIL for Rs.72,93,000/- prepared at the present wage rate of Rs.125/- per manday.
- (d) Plan to Stabilize the overburden, dumps by appropriate Grading/ Benching so as to ensure that angles of repose at any given place is less than 28° within the Mining lease area over 5.10 Sq. Miles of Bolani Iron Ore Mine of M/s SAIL for Rs.1,29,06,000/- prepared at the present wage rate of Rs.125/- per manday.

Condition No.2-iv(c) & (xvi):

Plan for Top Soil Management within the Mining lease area over 5.10 Sq. Miles of Bolani Iron Ore Mine of M/s SAIL for Rs.56,24,951/- or Rs.56,25,000/- prepared at the present wage rate of Rs.125/- per manday.

- Condition No.2(x). Scheme for fencing ,protection and regeneration of the safety zone area (7.5 metre strip all along the outer boundary of the area identified to undertake mining) over an area of 175.63 ha. of Forest land within the Mining lease area over 5.10 Sq. Miles of Bolani Iron Ore Mine of M/s SAIL for Rs.3,43,52,000 prepared at the present wage rate of Rs.125/- per man day .
- Condition No.2(xi). Scheme for Gap Plantation and Soil & Moisture Conservation Activities to Restock and Rejuvenate the degraded open Forests (having crown density less than 0.4), if any, located in the area within 100 M from outer perimeter fwithin the Mining lease area over 5.10 Sq. Miles of Bolani Iron Ore Mine of M/s SAIL for Rs.93,48,227/- or Rs.93,48,000/- prepared at the present wage rate of Rs.125/- per man day .

Further, in compliance with condition No. 2 (xvii) the scheme for establishment of ITC at Bolani with a financial outlay of Rs.118.00 lakh submitted by the User Agency is hereby technically approved .

Therefore, the schemes, each in duplicate, are forwarded to you for taking necessary action at your end.

Encl.:Each Scheme in one set.

SA/-
Regional Chief Conservator of Forests,
Rourkela Circle, Rourkela.

Memo No. 2992 /3F(Dis-K)-218/2011. Dated. 29.8.12

Copy forwarded to the Chief Conservator of Forests (Forest Diversion & Nodal Officer, FC Act), O/o the Principal Chief Conservator of Forests, Odisha for favour of information with reference to this office Memo No.136 dt.17.1.2012 & Memo No.329 dt.13.1.2012 of DFO, Keonjhar Forest Division.

Regional Chief Conservator of Forests,
Rourkela Circle, Rourkela.

OFFICE OF THE REGIONAL CHIEF CONSERVATOR OF FORESTS, ROURKELA
CIRCLE, ROURKELA PH. No.0661-2664324, FAX No.0661-2664325, E.mail:
rccrourkela@gmail.com.

Memo No. 3055 /3F(Dls-K)-218/2011.
Dated, Rourkela the, 03 th, September, 2012.

To

The Chief Conservator of Forests
(Forest Diversion & Nodal Officer, FC Act),
O/o the Principal Chief Conservator of Forests,
Odisha, Bhubaneswar.

Sub:-

Diversion of 1152.58 ha. of Forest land in the 5.10 sq. miles of mining lease of Bolani Ore Mines in favour of M/s SAIL in Bolani Ore Mines, in Keonjhar District during 2nd renewal of mining lease (RML) period in Barbil Tahasil- Compliance with the condition of Stage-I approval order reg.

Ref:-

Letter F.No.8-17/1997-FC(pt) dtd.4.4.2011 of Gol, MoEF communicated vide Memo No.6255/F&E dtd.7.4.2011 of the Govt. of Odisha, F&E Department and this office Memo No.2351 dtd.10.7.2012 and Memo No. 2992 dtd.29.08.2012.

In continuation of this office memo cited above, this is to inform you that consequent upon revision of the wage rate, the following schemes were submitted by the User Agency after revising them in accordance with the current wage rate of Rs.125/- per man-day which were technically approved by the undersigned and sent to the Divisional Forest Office, Keonjhar for necessary action at his end vide this office Memo No.2991 dt.29.08.2012 and Memo No.3041 dtd.3.9.2012 with copies endorsed to you in the next memos of even date for your kind information.

As per condition No.2-iv:

- (a) A plan containing appropriate mitigative measures to minimize soil erosion and choking of streams within the Mining lease area over 5.10 Sq. Miles of Bolani Iron Ore Mine of M/s SAIL for Rs.2,25,00,000/- prepared at the present wage rate of Rs.125/- per man-day.
- (b) The scheme for planting of adequate drought hardy plant species and sowing of seeds in the appropriate area within the Mining lease to arrest Soil Erosion for Rs.90,40,000/- prepared at the present wage rate of Rs.125/- per manday.
- (c) The scheme for construction of Check Dams, retention /Toe walls to arrest sliding down of the excavated materials along the contour for Rs.72,93,000/- prepared at the present wage rate of Rs.125/- per manday.
- (d) A Plan to stabilize the overburden dumps by appropriate grading/ benching so as to ensure that angles of repose at any given place is less than 28° for Rs.1,29,06,000/- prepared at the present wage rate of Rs.125/- per manday.

- Condition No.2-iv(e) & (xvi): Plan for Top Soil Management and conservation of top soil for 56,24,951/- prepared at the present wage rate of Rs.125/- per manday .
- Condition No.2(x). The Scheme for fencing ,protection and regeneration of the safety zone area (7.5 metre strip all along the outer boundary of the area identified to undertake mining) over an area of 175.63 ha. of Forest land within the Mining lease for Rs.3,43,52,000 prepared at the present wage rate of Rs.125/- per mandays
- Condition No.2-(xiii): A plan to undertake Corporate Social Responsibility (CSR) activities in the villages located in the vicinity of the area identified for Compensatory Afforestation in Patna Forest Range with the jurisdiction of Keonjhar Forest Division over an area of 205.0 ha for Rs.1,85,42,000/- prepared at the present wage rate of Rs.125/- per mandays
- Condition No.2(xi). The scheme for Gap Plantation and Soil & Moisture Conservation Activities to restock and rejuvenate the degraded open Forests(having crown density less than 0.4) , if any, located in the area within 100 M from outer perimeter within the Mining lease for Rs.93,48,227/- or Rs.93,48,000/- prepared at the present wage rate of Rs.125/- per mandays .
- Condition No.2(xviii). The Scheme for implementation of the recommendation of final study report of the XISS, Ranchi with an action plan with a financial out lay of Rs.27,85,00,000/-

As observed from above, the User Agency has complied with the conditions stipulated by Gol, MoEF & State Government and has demonstrated its commitment to fully comply with the statutory stipulations within the prescribed time frame except the condition relating to study of migratory routes of elephants stipulated by the State Government of Odisha. The grant of Stage-II approval in favour of the User Agency is recommended which may be considered.

Regional Chief Conservator of Forests,
Rourkela Circle,Rourkela.

Memo No. 3056 /3F(Dis-K)218/2011. Dated. 03.9.2012

Copy forwarded to the Divisional Forest Officer, Keonjhar Forest Division for information with reference to this office Memo No.2352 dt.10.07.2012.

Regional Chief Conservator of Forests,
Rourkela Circle,Rourkela.

Annexure-IV-H

OFFICE OF THE REGIONAL CHIEF CONSERVATOR OF FORESTS: ROURKELA
CIRCLE, ROURKELA
PH. No. 0661-2664324, FAX No. 0661-2664325, E.mail: rccfrourkela@gmail.com

Memo No. 2991/3F(Divs.-K)-218/2011.
Dated, Rourkela the, 29th, August, 2012.

To

The Divisional Forest Officer,
Keonjhar Forest Division.

Sub:-

Diversion of 1152.58 ha. of Forest land in the 5.10 sq. miles of mining lease of Bolani Ore Mines in favour of M/s SAIL in Bolani Ore mines, in Keonjhar District during 2nd renewal of mining lease (RML) period in Barbil Tahasil - Compliance with the condition of Stage-I approval order reg.-

Ref:-

Letter F.No.8-17/1997 FC(pt) dt.4.4.2011 of Gol, communicated vide Memo No.6255/F&E dt.7.4.2011 of the Govt. of Odisha, F&E Department and Memo No.328 dt.13.01.2012.

The following Schemes prepared at the prerevised wage rate of Rs.90/- were technically approved by the undersigned vide this office Memo No.135 dtd.17.01.2012. Consequent upon revision of the wage rate from Rs.90/- to Rs.125/-, the User Agency has revised the cost of the schemes in accordance with the current wage rate of Rs.125/- per man-day which are technically approved and sent herewith for necessary action at your end. Therefore, you are requested to please realize the amount in respect of the schemes to be implemented by you.

As per condition No.2-iv:

- (a) The scheme for Mitigative Measures to Minimize Soil Erosion and chocking of streams within the Mining lease area over 5.10 Sq. Miles of Bolani Iron Ore Mine of M/s SAIL for Rs.2,25,00,000/- prepared at the present wage rate of Rs.125/- per man-day.
- (b) The Scheme for Planting of Drought Hardy plant species and sowing of seeds within Mining lease to arrest Soil Erosion within the Mining lease area over 5.10 Sq. Miles of Bolani Iron Ore Mine of M/s SAIL for Rs.90,40,000/- prepared at the present wage rate of Rs.125/- per manday.
- (c) The Scheme for Construction of Check Dams, retention Wall/Toe walls to arrest sliding down of the excavated materials along with the Contour within the Mining lease area over 5.10 Sq. Miles of Bolani Iron Ore Mine of M/s SAIL for Rs.72,93,000/- prepared at the present wage rate of Rs.125/- per manday.
- (d) Plan to Stabilize the overburden, dumps by appropriate Grading/ Benching so as to ensure that angles of repose at any given place is less than 28° within the Mining lease area over 5.10 Sq. Miles of Bolani Iron Ore Mine of M/s SAIL for Rs.1,29,06,000/- prepared at the present wage rate of Rs.125/- per manday.

Condition No.2-iv(c) & (xvi):

Plan for Top Soil Management within the Mining lease area over 5.10 Sq. Miles of Bolani Iron Ore Mine of M/s SAIL for Rs.56,24,951/- or Rs.56,25,000/- prepared at the present wage rate of Rs.125/- per manday.

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Further, in compliance with condition No. 2 (xvii) the scheme for establishment of ITC at Bolani with a financial outlay of Rs.118.00 lakh submitted by the User Agency is hereby technically approved .

Therefore, the schemes, each in duplicate, are forwarded to you for taking necessary action at your end.

Encl.:Each Scheme in one set.

SA/-
Regional Chief Conservator of Forests,
Rourkela Circle, Rourkela.

Memo No. 2992 /3F(Dis-K)-218/2011. Dated. 29.8.12

Copy forwarded to the Chief Conservator of Forests (Forest Diversion & Nodal Officer, FC Act), O/o the Principal Chief Conservator of Forests, Odisha for favour of information with reference to this office Memo No.136 dt.17.1.2012 & Memo No.329 dt.13.1.2012 of DFO, Keonjhar Forest Division.

Regional Chief Conservator of Forests,
Rourkela Circle, Rourkela.

OFFICE OF THE REGIONAL CHIEF CONSERVATOR OF FORESTS, ROURKELA
CIRCLE, ROURKELA PH. No.0661-2664324, FAX No.0661-2664325, E.mail:
rccfrourkela@gmail.com.

Memo No. 3055 /3F(Dls-K)-218/2011.
Dated, Rourkela the, 03 th, September, 2012.

To

The Chief Conservator of Forests
(Forest Diversion & Nodal Officer, FC Act),
O/o the Principal Chief Conservator of Forests,
Odisha, Bhubaneswar.

Sub:-

Diversion of 1152.58 ha. of Forest land in the 5.10 sq. miles of mining lease of Bolani Ore Mines in favour of M/s SAIL in Bolani Ore Mines, in Keonjhar District during 2nd renewal of mining lease (RML) period in Barbil Tahasil- Compliance with the condition of Stage-I approval order reg.

Ref:-

Letter F.No.8-17/1997-FC(pt) dtd.4.4.2011 of GoI, MoEF communicated vide Memo No.6255/F&E dtd.7.4.2011 of the Govt. of Odisha, F&E Department and this office Memo No.2351 dtd.10.7.2012 and Memo No. 2992 dtd.29.08.2012.

In continuation of this office memo cited above, this is to Inform you that consequent upon revision of the wage rate, the following schemes were submitted by the User Agency after revising them in accordance with the current wage rate of Rs.125/- per man-day which were technically approved by the undersigned and sent to the Divisional Forest Office, Keonjhar for necessary action at his end vide this office Memo No.2991 dt.29.08.2012 and Memo No.3041 dtd.3.9.2012 with copies endorsed to you in the next memos of even date for your kind information.

As per condition No.2-iv:

- (a) A plan containing appropriate mitigative measures to minimize soil erosion and chocking of streams within the Mining lease area over 5.10 Sq. Miles of Bolani Iron Ore Mine of M/s SAIL for Rs.2,25,00,000/- prepared at the present wage rate of Rs.125/- per man-day.
- (b) The scheme for planting of adequate drought hardy plant species and sowing of seeds in the appropriate area within the Mining lease to arrest Soil Erosion for Rs.90,40,000/- prepared at the present wage rate of Rs.125/- per manday.
- (c) The scheme for construction of Check Dams, retention /Toe walls to arrest sliding down of the excavated materials along the contour for Rs.72,93,000/- prepared at the present wage rate of Rs.125/- per manday.
- (d) A Plan to stabilize the overburden dumps by appropriate grading/ benching so as to ensure that angles of repose at any given place is less than 28° for Rs.1,29,06,000/- prepared at the present wage rate of Rs.125/- per manday.

Condition No.2-iv(e) & (xvi): Plan for Top Soil Management and conservation of top soil for 56,24,951/- prepared at the present wage rate of Rs.125/- per manday.

Condition No.2(x). The Scheme for fencing ,protection and regeneration of the safety zone area (7.5 metre strip all along the outer boundary of the area identified to undertake mining) over an area of 175.63 ha. of Forest land within the Mining lease for Rs.3,43,52,000 prepared at the present wage rate of Rs.125/- per mandays

Condition No.2-(xiii): A plan to undertake Corporate Social Responsibility (CSR) activities in the villages located in the vicinity of the area identified for Compensatory Afforestation in Patna Forest Range with the jurisdiction of Keonjhar Forest Division over an area of 205.0 ha for Rs.1,85,42,000/- prepared at the present wage rate of Rs.125/- per mandays

Condition No.2(xi). The scheme for Gap Plantation and Soil & Moisture Conservation Activities to restock and rejuvenate the degraded open Forests(having crown density less than 0.4) , if any, located in the area within 100 M from outer perimeter within the Mining lease for Rs.93,48,227/- or Rs.93,48,000/- prepared at the present wage rate of Rs.125/- per mandays .

Condition No.2(xviii). The Scheme for implementation of the recommendation of final study report of the XISS, Ranchi with an action plan with a financial out lay of Rs.27,85,00,000/-

As observed from above, the User Agency has complied with the conditions stipulated by Gol, MoEF & State Government and has demonstrated its commitment to fully comply with the statutory stipulations within the prescribed time frame except the condition relating to study of migratory routes of elephants stipulated by the State Government of Odisha. The grant of Stage-II approval in favour of the User Agency is recommended which may be considered.

Regional Chief Conservator of Forests,
Rourkela Circle,Rourkela.

Memo No. 3056 /3F(Dis-K)218/2011. Dated. 03.9.2012

Copy forwarded to the Divisional Forest Officer, Keonjhar Forest Division for information with reference to this office Memo No.2352 dt.10.07.2012.

Regional Chief Conservator of Forests,
Rourkela Circle,Rourkela.

Annexure-VI

**PARAMETERS FOR EVALUATION OF LOSS OF FOREST OVER 87.09 HA.
FOREST AREA REQUIRED FOR DIVERSION FOR NON-FORESTRY USE FOR
BOLANI ORE MINES (5.10 SQ. MILES) OF M/S STEEL AUTHORITY OF INDIA.**

01.	Loss of value of timber, fuel wood Minor forest produce on annul basis including loss of man-hours per annum of people who derived livelihood and wages for the harvest of these commodities.		
a.	Loss of value of timber as per enumeration (1343.32 units) @ Rs. 9260/- per unit as per nearest coupe Karo Reserved Forest unit value for the year 2016-17.	Rs.	1,24,39,143.00
b.	Value of firewood 5 T.L.s @ 20000/-	Rs.	1,00,000.00
c.	Loss of Minor Forest Produce on lump sum.	Rs.	1,00,000.00
02.	Loss of animal husbandry productivity including loss of fodder	Rs.	Nil
03.	Cost of human settlement	Rs.	Nil.
04.	Loss of public facility an administrative infrastructure (road, school, dispensary, electric line and railway etc.) on forest land or which should require forest land if their facilities are diverted to the project.	Rs.	Nil
05.	Environmental losses (Soil erosion, effect on hydrological cycle, wildlife habitat, micro climatic upsetting of ecological balance)		
	As per thumb rule prescribed, Environmental loss due to loss of Forest over 87.09 ha of Forest area of density 0.3 for forest land to acquire over a period of 50 years.		
	126.74 lakhs x 0.3 x 87.09 ha = Rs. 33,11,33,598/-		
	Loss per Annum	Rs.	66,22,672.00
	Total loss:	Rs.	1,92,61,815.00
06.	Suffering to oustees	Rs.	Nil

**Divisional Forest Officer,
Keonjhar Division.**

ANNEXURE-

SUMMARY OF COST BENEFIT ANALYSIS.

	Per Annum
Total loss per annum due to loss of Timber, Firewood and Minor Forest Produce and Environmental loss due to loss of Forests.	Rs. 1,92,61,815.00
Total benefit to the economy due to annual production of Iron Ore over the applied area of 87.09 ha. (Proportionate value of total annual production value of the lease hold area of 1321.45 ha).	Rs. 24,02,83,711.00
Hence the cost benefit ratio of the Mining Project is	1 : 12.47


**Divisional Forest Officer,
Keonjhar Division.**

Annexure-VII

TO WHOM IT MAY CONCERN

Sub: Settlement of rights under FRA in respect of Sabik forest land covering 87.09 ha. under 5.1 Sq. Miles Mining Lease under Bolani Ores Mines, SAIL

It is to inform that the process for settlement of rights under the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights Act), 2006 in respect of Sabik forest land covering 87.09 ha. under 5.1 Sq.miles Mining Lease under Bolani Ores Mines has been initiated and letter in this regard has already been issued to Project Administrator, ITDA-cum-District Nodal Officer, Forest Right, Keonjhar vide letter No.780/Rev.dated.12.04.2016.(Copy of the said letter is enclosed)


It is certified that the Project Proponent has assured that the entire process of settlement of rights under FRA, 2006 in respect of the said forest land under 5.1 Sq. Miles Mining Lease, Bolani Ores Mines will be completed before final approval by the Central Government under Forest (Conservation) Act,1980.


Collector, Keonjhar

OFFICE OF THE COLLECTOR & DISTRICT MAGISTRATE; KEONJHAR

Memo No 2475 /Rev. Dt. 28.11.2016

Copy forwarded to General Manager(Mines), SAIL RMD, Bolani Ore Mines, PO-Bolani, Dist-Keonjhar, Pin-758037 for information and necessary action.


28.11.16
Addl. District Magistrate
Keonjhar

Annexure-VIII

Email Alert From System Administrator of Online Submission and Monitoring of Forests Clearances Proposal(OSMFCP) portal

monitoring-fc@nic.in <monitoring-fc@nic.in>

Tue, Mar 8, 2016 at 2:21 PM

To: bolanife2016@gmail.com

Cc: monitoring-fc@nic.in

A proposal seeking prior approval of Central Government under the Forest (Conservation) Act 1980, as per the details given below, has been examined by the Nodal Officer, Forest (conservation) Act, 1980, Government of Orissa and has been found to be complete in all respect.

1. Proposal No. : FP/OR/MIN/17936/2016
2. Proposal Name : 5.10 Sq. Miles ML of Bolani Ores Mines
3. Category of the Proposal : Mining
4. Date of Submission : 17/02/2016
5. Name of the Applicant with Contact Details

Name	: Dilip
Mobile No.	: 8895502478
State	: Orissa
District	: Keonjhar
Pincode	: 758037
6. Area Applied (ha.) : 87.09

Please provide duly signed hard copy of the above proposal along with all necessary enclosures to the office of the each concerned Divisional Forest Officer and District Collector and upload a copy of the acknowledgement slip(s) (single copy) as per the format given below, obtained from each of the above offices on portal of this Ministry for further processing of the above proposal.

8/3/2016
 पी. सी. बाईक / P. C. Baik
 महाप्रबंधक (खनन) / General Manager (Mining)
 सेल - अर एम डी - बोलाई ओरस माइन्स
 SAIL-RMD, Bolani Ores Mines
 बोलाई-758 037, खोर्दहर, ओडिशा
 Bolani-758 037, Keonjhar, Odisha

(System Administrator)

Acknowledgement Slip

This is to certify that hard copy of the proposal seeking prior approval of Central Government under the Forest (Conservation) Act 1980, as per details given below, along with all necessary enclosures has been received in the Office of the Orissa on 17/02/2016.

1. Proposal No. : FP/OR/MIN/17936/2016
2. Proposal Name : 5.10 Sq. Miles ML of Bolani Ores Mines
3. Category of the Proposal : Mining
4. Date of Submission : 17/02/2016

(v). District : Kolkata

(vi). Pin : 700017

(vii). Landmark : NIL

(viii). Email address : bolanifc2016@gmail.com

(ix). Landline Telephone No. : 33-22822316

(x). Fax No. : 33-22825630

(xi). Mobile No. : 8895502478

(xii). Website (if any) : www.sail.co.in

(xiii). Details of Proposals seeking prior approval of Central Government under the Act for diversion of forest land submitted by the User Agency in the past

List of proposal submitted In Past							
S.no	Proposal Status.	Proposal No.	Moef File No.	Area Proposed for Diversion(Ha.)	Area Diverted(Ha.)	Date of In-Principle Approval	Date of Final Approval
NIL							

(xiv). Legal status of User Agency : Central PSU

A-
3. Details of Person Making Application

(i). First Name: Dilip

(ii). Middle Name: NIL

(iii). Last Name: Bhargava

(iv). Gender: Male

(v). Designation: General Manager

(vi). Address 1: Bolani Ores Mines, SAIL-Raw Materials Division, At/Po- Bolani

(vii). Address 2: NIL

(viii). State: Orissa

(ix). District: Keonjhar

District wise breakup			
S.no	District Name	Forest Land(ha.)	Non-Forest Land(ha.)
1.	Keonjhar	87.09	8.59







B-2.3 Village wise breakup

Villages wise breakup			
S.no	Village	Forest Land(ha.)	Non-Forest Land(ha.)
1	Bolani	62.28	5.1
2	Balagoda	24.81	3.49

B-2.4 Component wise breakup

Component wise breakup			
S.no	Component	Forest Land(ha.)	Non-Forest Land(ha.)
1	Old mining and fines disposal area	23.4	0
2	Storing of minerals/waste	10	0.22
3	Roads, Power/Pipeline & conveyors etc.	2.88	1.02
4	Plants & machineries etc.	30.81	0.42
5	Office & Township	17.46	2.99
6	Unutilised land to be maintained as forest and oth	0.31	3.35
7	Safety Zone	2.23	0.59

C. Maps of forest land proposed to be diverted

Division 1. : Keonjhar		
(i). Area of forest land proposed to be diverted(in ha.) : 87.09		
(ii). : Non Linear		
(a). No. of patches : Six		
Patch wise details		
Patch No.	Area of Patch(in ha.)	Kml File of Patches
1.	0.51	 View File
2.	61.54	 View File
3.	15.26	 View File
4.	0.62	 View File
5.	3.67	 View File
6.	4.83	 View File
(iii). Copy of Survey of India Toposheet indicating boundary of forest		

K. Status of settlement of rights under the Forest Rights Act, 2006 on the forest land proposed to be diverted

(i). Whether the process for settlement of Rights under the Forest Rights Acts 2006 on the forest land proposed to be diverted has been completed? : No

L. Details of land identified for Compensatory Afforestation

(i). Whether non-forest or Revenue forest land is required to be provided by User Agency?: Not Applicable

(ii). Whether the area of non-forest land or Revenue forest land required to be provided by User Agency for raising Compensatory Afforestation is less than area of forest land proposed to be diverted?: Not Applicable

(iii) . Reason for not providing Non-Forest Land: Not Applicable

M. Mining Details

**M-
1. Details of Mineral Concessions**

(i). Whether the forest land is acquired under Coal Bearing Areas Act: No

(a). Reference number of Letter of Intent for grant of mining lease. (approval letter of the State Mines and Geology Department): Mining lease for 2nd RML was granted & lease deed

(b). Date of issue of the Letter of Intent (LOI) for grant of mining lease: 11 Nov 2014

(c). Copy the Letter of Intent (LOI): 

(d). Total area of the mining lease (in ha.): 1321.45

(e). Area of forest land located in the mining lease (in ha.): 1312.86

**M-
2. Details of Mining Plan**

(i). Date of approval of mining plan: 13 Jan 2010

(ii). Approval authority: Indian Bureau of Mines (IBM)

(iii). Copy of approval of mining plan: 

(iv). Copy of approved mining plan: 

(v). Nature of mining (underground/opencast): Opencast

S.no	File No	approval	land diverted(in ha.)	From Date	Date
1	F.No.8-17/1997-FC (vol.)	12 Nov 2014	1225.25	11 Dec 2012	10 Apr 2030

M-7. Mineral wise details

(i). No. of minerals: One

Mineral wise details						
Minerals	Estimated reserve in non forest land(million tons.)	Estimated reserve in forest land(million tons.)	Estimated annual extraction(million tons.)	Estimated life of mine(Yrs.)	Total estimated extraction during mining lease period(million tons.)	Estimated mineral reserve at the end of mining lease(million tons.)
Iron Ore	0	0	0	25	0	0

M-7.1 Proposed use of the minerals proposed to be raised from the mining lease

(i). Proposed use of the minerals proposed to be raised from the mining lease: Captive

(a).Copy note containing details of the linked end-use Project:

(ii).Copy note containing details of the plan for the transportation of the minerals proposed to be raised from the mining lease:

Additional information Details

Documents		
S.No	Documents	Remarks
1		Compliance of EDS vide letter no. 1807/mining dated 08/03/2016 is submitted herewith.
2		JUSTIFICATION OF EMPLOYMENT GENERATION
3		The instant proposal is being submitted for seeking necessary approval for modification of Final Stage-II FC order to include additional 87.09 ha land (DGPS area of 86.43 ha) recorded as forest as on/after 25.10.1980) in the diversion under Forest Conservation Act, 1980 .



OFFICE OF THE DIVISIONAL FOREST OFFICER, KEONJHAR DIVISION
Ph.No. 06766-254315; email: dfokjr.od@gov.in

No. 165 /6F-Mining- 58/2016
Dated, Keonjhar the 05th January, 2018

To

The General Manager,
Bolani Ore Mines(5.10 Sq Miles) of M/s SAIL
At/ P.o- Bolani, Dist- Keonjhar

Sub:

Proposal for diversion of balance 87.09 ha of Sabik Kissam forest land as on 25.10.1980 in addition to already diverted forest land of 1225.78 ha for iron ore mining in their Bolani Ore Mines of 1321.45 Ha (5.10 sq miles) in Keonjhar district, Odisha by M/s Steel Authority of India Limited (SAIL).

X-Sub:

Compliance of Stage-I stipulations imposed by MoEF&CC, Govt. of India.

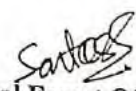
Ref:

Your letter No. GM/B/HD-2213 dated 22.12.2017 & memo No. 770 dated 22.12.2017 of Forest Range Officer, Barbil Range.

Sir,


With reference to aforementioned letter on the captioned subject, during the scrutiny of the submitted compliance report of the stipulations imposed by the MoEF & CC in Stage-I approval of the above mentioned mine, the following observation are noticed. You are requested to comply the same along with authenticated documents / information at an early date for further follow up action at this end.

1. The map prepared for compensatory afforestation in topo sheet not signed by the DFO, Rourkela & User Agency. The signed copy of the map should be submitted.
 - 2(vi). The deposit slip in support of N.P.V. payment should be enclosed on the compliance report.
 - 2(x). Period of Lease should be mentioned.
 - 2(xv). The details like nos. of pillar posted, GPS reading, front bearing & back bearing is wanting. The same should be furnished.
 - 2(xvi). The supporting documents should be enclosed.
 - 2(xxiii). The Certificate under FRA, 2006, Annexure-XXX should be enclosed in the compliance report.
- The signed hard copy of part-I application should be provided.


Divisional Forest Officer,
Keonjhar Division.

Memo No. _____ /Dated _____

Copy forwarded to the Divisional Forest Officer, Rourkela Division, Rourkela for information and necessary action. He is requested to provide the map 1:50000 scale on Sol topo sheet showing the location of C.A. land.


Divisional Forest Officer,
Keonjhar Division.



स्टील अथॉरिटी ऑफ इण्डिया लिमिटेड
STEEL AUTHORITY OF INDIA LIMITED
रॉ मेटेरियल्स डिवीजन
RAW MATERIALS DIVISION
बोलानी अयस्क खदान
BOLANI ORES MINES

Ref. No : GM/B - 2086

Dt. - 25/01/2018

To

The Divisional Forest Officer,
Keonjhar Forest Division, Keonjhar

Sub: Proposal for diversion of balance 87.09 ha. of sabik kisam forest land as forest as on 25.10.1980 in addition to already diverted forest land of 1225.78 ha for iron ore mining in their Bolani Ore Mines of 1321.45 Ha (5.10 sq. miles ML) in Keonjhar district of Odisha by M/s Steel Authority of India Limited (SAIL).

X-Sub: Compliance of stage-I stipulations imposed by MoEF & CC, Govt. of India

Ref: Your letter No-165/6F-Mining-58/2016 Dated 05.01.2018

Sir,

In connection with the subject and reference cited above, it is to mention that on the observations noticed on the already submitted compliance of the Stage-I of sabik kisam forest land, necessary compliance and documents as desired are enclosed as follows :

1. The Map prepared for compensatory afforestation in topo sheet duly signed by the DFO, Rourkela & User Agency and forwarded by DFO Rourkela vide his letter no 298/4F dt 19.01.2018 . The same is enclosed herewith as Annexure-II.
- 2(vi) The proof in support of N.P.V. payment is enclosed as Annexure-III (A) .
- 2(x) The original ML was granted on 10.04.1960 for 30 years . The 1st RML and 2nd RML have been granted and executed for 20 years each and the lease is valid till 10-04-2030 as per the 2nd R.M.L Deed executed on 14-11-2014. Hence, as stipulated , the Period of diversion of the 87.09 Ha Sabik -forest land under this approval will be for a period co-terminus with the period of the mining lease already granted under the MMDR Amendment Act, 2015, as amended and the Rules framed there-under , i.e shall be co-terminus with the 2nd renewal period for a period of 20 years with effect from 11-04-2010 till 10-04-2030 . An undertaking to this effect is attached as Annexure-I.
- 2(xv) The boundary of the diverted sabik forest land, Reserved & revenue forest , Mining Lease and safety zone (7.5m from all along ML boundary) has been demarcated , as applicable, on ground as per the joint surveyed map by erecting four feet height reinforced cement concrete pillars & RF with Stone Masonary pillars, inscribed with its serial number, distance from pillar to pillar and GPS/DGPS co-ordinates, forward/back bearings . The authenticated map showing demarcation of diverted forest land, as above, is enclosed as Annexure -IV (G) .

स्टील अथॉरिटी ऑफ इण्डिया, लिमिटेड रॉ मेटेरियल्स डिवीजन, बोलानी अयस्क खदान, पो० - बोलानी - 758037, जिला - कर्णामूर, उड़ीसा
Steel Authority of India Ltd., Raw Materials Division, Bolani Ores Mines, PO. : Bolani - 758037, Dist. Keonjhar, Odisha
दूरभाष / Telephone : 06767 - 260211 (O) फैक्स / Fax 06767 - 260172, Email : rmdbom@gmail.com, Website : www.sail.co.in

2(xvi) No Mining (excavation of ore) is being undertaken in the sabik kisam forest land within the 5.10 sq. mile ML and there is no plan to undertake excavation of ore in these patch of sabik forest land . Hence the area will be reclaimed by afforestation . A copy of reclamation and rehabilitation plan in respect of 87.09 ha sabik kisam forest land submitted along with proposal is enclosed herewith in **Annexure -IV(H)** . An undertaking for implementation of the same is already enclosed as Annexure - I(A) .

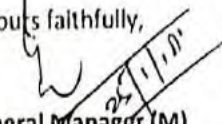
2(xviii) The process for compliance of settlement of rights, in terms of the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006, has been completed for the sabik forest land to be diverted is already completed and DLC has submitted its recommendation to Collector Keonjhar . The certificate of Collector, Keonjhar is awaited . As such, to this effect , Collector Keonjhar vide his letter No2475 Dt.28.11.2016, has already given a certificate which is attached as **Annexure -I (C)** .

In view of the above , the revised point-wise compliance, as updated with above said facts is furnished herewith for your kind perusal . Further , as the approval of schemes for 1.5 times Safety zone and 5.18 ha additional CA land is already in process and we are giving undertaking for payment of the fund towards above, as per approved schemes, (enclosed in **Annexure - IV(A)**) , we request your kindself to forward our compliance .

This is for your kind Information & necessary action.

Thanking you,

Yours faithfully,


General Manager (M)
Bolani Ores Mines, M/s SAIL

Encls : As above

Received
25/11/18



OFFICE OF THE DIVISIONAL FOREST OFFICER, KEONJHAR DIVISION

Ph.No. 06766-254315: email: dfokjr.od@gov.in

Memo No. 4211 /6F- Mining- 58/2016

Dated, Keonjhar the 20-06- 2018

To

The Regional Chief Conservator of Forests,
Rourkela Circle, Rourkela.

Sub: Proposal for diversion of balance 87.09 ha of Sabik Kissam forest land as on 25.10.1980 in addition to already diverted forest land of 1225.78 ha for iron ore mining in their Bolani Ore Mines of 1321.45 Ha (5.10 sq miles) in Keonjhar district, Odisha by M/s Steel Authority of India Limited (SAIL).

X- Sub: **Compliance of the conditions stipulated vide letter No. 8-17/2016-FC dated 12.09.2017 of MoEF&CC, Govt. of India and additional conditions stipulated vide Memo No. 20296/F&E dated 03.10.2017 of Special Secretary to Govt. of Odisha, Forest & Environment Department.**

Ref: i) Letter F.No. 8-17/2016-FC dated 12.09.2017 of MoEF&CC, Govt. of India
ii) Memo No. 20296/F&E dated 03.10.2017 of Special Secretary to Govt. of Odisha, Forest & Environment Department, Bhubaneswar.

With reference to the aforesaid letters on the captioned subject, this is to apprise that the compliance of the conditions stipulated in the Stage- I approval order of MoEF&CC, Govt. of India and additional conditions stipulated by Special Secretary to Govt. of Odisha, Forest & Environment Department in respect of the above diversion proposal is submitted by the User Agency. The point wise compliance report along with enclosures is submitted herewith for favour of kind information and further needful action at your end.

Encl: As above

sd/
**Divisional Forest Officer,
Keonjhar Division**

Memo No. 4212 / Dated. 20-6-18

Copy along with compliance report submitted to the Additional Principal Chief Conservator of Forests, FD & NO, FC Act, O/o the PCCF, Odisha, Bhubaneswar for favour of kind information.

sd/
**Divisional Forest Officer,
Keonjhar Division**

Memo No. 4213 / Dated. 20-06-18

Copy forwarded to the General Manager, Bolani Ore Mines (5.10 Sq, Miles) of M/s SAIL, At/ P.O- Bolani, Dist- Keonjhar for information and necessary action.

Satish
**Divisional Forest Officer,
Keonjhar Division**

Compliance as regards the conditions stipulated in the in-principle approval (Stage-I approval) accorded vide F. No. 8-17/2016-FC DT.12.09.2017 of MoEF&CC, GoI, and additional conditions imposed vide memo No. 10F(Con)72/2014-20296-F&E dated 03.10.2017 of Special Secretary to Govt. of Odisha, Forest & Environment Department, Bhubaneswar.

i. Legal status of the diverted forest land shall remain unchanged

The legal status of the diverted forest land remains unchanged. An undertaking to this effect has been submitted by the user agency and is attached at **Sl no-1 of Annexure-I.**

ii. Compensatory afforestation over the degraded forest land, twice in extent to the area of forest land proposed to be diverted shall be raised on the identified forest land within a period of three years with effect from the date of issue of Stage-II clearance and maintained thereafter in accordance with the approved Plan in consultation with the State Forest Department at the cost of the user agency;

Degraded forest land over 169.72 ha. (twice in extent of 84.86 ha. of forest land excluding safety zone over 2.23 ha being diverted), has been identified in two RFs viz. 70.72 ha degraded forest land within Gurhiali Reserve Forest & 99.0 ha degraded forest land within Chhatam RF of Rajgangpur Forest Range of Rourkela Forest Division. The site specific Compensatory Afforestation scheme has been technically approved by Addl. PCCF, Forest Diversion and Nodal Officer, FC Act vide his memo no. 24139 dated 13.11.2017 with a financial outlay of Rs 2,20,64,000.00/- (Two Crores Twenty Lakhs Sixty Four Thousand only) at wage rate of Rs 200/MD, excluding the cost of four wheeler vehicle of Rs 20.00 Lakhs to be provided to the Divisional Forest Officer, Rourkela by the user agency, the copy of which is enclosed as **Annexure-II.**

iii. Additional degraded forest land of 5.18 ha as CA land along with shape files shall be provided and the plantation area in the 169.00 ha of CA land may be excluded and equivalent additional degraded forest area shall be submitted for CA;

- 1) Additional degraded forest land over 5.18 ha has been identified in Revena Reserved Forest of Brahmanipal Forest Range of Keonjhar WL Division, Anandapur. Site Specific CA scheme over 5.18 ha degraded forest land has been technically approved by the Addl. PCCF, Forest Diversion and Nodal Officer, FC Act Bhubaneswar vide. his Memo No-6806 Dated.28.03.2018 with a financial outlay of Rs 18,62,200.00/-(Eighteen Lakhs Sixty Two Thousand Two Hundred Only) at wage rate of Rs 213.50 per MD, the copy of which is enclosed as **Annexure-III (A)**. The shape file of the same is attached as **Annexure-XVIII**. The user agency has deposited the approved amount of Rs 18,62,200.00(Eighteen Lakhs Sixty Two Thousand Two Hundred Only) towards CA over aforesaid additional degraded forest land of 5.18 ha through online portal in the account of Ad-hoc CAMPA i.e Odisha CAMPA/150825817936292, New Delhi, Lodhi Complex / New Delhi Lodhi Complex /CORP0000371 vide, **UTR no-SBIN418099593101** dated 09.04.2018. The copy of receipt in support of the aforesaid payment is enclosed as **Annexure-III (B).**

- 2) The plantation area to the extent of 3.3 ha in the Gurhiali RF (out of 169.72ha of CA land) has been excluded and equivalent degraded forest land has been identified in the adjoining area within same Gurhiali RF of Rajgangpur Forest Range of Rourkela Forest Division and the same has been submitted by DFO, Rourkela vide his memo no 1694/4F dt 27.03.2018, the copies of which are attached as **Annexure-III (C)**. The shape file of the same is attached as **Annexure-XVIII**.

- iv. **The land identified for the purpose of CA shall be clearly depicted on a Survey of India topo-sheet of 1:50000 scale;**

The land identified for the purpose of CA has been clearly depicted on the SOI topo-sheet of 1:50,000 scale duly authenticated by Divisional Forest Officer, Rourkela Division which is enclosed as **Annexure-IV**.

- v. *The User Agency shall transfer the cost of raising and maintaining the compensatory afforestation at the current wage rate in consultation with State Forest Department in the account of Ad-hoc CAMPA of the concerned State through online portal. The scheme may include appropriate provision for anticipated cost increase for works scheduled for subsequent years;*

The cost of raising and maintaining compensatory afforestation as per the approved scheme amounting to Rs 2,20,64,000.00/- (Two Crores Twenty Lakhs Sixty Four Thousand only) at the wage rate of Rs.200.00 per MD which includes 20% escalation for anticipated cost increase for works scheduled for subsequent years. The fund has been transferred by the user agency through online portal in the account of Ad-hoc CAMPA vide, UTR no-SBIN617355279824 on 21-Dec-2017 in ORRISA CAMPA /150825817936563 . The copy of receipt in support of the aforesaid payment is enclosed as **Annexure-V(A)**. The user agency has also furnished an undertaking **at sl no -15 of Annexure-I** to pay the additional amount in case of anticipated increase for works scheduled for subsequent years. Further the user agency has intimated that the four wheeler vehicle has been delivered to DFO Rourkela , vide their letter no GM/B/07-18 dt 30.05.2018 the copy of which is enclosed as **Annexure -V(B)** .

- vi. *The User Agency shall transfer online, the Net Present Value (NPV) of the forest land being diverted under this proposal, as per the orders of the Hon'ble Supreme Court of India dated 28.03.2008, 24.04.2008 and 09.05.2008 in Writ Petition (Civil) No. 202/1995 and the guidelines issued by this Ministry vide its letter No. 5-3/2007-FC dated 05.02.2009. The requisite funds shall be transferred through online portal into Ad-hoc CAMPA account of the State Concerned;*

The User Agency has transferred the Net Present Value (NPV) of the sabik forest land being diverted under this proposal (i.e. 87.09 hectare of Non-Forest land recorded as sabik forest as on 25.10.1980), for an amount Rs 6,35,75,700/- (Six Crores Thirty Five Lakhs Seventy Five Thousand Seven Hundred only) vide UTR No SBINR5201630826953046 on 08.03.2016 in

Compensatory Afforestation Fund (CAF), Orissa SB Accounts no - 344902010105428 of UNION Bank of India, Sunder Nagar New Delhi-110003, IFSC No - UBIN 0534498. The copy of receipt in support of the aforesaid payment is enclosed as **Annexure-VI**.

- vii. *At the time of payment of the Net Present Value (NPV) at the then prevailing rate, the User Agency shall furnish an undertaking to pay the additional amount of NPV, if so determined, as per the final decision of the Hon'ble Supreme Court of India ;*

The User Agency has submitted an undertaking, to pay the additional NPV, if so determined, as per the final decision of Hon'ble Supreme Court of India has been submitted by the user agency which is enclosed at **Sl no – 2 of Annexure-I**.

- viii. *Following activities shall be undertaken by the user agency at the project cost and appropriate cost of the plan/scheme shall be deposited in Adhoc CAMP A Account;*

- a) *Mitigative measures to minimize soil erosion and choking of stream shall be implemented within a period of three year with effect from the issue of Stage-II clearance in accordance with the approved Plan in consultation with the State Forest Department;*

The scheme for mitigative measures to minimize soil erosion and choking of stream was already technically approved with financial outlay of Rs.2,25,000,00/- by the RCCF, Rourkela vide his Memo no (Dis-K)-218/2011 dt 03.09.2012 , as per condition no. 2(iv)(a) of Stage-I approval vide F. No. 8-17/1997-FC (pt.) dated 04.04.2011 of MoEF, Govt. of India during diversion of forest land of 1152.58 ha @125/- per MD , the copy of which is enclosed as **Annexure-VII(A)** . The copy of the scheme is also attached herewith in **Annexure – VIII(A)**. In this regard, the user agency has submitted an undertaking which is enclosed at **Sl no – 1 of Annexure-VII(C)** .

- b) *Planting of adequate drought hardy plant species and sowing of seeds, in the appropriate area within the mining lease to arrest soil erosion in accordance with the approved scheme;*

The scheme for Planting of adequate drought hardy plant species and sowing of seeds in the appropriate area within the mining lease to arrest soil erosion was technically approved with a financial outlay of Rs.90,40,000/- by the RCCF, Rourkela by the RCCF, Rourkela vide his Memo no (Dis-K)-218/2011 dt 03.09.2012 , as per condition no. 2(iv)(b) of Stage-I approval vide F. No. 8-17/1997-FC (pt.) dated 04.04.2011 of MoEF, Govt. of India during diversion of forest land of 1152.58 ha @125/- per MD , the copy of which is enclosed as **Annexure-VII(A)** . The copy of the scheme is attached herewith in **Annexure-VIII (B)**. In this regard , the user agency has submitted an undertaking which is enclosed at **Sl no – 2 of Annexure-VII(C)** .

- c) *Construction of check dams, retention /toe walls to arrest sliding down of the excavated material along the contour in accordance with the approved scheme;*

The scheme for Construction of check dams, retention/toe walls to arrest sliding down of the excavated materials along the contour was technically approved with a financial outlay of Rs.72,93,000/- by the RCCF, Rourkela by the RCCF, Rourkela vide his Memo no (Dis-K)-218/2011 dt 03.09.2012 , as per condition no. 2(iv)(c) of Stage-I approval vide F. No. 8-17/1997-FC (pt.) dated 04.04.2011 of MoEF, Govt. of India during diversion of forest land of 1152.58 ha @125/- per MD , the copy of which is enclosed as **Annexure-VII(A)** . The copy of the scheme is attached herewith in **Annexure-VIII (C)**. In this regard , the user agency has submitted an undertaking which is enclosed at **Sl no – 3 of Annexure-VII(C)** .

- d) Stabilize the overburden dumps by appropriate grading/benching, in accordance with the approved scheme, so as to ensure that angles of repose at any given place is less than 28 degree; and ;*

The Scheme for Stabilization of overburden dumps was approved with a financial outlay of Rs.1,29,06,000/- by the RCCF, Rourkela vide his memo no 30553F(Dis-K)-218/2011 dt 03.09.2012, as per condition no. 2(iv)(d) of Stage-I approval vide F. No. 8-17/1997-FC (pt.) dated 04.04.2011 of MoEF, Govt. of India during diversion of forest land of 1152.58 ha @125/- per MD , the copy of which is enclosed as **Annexure-VII(A)** . The copy of the scheme is attached herewith in **Annexure-VIII(D)**. In this regard, the user agency has submitted an undertaking which is enclosed at **Sl no – 4 of Annexure-VII(C)**.

- e) No damage shall be caused to the top-soil and the user agency will follow the top soil management plan;*

The Scheme for management of Top Soil has been prepared and was approved with a financial outlay of Rs. 56,24,951/- by the RCCF, Rourkela vide his memo no 30553F(Dis-K)-218/2011 dt 03.09.2012, as per condition no. 2(iv)(e) & (xvi) of Stage-I approval vide F. No. 8-17/1997-FC (pt.) dated 04.04.2011 of MoEF, Govt. of India during diversion of forest land of 1152.58 ha @125/- per MD , the copy of which is enclosed as **Annexure-VII(A)**. The copy of the scheme is attached herewith in **Annexure-VIII (E)**. In this regard, the user agency has submitted an undertaking which is enclosed at **Sl no – 5 of Annexure-VII(C)**.

- ix. Fencing, protection and regeneration of the safety zone area [7.5 meters strip shall be kept within the mining lease boundary and area of the- safety zone shall be part of the total area of mining lease as per the Ministry's guidelines dated 27.05.2015] shall be done within three year at the project cost from the issue of Stage-II Clearance. Besides this afforestation on degraded forest land to be selected elsewhere measuring one & a half times the area under safety zone shall also be done at the project cost; The degraded forest land (DFL) so selected will be informed to the MOEF & CC with shape files and afforestation will be done within three years from the date of Stage-II clearance and maintained thereafter in accordance with the approved Plan in .consultation with the State Forest Department;*

The Scheme for fencing, protection and regeneration of the safety zone area (7.5 meter strip all along kept within the mining lease boundary) with a financial outlay of Rs 343.52 Lakhs was approved by the RCCF, Rourkela vide his memo no 30553F(Dis-K)-218/2011 dt 03.09.2012, as per condition no. 2(x) of Stage-I approval vide F. No. 8-17/1997-FC (pt.) dated 04.04.2011 of MoEF, Govt. of India during diversion of forest land of 1152.58 ha @125/- per MD, the copy of which is enclosed as **Annexure-VII(A)**. The copy of the scheme is attached herewith in **Annexure-IX (A)**. In this regard, the user agency has submitted an undertaking which is enclosed at **Sl no – 6 of Annexure-VII(C)**.

Besides, the scheme for afforestation with 10 years maintenance period on degraded forest land over 3.345 ha (2.23 ha Sabik forest safety zone under this proposal x 1.5) identified in Rebena RF of Brahmanipal range under Keonjhar WL division, Anandpur has been approved by the RCCF Baripada Vide Memo No-1434 Dated.11.04.2018 with financial implication of Rs.1199589.00 (Rupees Eleven lakh ninety nine thousand five hundred eighty nine) only, the copy of which along with the copy of the scheme is enclosed as **Annexure-IX-B**. The shape file of the same is attached as **Annexure-XVIII**.

Further, the user agency has deposited the approved amount of Rs.11,99,589.00 (Rupees Eleven lakh ninety nine thousand five hundred eighty nine) only through online portal in the account of Ad-hoc CAMPA ORRISA CAMPA/ 150825817936882, NEW DELHI LODHI COMPLEX/CORP0000371 vide UTR no- SBIN618127738107 dated 07-05-2018. The copy of receipt in support of the aforesaid payment is enclosed as **Annexure-IX-C**.

- x. *Period of diversion of the said -forest land under this approval shall be for a period co-terminus with the period of the mining lease proposed to be granted. under the MMDR Amendment Act, 2015, as amended and the Rules framed there-under;*

The original ML was granted on 10.04.1960 for 30 years. The 1st RML was granted and executed for 20 years w.e.f. 10.04.1990 to 09.04.2010. The 2nd RML has also been granted for 20 years up w.e.f. 10.04.2010 to 09-04-2030 and executed on 14-11-2014. Hence, as stipulated, the Period of diversion of the 87.09 Ha Sabik -forest land under this approval will be for a period co-terminus with the period of the mining lease i.e 09-04-2030. The user agency has furnished an undertaking at **Sl no 3, attached as Annexure-I**.

- xi. *Any fund received from the user agency under the project and deposited in the State Forest Department account, except the funds realized for regeneration/demarcation of safety zone, shall be transferred through online portal into Ad-hoc CAMPA account of the State Concerned;*

The User Agency has transferred all the funds through online portal in to Ad-hoc CAMPA except the cost towards NPV, Regional Wildlife Management Plan and CA Fund which were made prior to implementation of online payment system. The funds realized from user agency prior to implementation of online payment system were transferred to the designated Ad-hoc CAMPA as follows:

Type of payment	Amount (Rs)	Bank/Acct no	Cheque/DD No / RTGS no
NPV	Rs 89,48,19,400/- (76,73,38,280/- + 12,74,81,120/-)	CAMPA Account No.1585, Corporation Bank, New Delhi	Cheq nos - 597654 dt. 08.04.2010 & 597672 dt. 03.07.2010
Regional Wild Life Management Fund	Rs 2,64,29,000	CAMPA Account No.1585, Corporation Bank, New Delhi	Cheq no – 272679 Dt. 03-06- 2010
CA Fund over 205 Ha Degraded Forest land	Rs 72,56,000/-	Union Bank' of India, Sundar Nagar, New Delhi-110003/ 344901010070194	SBINH11069319372 Dt. 10- 03-2011
CA Fund over 205 Ha Degraded Forest land at revised wage rate Rs 125/-	Rs 10,44,000.00/-	Union Bank' of India, Sundar Nagar, New Delhi-110003/ 344902010105428/ by RTGS / IFSC Code UBIN0534498	SBINH12292336907 Dt. 18- 10-2012
Additional CA Fund	Rs 3,29,06,700/-	Union Bank' of India, Sundar Nagar, New Delhi-110003/ 344902010105428 /by RTGS/ IFSC Code UBIN0534498	SBINH12032319281 Dt. 01.02.2012
Additional CA Fund at revised wage rate Rs 125/-	Rs 2,95,85,300.00/-	Union Bank' of India, Sundar Nagar, New Delhi-110003/ 344902010105428/ RTGS / IFSC Code UBIN0534498	SBINH12292336907 Dt. 18- 10-2012

The copy of receipts in support of the aforesaid payments is enclosed as **Annexure-X**

- xii. The User Agency shall obtain the Environment Clearance as per the provisions of the Environmental (Protection) Act, 1986, if required;**

The user agency has obtained Environmental clearance for the lease as per provisions of EP Act, 1986 vide letter No.-J-11015/418/2008 - IA II (M) dated 21.12.2012 for production of 12.0 MTPA Iron Ore. The copy of the same is enclosed as **Annexure-XI**.

- xiii. No labour camp shall be established on the forest land;**

The user agency has submitted an undertaking that no labour camp will be established on the forest land which is attached at **Sl no – 4 of Annexure-I**.

- xiv. The User Agency shall provide fuels preferably alternate fuels to the labourers and the staff working at the site so as to avoid any damage and pressure on the . nearby forest areas;**

As reported by the user agency, the alternative fuel such as, Fire wood requirement for the contractual labourers is met with from the depot of OFDC Ltd at the project cost. Till date 1348 quintals of firewood has been distributed among local labourers free of cost at an expenditure of Rs 5.17 lakhs.

The user agency has submitted an undertaking to provide fuels preferably alternate fuels to the labourers and the staff working at the site so as to avoid any damage and pressure on the nearby forest areas , which is attached **at SI no – 5 of Annexure-I .**

- xv. *The boundary of the diverted forest land, Mining Lease and safety zone as applicable, shall be demarcated on ground at the project cost, by erecting four feet high reinforced cement concrete pillars, each inscribed with its serial number, distance from pillar to pillar and GPS co-ordinates;*

The user agency has demarcated the boundary of the diverted forest land, mining lease and safety zone , as applicable on the ground at project cost , by erecting four feet high reinforced cement concrete pillars , each inscribed with serial number, distance from pillar to pillar and GPS co-ordinates . Photos of the same are enclosed as **Annexure-XII.**

- xvi. *The User Agency shall undertake mining in a phased manner after taking due care for reclamation of the mined over area. The concurrent reclamation plan as per the approved mining plan 'shall be executed by the User Agency from the very first year, and an annual report on implementation thereof shall be submitted to the Nodal Officer, Forest (Conservation) Act, 1980, in the concerned State Government and the concerned Regional Office of the Ministry. If it is found from the annual report that the activities indicated in the concurrent reclamation plan are not being executed by the User Agency, the Nodal Officer or the Addl. Pr. Chief Conservator of Forests (Central) may direct that the mining activities shall remain suspended till such time, such reclamation activities area satisfactorily executed;*

The User Agency has furnished an undertaking to carry out mining in a phased manner after taking due care for reclamation of the mined over area, from the very first year, as per the Mining Plan approved by Indian Bureau of Mines, GoI and submit an annual report on implementation of the concurrent reclamation plan to the Nodal officer, Forest (Conservation) Act, 1980, Odisha and Eastern Regional Office, MoEF & CC, Bhubaneswar . The undertaking is enclosed at **SI no - 16 of Annexure-I.**

- xvii. *The layout plan of the mining plan/ proposal shall not be changed without the prior approval of the Central Government;*

The User Agency has furnished an undertaking that the layout plan of the mining plan/ proposal will not be changed without the prior approval of the Central Government which is enclosed **at SI no.-6 of Annexure-I.**

- xviii. *The forest land shall not be used for any purpose other than that specified in the proposal;*

The User Agency has furnished an undertaking that the forest land will not be used for any purpose other than that specified in the proposal which is enclosed at **SI no - 7 of Annexure-I .**

- xix. *The forest land proposed to be diverted shall under no circumstances be transferred to any other agency, department or person without prior approval of the Central Government;*

The User Agency has furnished an undertaking that the forest land proposed to be diverted shall under no circumstances be transferred to any other agency, department or person without prior approval of the Central Government, which is enclosed at **Sl no - 8 of Annexure-I**.

- xx. *No damage to the flora and fauna of the adjoining area shall be caused;*

The User Agency has furnished an undertaking that no damage to the flora and fauna of the adjoining area will be caused, which is enclosed at **Sl no - 9 of Annexure-I**.

- xxi. *Any tree felling shall be done only when it is unavoidable and that too under strict supervision of the State Forest Department;*

The User Agency has furnished an undertaking that any tree felling will be done only when it is unavoidable and that too under **strict supervision** of the State Forest Department which is enclosed at **Sl no - 10 of Annexure-I**.

- xxii. *The user agency will abide by the applicable recommendations of the State Government;*

The User Agency has furnished an undertaking that Bolani Ores Mines, M/s SAIL will abide by the applicable recommendations of the State Government which is enclosed at **Sl no - 11 of Annexure-I**.

- xxiii. *The State Government shall complete settlement of rights, in terms of the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006, if any, on the forest land to be diverted and submit the documentary evidence as prescribed by this Ministry in its letter No. 11-9/1998-FC (pt.) dated 03.08.2009 read with 05.07.2013, in support thereof;*

The Collector cum District Magistrate, Keonjhar vide his Order No 191 dt. 31.01.2018 has furnished the requisite Certificate in Form II under Scheduled Tribe & Other Traditional Forest Dwellers (Recognition of Forest Rights) Act 2006 which is attached as **Annexure-XIII**. The complete compliance along with **the Original Certificate** was forwarded to RCCF Rourkela vide this office memo no 839/6F -Mining-3/2016 Dated.07.02.2018 and the same has been forwarded to Addl. PCCF (Forest Diversion & Nodal Officer FC Act),Bhubaneswar vide memo no 495 dated 26.02.2018 of RCCF Rourkela

- xxiv. *User agency either himself or through the State Forest Department shall undertake gap planting and soil & moisture conservation activities to restock and rejuvenate the degraded open forests (having crown density less than 0.40), if any, located in the area within 100 m.*

from outer perimeter of the mining lease. The plan for plantation and SMC activities will be prepared and submitted to MoEF & CC before Stage-II Clearance;

The Scheme for gap planting and soil & moisture conservation activities to restock and rejuvenate the degraded open forest around the ML area was technically approved with a financial outlay of Rs 93.48 Lakhs by the RCCF, Rourkela vide his memo no 30553F(Dis-K)-218/2011 Dated. 03.09.2012 as per condition no. 2(xi) of Stage-I approval vide F. No. 8-17/1997-FC (pt.) dated 04.04.2011 of MoEF, Govt. of India during diversion of forest land of 1152.58 ha @125/- per MD, the copy of which is enclosed as **Annexure-VII(A)**. The copy of the scheme is attached herewith as **Annexure-XIV**. In this regard, the user agency has submitted an undertaking which is enclosed at **Sl no – 7 of Annexure-VII(C)**.

- xxv. *The User Agency shall prepare a list of existing village tanks and other water bodies with GPS co-ordinates located within five km from the mine lease boundary. This list is to be duly verified by the concerned Divisional Forest Officer. The User Agency shall regularly undertake desilting of these village tanks and other water bodies so as to mitigate the impact of siltation of such tanks/water bodies. A detailed plan for desilting of identified ponds and water bodies to be prepared in consultation with forest department and shall be submitted to MoEF & CC before Stage-II approval;*

The Scheme for De-silting of village tanks within 5 km around the ML area was technically approved with a financial outlay of Rs 55.00 Lakhs by the RCCF, Rourkela vide his Memo nos 135/3F(Dis-K)-218/2011 dt 17.01.2012, as per condition no. 2(xi) of Stage-I approval vide F. No. 8-17/1997-FC (pt.) dated 04.04.2011 of MoEF, Govt. of India during diversion of forest land of 1152.58 ha @125/- per MD, the copy of which is enclosed as **Annexure-VII (B)**. In this regard, the user agency has submitted an undertaking which is enclosed at **Sl no – 8 of Annexure-VII(C)**.

- xxvi. *The User Agency shall submit the annual self - compliance report in respect of the above stated conditions to the State Government, concerned Regional Office and to this Ministry by the end of March every year;*

The User Agency has submitted an undertaking that the annual self-compliance report in respect of the conditions will be furnished regularly to the State Government, Eastern Regional Office of MoEF& CC, Govt of India and MoEF & CC, Govt. of India, New Delhi which is enclosed at **Sl. No. 12 of Annexure-I**.

- xxvii. *Any other condition that the concerned Regional Office of this Ministry may stipulate, from time to time, in the interest of conservation, protection and development of forests & wildlife; and;*

The User Agency has furnished an undertaking that any other condition that the concerned Regional Office of this Ministry might stipulate, from time to time, in the interest of

conservation, protection and development of forests & wildlife will be complied by them , which is enclosed at **Sl. No. 13 of Annexure-I.**

- xxviii. The user agency shall comply all the provisions off the all Acts, _Rules, Regulations, Guidelines, Hon'ble Court Order (s) and National Green Tribunal Order(s) pertaining to this project, if any, for the time being in force, as applicable to the project;**

The User Agency has furnished an undertaking to comply all the provisions of all Acts, Rules, Regulations, Guidelines, Hon'ble Court Order(s) and National Green Tribunal Order(s) pertaining to this project, if any, for the time being in force, as applicable to the project, which is enclosed at **Sl. No. 14 of Annexure-I .**

Additional Conditions imposed vide memo No. 10F(Con)72/2014-20296-F&E dated 03.10.2017 of Special Secretary to Govt. of Odisha, Forest & Environment Department, Bhubaneswar.

- A. Details of benefit to be accrued for this project (as shown in C:B Ratio) shall be given;**

The details of benefit to be accrued for this project (as shown in C:B Ratio) is attached as **Annexure-XVI.**

- B. The Collector Keonjhar shall furnish the complete compliance of FRA guidelines pertaining 87.09 ha, of sabik kism forest land of the ML area;**

The Collector cum District Magistrate, Keonjhar vide his Order No 191 dt. 31.01.2018 has furnished the requisite Certificate in Form II under Scheduled Tribe & Other Traditional Forest Dwellers (Recognition of Forest Rights) Act 2006 which is attached as **Annexure-XIII.** The complete compliance along with the Original Certificate was forwarded to RCCF Rourkela vide this office memo no 839/6F –Mining-3/2016 Dated.07.02.2018 and to Addl PCCF (Forest Diversion & Nodal),Bhubaneswar vide his office memo no 495 dated 26.02.2018 of RCCF Rourkela.

- C. Signed copy of Part I of the application from shall be furnished by user agency;**

The signed copy of Part I of the application form is attached as **Annexure-XVII.**


20/6/18
Divisional Forest Officer,
Keonjhar Division

**STATEMENT SHOWING THE PAYMENT DETAILS IN PRESCRIBED FORMAT IN
REGARDS TO 5.10 SQ. MILE ML OF BOLANI ORES MINES, M/S SAIL.**

Sl. No.	Particulars	Details
1	State/District/Forest Division to which proposal relates	Keonjhar Forest Division, Odisha
2	Name of User Agency, Nature of the proposal	Bolani Ores Mines
3	Extent of forest area involved	1312.86 ha
4	Whether original or extension	Extension (2 nd RML)
5	If extension of lease, please clarify if proposal involves additional forest area, and if so, specify	87.09 ha Non forest land recorded as forest as on 25.10.1980 has been proposed to be diverted under section 2(ii) of FC Act-1980
6	Date of 1 st Stage Clearance	F.NO. 8-17/2016-FC Dt.12.09.2017
7	Extension of CAMPA charges , Head wise	
a.	Compensatory Afforestation	<p>Rs 2,20,64,000.00 (Rupees Two Crores Twenty Lakhs Sixty Four Thousand only) has been transferred through online portal in the account of Ad-hoc CAMPA vide e-Pay Order Number CNAAGSPFD8 on 21-Dec-2017 i.e. ORRISA CAMPA/150825817936563, FCS BANGALORE / FCS BANGALORE/CORP0000633, UTR no-SBIN617355279824.</p> <p>Rs.72,56,000.00 (Rupees Seventy Two Lakhs Fifty Six Thousand Only) has been transferred through RTGS to Union Bank' of India, Sundar Nagar, New Delhi-110003/ 344901010070194 RTGS No-SBINH11069319372 dated.10-03-2011</p> <p>Rs.10,44,000.00 (Rupees Ten Lakhs Forty Four Thousand Only) has been transferred through RTGS to Union Bank' of India, Sundar Nagar, New Delhi-110003/ 344902010105428/ by RTGS / IFSC Code UBIN0534498 RTGS No- SBINH12292336907 dated.18-10-2012</p> <p>Rs 1,24,97,040.00 (Rupees One Crore Twenty Four Lakh Ninety Seven Thousand Forty Only) has been transferred through Chq no CT-400/144677 dt 27.11.1997</p>
b.	Additional CA	<p>Rs.18,62,200.00 (Rupees Eighteen Lakhs Sixty Two Thousand Two Hundred Only) has been transferred through online portal in the account of Ad-hoc CAMPA vide e-Pay Order Number CNAAIUSHA6 on 09.04.2018 i.e. ORRISA CAMPA/150825817936292, NEW DELHI LODHI COMPLEX/NEW DELHI LODHI COMPLEX/CORP0000371, UTR no-SBIN418099593101</p> <p>Rs.3,29,06,700.00 (Rupees Three Crore Twenty Nine Lakhs Six Thousand Seven Hundred Only) has been transferred through RTGS to Union Bank' of India, Sundar Nagar, New Delhi-110003/ 344902010105428 /by RTGS/ IFSC Code UBIN0534498 RTGS No-SBINH12032319281 dated.01.02.2012</p> <p>Rs 2,95,85,300.00 (Rupees Two Crore Ninety Five Lakhs Eighty Five Thousand Three Hundred Only) has been transferred through RTGS to Union Bank' of India, Sundar Nagar, New Delhi-110003/ 344902010105428/ RTGS / IFSC Code UBIN0534498</p>

	c.	Penal CA	Rs 47,50,500.00 (Rupees Forty Seven Lakh Fifty Thousand Five Hundred Only) has been transferred through Chq no CT-400/145053 dt. 08.01.1998								
	d.	Catchment Area Treatment	Nil								
	e.	Wildlife Management Plan	Rs.2,64,29,000.00 (Rupees Two Crore Sixty Four Lakhs Twenty Nine Thousand Only) has been transferred to CAMPA Account No.1585, Corporation Bank, New Delhi Demand Draft no – 272679 Dated. 03-06-2010 Rs 3,03,93,350.00 (Rupees Three Crore Three Lakh Ninety Three Thousand Three Hundred Fifty Only) has been transferred to CAF Orissa SB A/c No SB01025222 Corporation Bank, CGO complex New Delhi SBINH14031365239 Dt 31.01.2014								
	f.	Additional Charges for diversion area falling under notified/Protected area	Nil								
	g.	Net Present Value	1. Rs.76,73,38,280.00 (Rupees Seventy Six Crore Seventy Three Lakhs Thirty Eight Thousand Two Hundred Eighty Only) CAMPA Account No.1585, Corporation Bank, New Delhi Cheque no – 597654 dated. 08.04.2010 2. Rs.12,74,81,120.00 (Rupees Twelve Crore Seventy Four Lakh Eighty One Thousand One Hundred Twenty Only) CAMPA Account No.1585, Corporation Bank, New Delhi Cheque no – 597672 dated. 03.07.2010 3. Rs 6,35,75,700.00 (Rupees Six Crores Thirty Five Lakhs Seventy Five Thousand Seven Hundred only) vide UTR No SBINR5201630826953046 on 08.03.2016 in Compensatory Afforestation Fund (CAF), Orissa SB Accounts no - 344902010105428 of UNION Bank of India, Sunder Nagar New Delhi-110003, IFSC No - UBIN 0534498								
	h.	Penal Net Present Value	NIL								
	i.	Any other charges/Levies(Pl specify)									
		1.5 times Safety Zone	Rs.1199589.00 (Rupees Eleven lakh ninety nine thousand five hundred eighty nine) only has been transferred by the user agency through online portal in the account of Ad-hoc CAMPA vide e-Pay Order Number CNAAJHZWB1 on 07-05-2018 i.e. ORRISA CAMPA/ 150825817936882, NEW DELHI LODHI COMPLEX/CORP0000371, UTR no-SBIN618127738107								
		1.5 times Safety Zone	Rs 19,75,838.00 (Rupees Nineteen Lakh Seventy Five Thousand Eight Hundred Thirty Eight only) has been transferred through Chq no CT-400/144677 dt 27.11.1997								
		Protection, Fencing and Regeneration of safety zone	Rs 16,55,014.00(Rupees Sixteen Lakh Fifty Five Thousand Fourteen Only) has been transferred through Chq no CT-400/145104 dt. 13.01.1998								
		Fund towards implementation of SSCP in buffer zone	Rs 9,76,07,000.00 (Rupees Nine Crore Seventy Six Lakh Seven Thousand only) has been transferred to Adhoc CAMPA A/c No SB01025222 Corporation Bank, CGO complex New Delhi Cheque no 752416 dt 28.06.2014								
8	Details of Bank Draft Details(Bank Draft no., date and amount) head wise against items indicated in para 7:		<table> <tr> <th>Date.</th><th>DD No.</th><th>Amount (Rs)</th><th>Item</th></tr> <tr> <td>03.06.2010</td><td>272679</td><td>26429000</td><td>RWLM</td></tr> </table>	Date.	DD No.	Amount (Rs)	Item	03.06.2010	272679	26429000	RWLM
Date.	DD No.	Amount (Rs)	Item								
03.06.2010	272679	26429000	RWLM								

9	Whether deposited by RTGS, if so, the particulars and date of remittance:	Date.	UTR No.	Amount (Rs)	Item
		10.03.11	SBINH11069319372	7256000	CA
		18.10.12	SBINH12292336907	1044000	CA
		01.02.12	SBINH12032319281	32906700	Addl. CA
		18.10.12	SBINH12292336907	29585300	Addl. CA
		31.01.14	SBINH14031365239	30393350	RWMP
		08.03.16	SBINR5201630826953046	63575700	NPV
10	Bank (Corporation Bank, Lodhi Complex/ Union Bank of India, Sunder Nagar) in which deposited, with date of deposition.	Ad-hoc CAMPA Funds (Corporation Bank, Lodhi Complex & Union Bank of India, Sunder Nagar)			
11	Any other remarks				


Divisional Forest Officer,
Keonjhar Division

Annexure-I



स्टील अथॉरिटी ऑफ इण्डिया लिमिटेड
STEEL AUTHORITY OF INDIA LIMITED
रॉ मटेरियल्स डिवीजन
RAW MATERIALS DIVISION
बोलानी अयस्क खदान
BOLANI ORES MINES

Date: 09.04.2018

UNDERTAKING

I, on behalf of Bolani Ores Mines, M/s SAIL, hereby undertake to comply the following conditions as stipulated in Stage-I FC Order vide F.No.8-17/2016-FC Dt.12.09.2017 granted by MoEF & CC,GOI :

1. That the legal status of diverted Forest land will remain unchanged.
2. That the additional amount of Net Present Value(NPV), if so determined, as per the final decision of Hon'ble Supreme Court of India shall be paid by Bolani Ores Mines, M/s SAIL to the State Govt. of Odisha.
3. Period of diversion of the said -forest land under this approval shall be for a period co-terminus with the period of the mining lease i.e. from 11-04-2010 till 10-04-2030 granted under the MMDR Amendment Act, 2015, as amended and the Rules framed there-under.
4. That no labour camp will be established on the above forest land.
5. That alternate fuels will be provided to the laborers and staff of BOM working at the site so as to avoid any damage and pressure on the nearby forest areas.
6. That no Changes in layout plan of the mining plan/ proposal shall be done without prior approval of the Central Government.
7. That the forest land will not be used for any purpose other than that specified in the proposal.
8. That the forest land proposed to be diverted will not be transferred to any other agency, department or person without prior approval of the Central Government.
9. That no damage to the flora and fauna of the adjoining area will be caused.
10. That any tree felling will be done only when it is unavoidable and that too under strict supervision of the Odisha State Forest Department.
11. That Bolani Ores Mines will abide by the applicable recommendations of the Odisha State Government.
12. That the annual self - compliance report in respect of the conditions stipulated in the Stage-I FC Grant Order will be submitted to the State Government, concerned Regional Office and to the Ministry by the end of March every year.
13. That additional condition stipulated by Regional Office of Ministry, from time to time, in the interest of conservation, protection and development of forests & wildlife will be complied.
14. That Bolani Ores Mines shall comply all the provisions of the all Acts, Rules, Regulations, Guidelines, Hon'ble Court Order(s) and National Green Tribunal Order(s) pertaining to the project, if any, for the time being in force, as applicable to the project.
15. That Bolani Ores Mines, M/s SAIL will pay the excess amount in case of anticipated increase for works scheduled for subsequent years against the scheme of Compensatory Afforestation over 169.72ha degraded forest land in 2 RFs viz. 70.72 ha DFL within Gurniali Reserve Forest & 99.0 ha DFL within Chhatam RF of Rajgangpur Forest Range of Rourkela Forest Division.
16. That Bolani Ores Mines, M/s SAIL, will carry out mining in a phased manner after taking due care for reclamation of the mined over area and the concurrent reclamation plan shall be executed as per the Mining Plan approved by Indian Bureau of Mines, Govt of India and an annual report on implementation of the concurrent reclamation plan shall be submitted to the Nodal officer, Forest (Conservation) Act, 1980, Odisha and Eastern Regional Office, MoEF & CC, Bhubaneswar.
17. That no damage will be caused to the top-soil and the top soil management plan will be followed.

COUNTERSIGNED

[Signature]
20/6/18

Divisional Forest Officer,

[Signature]

General Manager (M)

Bolani Ores Mines, M/s SAIL

डॉ. देसरकार / D. DEYSARKAR

नरखबपक (बन) / General Manager (Mines)

स्टील अथॉरिटी ऑफ इण्डिया लिमिटेड, बोलानी अयस्क खदान, पो. बोलानी, रायगढ़ जिला, उड़ीसा

SAIL-RMD-Bolani Ores Mines

राजगंगपुर, उड़ीसा

Pin-758033, Odisha

Phone: 06767-260211, 06767-260172, Email: rmd@rail.co.in, Website: www.sail.co.in

स्टील अथॉरिटी ऑफ इण्डिया लिमिटेड, रॉ मटेरियल्स डिवीजन, बोलानी अयस्क खदान, पो. बोलानी, रायगढ़ जिला, उड़ीसा
Steel Authority of India Ltd., Raw Materials Division, Bolani Ores Mines, PO. : Bolani, Rayagada District, Odisha
दूरध्वनि / Telephone : 06767 - 260211 (O) फैक्स / Fax 06767 - 260172, Email : rmd@rail.co.in, Website : www.sail.co.in

There's little bit of SAIL in everybody's life

हर किसी की जिन्दगी से जुड़ा हुआ है सेल

Annexure-II



STATE FOREST HEADQUARTERS
OFFICE OF THE PRINCIPAL CHIEF CONSERVATOR OF FORESTS, ODISHA,
BHUBANESWAR

Memo No. 24139 /9F (MG)-67/2016
Dated, Bhubaneswar the 13th November, 2017

To

The DFO, Keonjhar Forest Division.

Sub: Proposal for diversion of balance 87.09 ha of Sabik Kissam forest land as on 25.10.1980 in addition to already diverted forest land of 1225.78 ha for iron ore mining in their Bolani Ore Mines of 1321.45 ha (5.1 Sq. Miles) in Keonjhar District, Odisha by M/s Steel Authority of India Limited (SAIL).

Ref: This Office memo no. 21938 dated 11.10.2017.

In continuation to this office memo cited above, the financial outlay of revised CA Scheme over 169.72 ha of degraded forest land identified in Gurhiali RF (70.72 ha) and Chhatam RF (99.00 ha) under Rajgangpur Range of Rourkela Forest Division pertaining to the above project amounting to ₹ 2,40,64,000/- (Rupees two crores forty lakhs sixty four thousand) only technically approved by Addl. PCCF, Forest Diversion and Nodal Officer, FC Act is enclosed herewith for information and necessary action.

Encl- As above

Memo No.

24140

Dt.

13-11-17

ahmayer 13/11/17
Addl. Principal CCF (FD& NO, FC Act)

Copy forwarded to the RCCF, Rourkela Circle for information and necessary action in continuation to this office memo no. 21938 dated 11.10.2017.

Memo No.

24141

Dt.

13-11-17

ahmayer 13/11/17
Addl. Principal CCF (FD& NO, FC Act)

Copy forwarded to the General Manager, Bolani Ore Mines, M/s SAIL, Dist-Keonjhar, Pin-758037 for information and necessary action in continuation to this office memo no. 21941 dated 11.10.2017.

ahmayer 13/11/17
Addl. Principal CCF (FD& NO, FC Act)

o/c

Financial Outlay for **Revised Compensatory Afforestation Scheme** over 169.72 ha of degraded forest land identified in Gurhiali RF (70.72 ha) and Chhatam RF (99.00 ha) under Rajgangpur Range of **Rourkela Forest Division** against proposed diversion of 87.09 ha of forest land of **Bolani Ores Mines of M/s SAIL**.

(Wage Rate @ Rs.200/- per MD)

Sl. No.	Description	Amount (Rs.)
A	PLANTATION ACTIVITIES: (To be deposited in Ad-hoc CAMPA)	
1	Cost of ANR Plantation @ 200 plants/ha over 169.72 ha. @ Rs.29,698/- per ha. with 10 years maintenance.	50,40,345.00
2	Special Soil Conservation Measures – Graded Earthen Guide Bund for 8500 mtrs. (5300 + 3200) mtrs. @ Rs.1,288/- per mtr.	1,09,48,000.00
	Total	1,59,88,345.00
3	Add 15% of total plantation cost towards the cost of EPA & incentives to V.S.S.	23,98,252.00
	Total	1,83,86,597.00
4	Add Escalation Cost (20%)	36,77,319.00
	Total	2,20,63,916.00 Or rounded off to 2,20,64,000.00
B	INFRASTRUCTURE (To be provided in kinds):	
5	One four wheeler vehicle for monitoring of CA	20,00,000.00
	Total (B)	20,00,000.00
	Grand Total (A+B)	2,40,64,000.00

(Rupees two crores forty lakhs sixty-four thousand only)

Technically Approved

shunyak
25/4/17
.. Addl. Principal Chief Conservator of Forests
Forest Diversion & Nodal Officer, FC Act
Addl. Principal Chief Conservator of Forests
(Forest Division & Nodal Officer F.C. Act)
O/o. the P.C.C.F., Odisha, Bhubaneswar

Annexure-III (A)



By E-mail

STATE FOREST HEADQUARTERS
OFFICE OF THE PRINCIPAL CHIEF CONSERVATOR OF FORESTS, ODISHA,
BHUBANESWAR

Memo No. 6806 MF(MG)-67/2016
Dated, Bhubaneswar the 28th March 2018

To

The DFO, Keonjhar Forest Division.

Sub: Proposal for diversion of balance 87.09 ha of Sabik KISSAM forest land as on 25.10.1980 in addition to already diverted forest land of 1225.78 ha for iron ore mining in their Bolani Ore Mines of 1321.45 ha (5.1 Sq. Miles) in Keonjhar District, Odisha by M/s Steel Authority of India Limited (SAIL) - ACA Scheme regarding.

Ref: Memo No. 404 dated 17.02.2018 of RCCF, Rourkela Circle addressed to you.

In inviting a reference to the memo cited above on the captioned subject, the financial outlay for Additional Compensatory Afforestation Scheme over 5.18 ha of degraded forest land identified in Rebena RF under Brahmanipal Range of Keonjhar(WL) Division, Anandapur against the proposed project of M/s Steel Authority of India Ltd (SAIL) has been technically approved for ₹ 18,62,200/- (Rupees eighteen lakhs sixty two thousand and two hundred) only ^{by} Addl. PCCF, Forest Diversion and Nodal Officer, FC Act at current wage rate of Rs 213.50 per manday. A copy of the financial outlay alongwith 3 (Three) sets of ACA Scheme is enclosed herewith for information and necessary action. You are requested to raise demand on the user agency for payment through web portal of MoEF & CC and submit the deposit particulars of the amount paid alongwith the Stage-I compliance.

This is urgent.

Encl-(Copy of Financial Outlay & 3 sets of CA Scheme)

ahumayak 27/3/18
Addl. Principal CCF (FD& NO, FC Act)

Memo No. 6807 Dt 28-03-18

Copy alongwith a copy of the financial outlay forwarded to the DFO, Keonjhar(WL) division, Anandapur for information & necessary action.

Encl- (Copy of Financial Outlay)

ahumayak 27/3/18
Addl. Principal CCF (FD& NO, FC Act)

Memo No. 6808 Dt 28-03-18

Copy forwarded to the RCCF, Rourkela Circle for information & necessary action with reference to his memo no.403 dated 17.02.2018.

ahumayak 27/3/18
Addl. Principal CCF (FD& NO, FC Act)

Memo No. 6809

Dt. 28-03-18

Copy forwarded to the General Manager, Bolani Ore Mines, M/s SAIL, Dist-Keonjhar, Pin-758037 for information and necessary action

ahumayak 27/3/18
Addl. Principal CCF (FD& NO, FC Act)

Financial Outlay for Additional Compensatory Afforestation Scheme over 5.18 ha of degraded forest land identified in Revena RF under Brahmanipal Forest Range of Keonjhar (WL) Division, Anandapur against Bolani Iron Ore Mines of M/s Steel Authority of India Ltd. (SAIL).

(Wage Rate @ Rs.213.50 per MD)

Sl. No.	Description	Amount (Rs.)
1	Cost of ANR plantation @ 600 plants per ha. over 5.18 ha. @ Rs.50,423.25 per ha. with 10 years maintenance.	2,61,192.00
2	Soil Conservation Measures:	
(i)	LBCD structure of 2 mt. span 10 structure @ Rs.610/-.	61,100.00
(ii)	LBCD structure of 3 mt. span 20 structure @ Rs.13,118/-	2,62,360.00
(iii)	LBCD structure of 4 mt. span 20 structure @ Rs.22,449/-	4,48,980.00
(iv)	Staggered trenches of size (2 mt. x 0.5 mt. x 0.5 mt.) for 250 nos. per ha. along with Agave Plant on the dugout soil @ Rs.25,040/- per ha. over 5.18 ha.	1,29,707.00
3	Graded Earthen Guide bund for 120 mtrs. @ Rs.1550.30 per mt.	1,86,036.00
	Total	13,49,375.00
4	15% of the total plantation cost towards EPA/Incentive to VSS.	2,02,406.00
	Total	15,51,781.00
5	Add Escalation Cost (20%)	3,10,356.00
	Grand Total	18,62,137.00
		Or rounded off to
		18,62,200.00

(Rupees eighteen lakhs sixty-two thousand two hundred only)

Technically Approved

ahwaryale
26/3/16
Addl. Principal Chief Conservator of Forests
Forest Diversion & Nodal Officer, FC Act
Addl. Principal Chief Conservator of Forests
(Forest Division & Nodal Officer F.C. Act)
Dy. Pr. P.C.C.F., Odisha, Bhubaneswar

Annexure-III (B)



e-PayOrder Details

e-PayOrder Number CNAAIUSHA6
Debit Status Success

Date **09-Apr-2018**

PAY **ORISSA CAMPA**

RUPEES (In words) **Eighteen Lakhs Sixty Two Thousand Two Hundred only** Rs **18,62,200.00**

ACCOUNT NO. **00000011180766769**

STATE BANK OF INDIA

BOLANIDEBASHISH BEHERA
MakerRAJEEV KUMAR
Authorizer 1RABINDRA NATH OJHA
Authorizer 2

"CNAAIUSHA6"

Counterfoil Description SAIL RMD BOM
Transaction Type NEFT Funds transfer
GSTIN Number --

Debit Account Details

Account No.	Branch	Amount
00000011180766769	BOLANI	18,62,200.00

Credit Account Details

Beneficiary Name/Account No.	Bank/Branch/IFSCCode	Amount	Credit Status	UTR No.
ORISSA CAMPA/150825817936292	NEW DELHI LODHI COMPLEX/NEW DELHI LODHI COMPLEX/CORP0000371	18,62,200.00	Credited to Beneficiary Account	SBIN418099593101

Annexure-III (C)



ବିଭାଗୀୟ ଅଧିକାରୀ ତଥା ବନ୍ୟଜୀବୀ ତତ୍ତ୍ୱାବଧାନଙ୍କ କାର୍ଯ୍ୟାଳୟ, ରୂରକେଲା

OFFICE OF THE DIVISIONAL FOREST OFFICER CUM WILDLIFE WARDEN
ROURKELA FOREST DIVISION, ROURKELA, SUNDARGARH, ODISHA

Phone No. 0661-2664637, Fax No. 0661-2664639, e mail- dforourkela@yahoo.co.in

Memo No....1694...../4F, Dt..27/03/2018

To

The Divisional Forest Officer,
Keonjhar Division.

Sub:-

Proposal for diversion of balance 87.09 Ha. of Sabik Kisan forest land as on 25.10.1980 in additional to already diverted forest land of 1225.78 ha. for iron ore mining in their Bolani Ores Mines of 1321.45 ha. (5.10 sq miles ML) in Keonjhar district, Odisha by M/s Steel Authority of India limited (SAIL).

Ref:

Your Memo No.7150 dt.16.11.2017 and this Office Memo No.7751 dt.01.12.2017

In continuation to this Office memo no. cited above, it is to inform you that, the map & scheme for Compensatory Afforestation(CA) over 169.72 ha. of degraded forest land identified in Gurhiali RF-70.72 Ha & Chhatam RF-99.0 Ha, Rajgangpur Range for raising Compensatory Afforestation in ANR with gap mode for the above diversion proposal was prepared with a total financial outlay of Rs.2,34,44,852/- (Rupees Two Crore Thirty Four Lakhs Forty Four Thousand Eight Hundred Fifty Two) only, out of which, Rs.2,14,44,852/- (Rupees Two Crore Fourteen Lakhs Forty Four Thousand Eight Hundred Fifty Two) only was to be deposited by the user Agency and a four wheeler vehicle with a cost of Rs. 20.0 Lakhs was to be provided by the user Agency for monitoring of the plantation. Further, as informed by the user agency, the fund for CA amounting to Rs 2,20,64,000/- (Rupees Two Crore twenty Lakhs sixty Four Thousand only) was deposited by UA in the Ad-hoc CAMPA account as per your demand note vide 7284/6F-Mining dt. 21.11.2017. The copies of the deposits are attached herewith.

Contd...P/2

MoEF & CC, GoI has raised objection in condition no - iii of the Stage-I order no. F-No - 8-17/2016-FC dt. 12.09.2017 and has given a stipulation as follows :- "Additional degraded forest land of 5.18 ha as CA land along with shape files shall be provided and the plantation area in the 169.00 ha of CA land may be excluded and equivalent additional degraded forest area shall be submitted for CA". Accordingly, in compliance to the objections raised by MoEF & CC, GOI, the plantation area to the extent of 3.33 ha observed within the Gurhiali RF has been excluded and equivalent additional suitable degraded forest land has been identified adjacent to the earlier patch inside same Gurhiali RF. The site specific nature of the area & the treatment measures remains same. Hence the total land of 169.72 Ha (i.e Gurhiali RF-70.72 Ha & Chhatam RF-99.0 Ha) identified in Rajgangpur Range remains intact, without any change in financial outlay in the scheme submitted earlier. The maps enclosed along with CA scheme have been revised. The copy of the scheme along with the authenticated revised maps with GPS coordinate and shape file are enclosed herewith for your further needful action.

Further, as regards additional Degraded Forest Land (DFL) of 5.18 ha for CA, the User Agency may be advised to arrange the land elsewhere.

Divisional Forest Officer
Rourkela Division

Memo No 1695 /Dated: 25/3/18

Copy forwarded to the Regional Chief Conservator of Forest, Rourkela Circle/ Addl. PCCF, FD & Nodal Officer, FC Act, O/o the PCCF, Odisha, Bhubaneswar for favour of kind information and necessary action with reference to this office Memo No.7752 dt.01.12.2017.

Divisional Forest Officer
Rourkela Division.

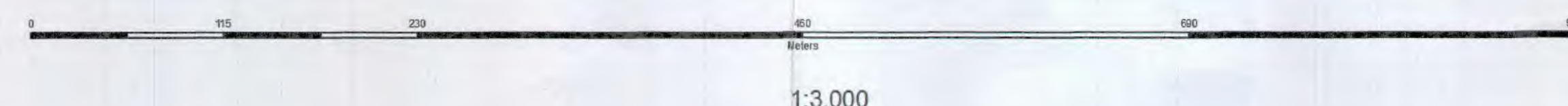
Memo No 1696 /Dated: 25/3/18

Copy forwarded to the General Manager, Bolani Ores Mines (5.10 sq Miles) of M/s SAIL, At/Po:- Bolani, Dist:- Keonjhar information and necessary action with reference to this office Memo No.7753 dt.01.12.2017..

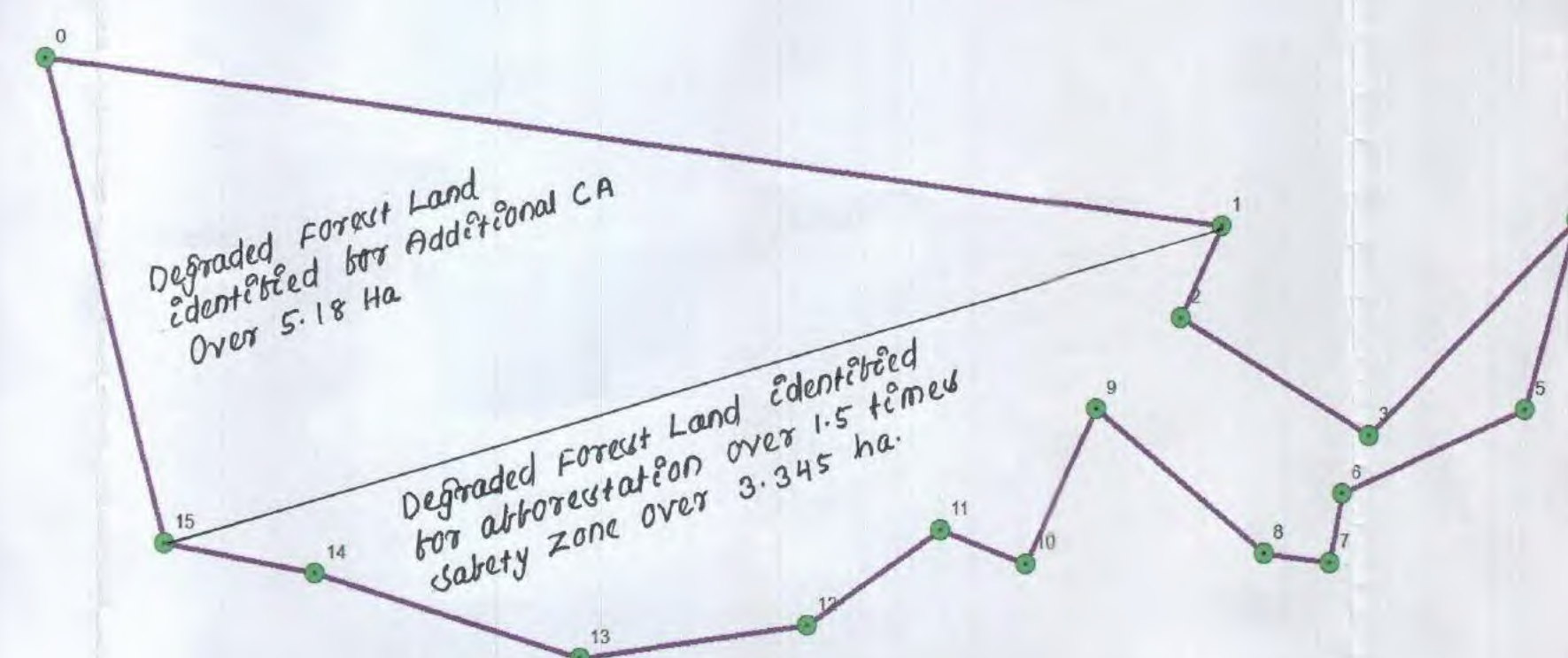
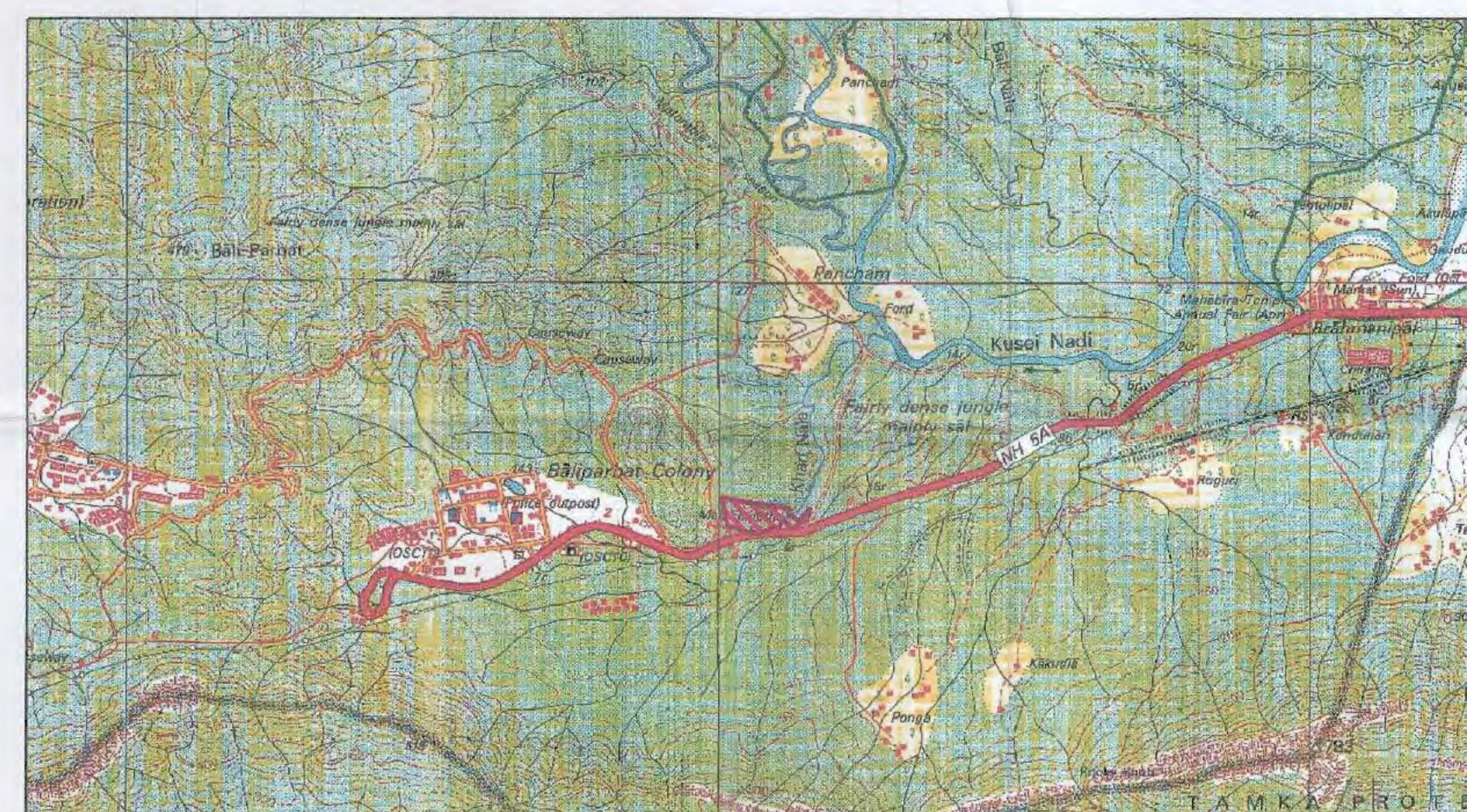
Divisional Forest Officer
Rourkela Division.

Annexure-IV

MAP SHOWING SUITABLE LAND FOR COMPENSATORY AFFORESTATION
IDENTIFIED IN ANANDAPUR FOREST DIVISION FOR
DIVERSION OF SABIK FOREST LAND
WITHIN 5.10 SQ MILES ML OF BOLANI ORES MINES OF M/S SAIL.



KEY PLAN
TOPOSHEET NO : F45N16
Scale : 1:50,000



FIELD NOTES

CO-ORDINTAES AROUND 9.18 HA DEGRADED FOREST LAND FOR COMPENSATORY AFFORESTATION
IDENTIFIED IN BRAHMANIPAL RANGE (REBENA RF,near Baiparbat,patch-IX) ANANDAPUR FOREST
DIVISION FOR DIVERSION OF SABIK KISAM FOREST LAND(87.09 Ha) WITHIN 5.10 SQ MILES ML OF
BOLANI ORES MINES OF M/S SAIL.

SI No/PillarID	Longitude	Latitude	Easting	Northing
0	85°52'30.43"	21°06'36.00"	383172.4202	2334734.698
1	85°52'47.89"	21°06'33.52"	383676.1152	2334654.945
2	85°52'47.28"	21°06'32.18"	383658.4298	2334613.849
3	85°52'50.09"	21°06'30.46"	383739.0359	2334560.813
4	85°52'53.18"	21°06'33.59"	383828.4238	2334656.239
5	85°52'52.43"	21°06'30.85"	383806.1366	2334571.9
6	85°52'49.69"	21°06'29.63"	383727.2698	2334535.274
7	85°52'49.51"	21°06'28.62"	383721.5992	2334504.039
8	85°52'48.54"	21°06'28.76"	383693.3864	2334508.636
9	85°52'46.02"	21°06'30.85"	383621.9694	2334573.817
10	85°52'44.98"	21°06'28.66"	383590.9489	2334506.393
11	85°52'43.72"	21°06'29.16"	383554.663	2334521.535
12	85°52'41.74"	21°06'27.79"	383497.4162	2334479.631
13	85°52'38.35"	21°06'27.29"	383399.8717	2334465.373
14	85°52'34.43"	21°06'28.51"	383287.0035	2334504.237
15	85°52'32.20"	21°06'28.98"	383222.203	2334518.568

TOTAL AREA : 9.18 hects

DETAILS OF SUITABLE LAND IDENTIFIED FOR COMPENSATORY AFFORESTATION IN ANANDPUR WILDLIFE DIVISION FOR
DIVERSION OF SABIK FOREST LAND WITHIN 5.10 SQ MILES ML OF BOLANI ORES MINES OF M/S SAIL .

SI No	Ranges of Rourkela Division	RF	Patch	Area in Ha	Remarks
1	Brhamanipal Range	Rebena RF	Patch-IX(Baliparbat)	9.18Ha	
			TOTAL	9.18 Ha	

SITE IDENTIFIED FOR COMPENSATORY AFFORESTATION
OVER 9.18 HA DEGRADED FOREST LAND
IN REBENA ESERVED FOREST
UNDER BRAHMANIPAL RANGE OF ANANDPUR DIVISION

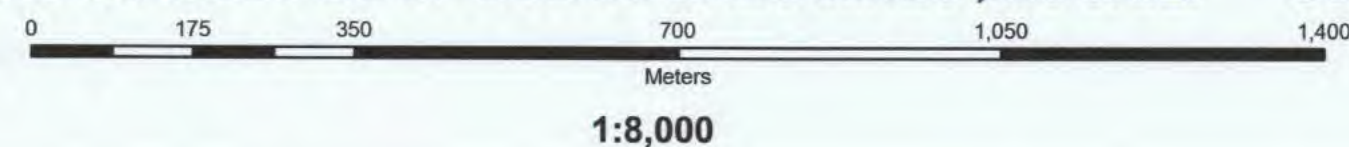
for the Diversion Proposal (87.09 Ha sabik forest) of Mining Project of
ORES MINES OF M/S SAIL.
5.10 SQ MILES ML OF BOLANI ORES MINES OF M/S SAIL.

Forrest Officer
Bramanipal Range

Forrest Officer
Bramanipal Range

Forrest Officer
Koonjhar (WL) Division
Anandapur

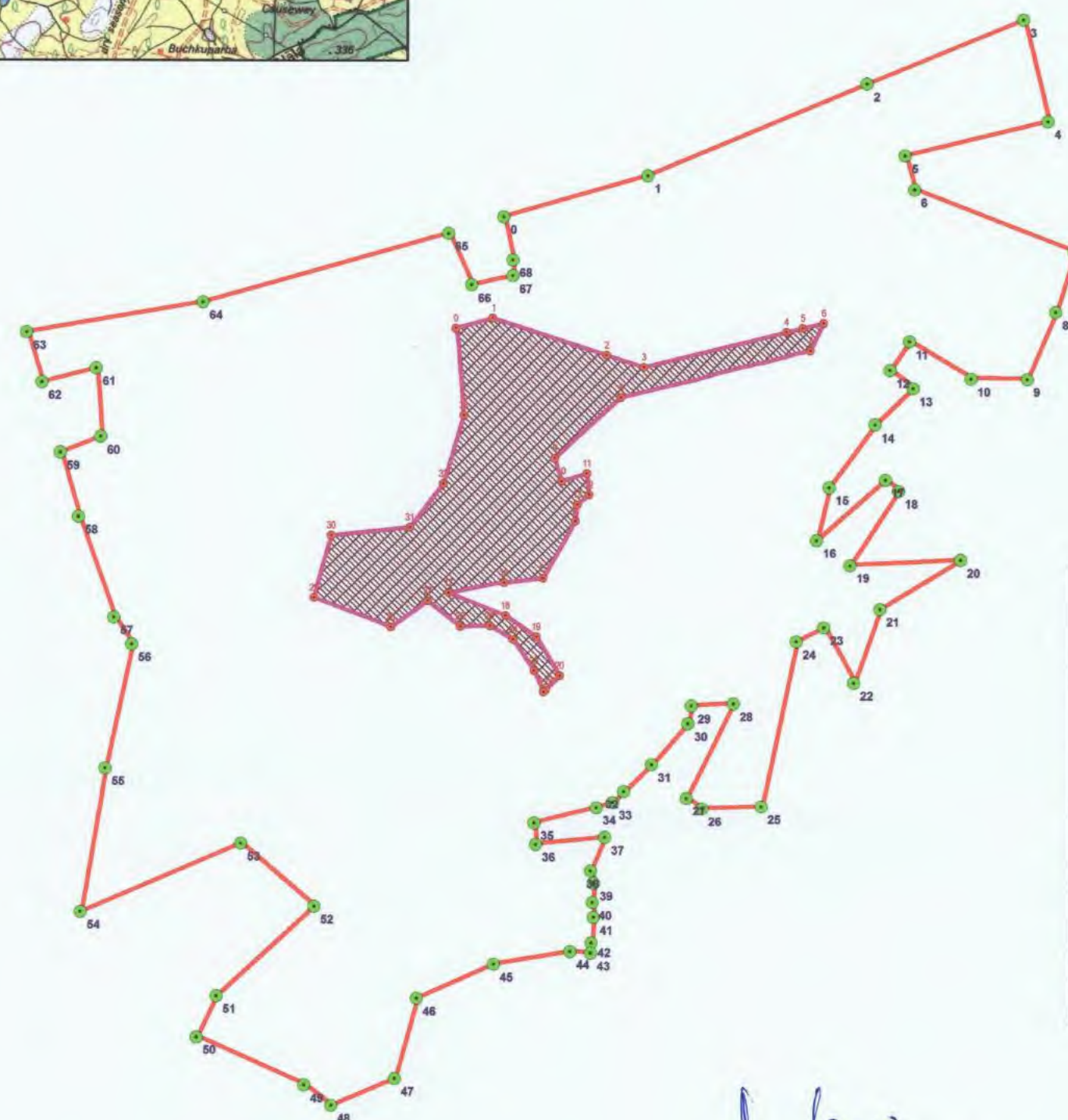
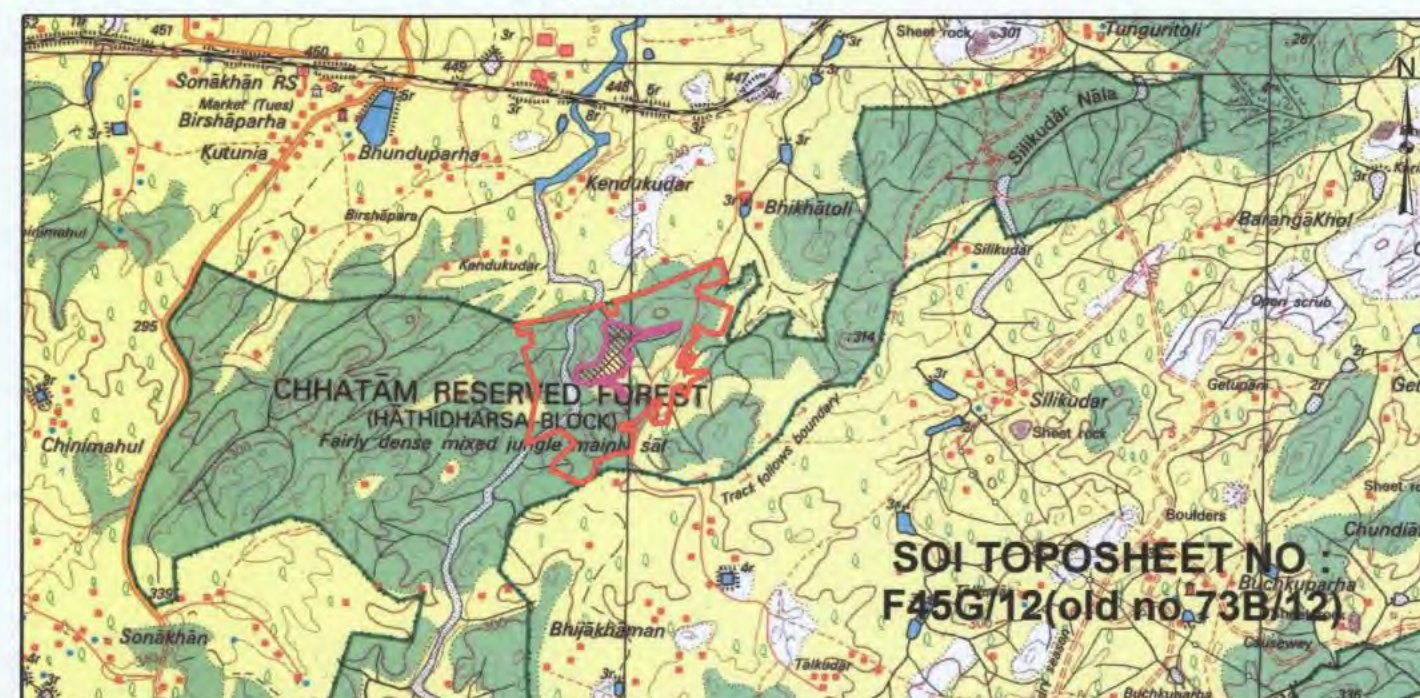
MAP SHOWING LAND FOR COMPENSATORY AFFORESTATION OVER 99.0 HA DEGRADED FOREST LAND WITHIN CHHATAM RESERVED FOREST (HATHIDHARSA BLOCK) OF RAJGANGPUR FOREST RANGE (ROURKELA FOREST DIVISION) FOR DIVERSION OF 87.09 HA NON FOREST LAND RECORDED AS FOREST AS ON 25.10.1980 INSIDE 5.10 SQ MILES ML OF BOLANI ORES MINES ,M/s SAIL. Scale : 1:8,000



SOI TOPOSHEET NO : F45G/12(old no 73B/12)



KeyPlan, 1:50,000



Legend

Points around excluded boundary

Points around Total/Gross area



Area Excluded from gross area (10.0Ha)



Net Area for CA over 99.0 ha (109.0ha-10.0 ha)

FIELD NOTES

CO-ORDINATES AROUND CA SITE OVER 99.0 HA

Pillar Id	Longitude	Latitude	EASTING	NORTHING
0	84°32'26.18"	22°09'07.08"	246354.578	2451701.138
1	84°32'26.12"	22°09'09.07"	246354.528	2451759.170
2	84°32'43.65"	22°09'13.41"	246858.316	2451887.806
3	84°32'51.17"	22°09'16.46"	247052.232	2451978.383
4	84°32'52.43"	22°09'11.87"	247109.270	2451836.282
5	84°32'46.54"	22°09'10.19"	246910.555	2451787.787
6	84°32'46.02"	22°09'08.66"	246924.003	2451740.675
7	84°32'53.83"	22°09'05.97"	247146.248	2451654.206
8	84°32'52.97"	22°09'03.23"	247120.417	2451570.219
9	84°32'51.69"	22°09'00.18"	247081.014	2451477.085
10	84°32'48.93"	22°09'00.15"	247002.594	2451477.561
11	84°32'45.91"	22°09'01.79"	246917.386	2451529.283
12	84°32'45.00"	22°09'00.47"	246890.567	2451489.159
13	84°32'46.14"	22°08'59.66"	246922.730	2451463.830
14	84°32'44.33"	22°08'58.00"	246870.035	2451413.419
15	84°32'42.17"	22°08'55.15"	246806.719	2451326.813
16	84°32'41.60"	22°08'52.75"	246789.415	2451283.217
17	84°32'44.87"	22°08'55.54"	246884.342	2451337.392
18	84°32'45.53"	22°08'55.05"	246903.018	2451322.168
19	84°32'43.24"	22°08'51.63"	246835.718	2451218.023
20	84°32'44.59"	22°08'51.97"	246898.355	2451225.848
21	84°32'44.73"	22°08'49.64"	246877.494	2451156.010
22	84°32'43.53"	22°08'46.27"	246841.446	2451052.924
23	84°32'42.04"	22°08'48.75"	246799.948	2451129.760
24	84°32'40.72"	22°08'48.09"	246761.648	2451102.212
25	84°32'38.16"	22°08'40.55"	246713.355	2450878.824
26	84°32'36.29"	22°08'40.41"	246630.864	2450875.859
27	84°32'35.53"	22°08'40.88"	246609.485	2450890.845
28	84°32'32.71"	22°08'45.24"	246614.588	2451033.880
29	84°32'35.69"	22°08'45.10"	246616.193	2451020.605
30	84°32'35.55"	22°08'44.29"	246611.684	2450995.645
31	84°32'34.84"	22°08'42.40"	246591.597	2450958.293
32	84°32'32.51"	22°08'41.14"	246522.840	2450903.616
33	84°32'31.96"	22°08'40.62"	246507.067	2450884.495
34	84°32'31.19"	22°08'40.37"	246484.732	2450877.093
35	84°32'28.19"	22°08'39.61"	246398.289	2450805.265
36	84°32'28.28"	22°08'38.64"	246400.359	2450825.280
37	84°32'31.62"	22°08'39.02"	246496.339	2450835.285
38	84°32'30.95"	22°08'37.40"	246476.523	2450788.454
39	84°32'31.11"	22°08'36.37"	246480.672	2450771.123
40	84°32'31.07"	22°08'36.05"	246479.064	2450744.241
41	84°32'31.13"	22°08'35.38"	246480.536	2450723.536
42	84°32'31.04"	22°08'34.21"	246477.431	2450687.705
43	84°32'31.01"	22°08'33.78"	246476.422	2450673.696
44	84°32'30.03"	22°08'33.80"	246448.371	2450675.536
45	84°32'26.33"	22°08'33.18"	246341.843	2450608.005
46	84°32'26.63"	22°08'31.58"	246244.995	2450600.133
47	84°32'21.82"	22°08'27.90"	246204.220	2450487.672
48	84°32'18.56"	22°08'26.62"	246115.757	2450460.070
49	84°32'17.23"	22°08'27.54"	246078.201	2450488.840
50	84°32'12.08"	22°08'29.43"	245929.460	2450505.579
51	84°32'12.92"	22°08'31.51"	245956.760	2450613.032
52	84°32'17.56"	22°08'35.65"	246091.831	2450788.213
53	84°32'13.97"	22°08'38.45"	245996.178	2450826.061
54	84°32'08.38"	22°08'35.13"	245788.094	2450705.587
55	84°32'07.30"	22°08'41.80"	245802.316	2450902.119
56	84°32'08.54"	22°08'47.43"	245839.113	2451104.973
57	84°32'07.65"	22°08'48.65"	245814.088	2451142.719
58	84°32'05.85"	22°08'53.24"	245764.893	2451284.478
59	84°32'04.92"	22°08'56.12"	245739.530	2451373.800
60	84°32'06.85"	22°08'56.84"	245795.322	2451395.027
61	84°32'06.57"	22°08'59.30"	245788.865	2451489.480
62	84°32'05.95"	22°08'59.31"	245781.844	2451470.119
63	84°32'03.17"	22°09'01.49"	245682.143	2451539.843
64	84°32'11.69"	22°09'02.98"	245936.986	2451581.948
65	84°32'23.52"	22°09'06.38"	246277.843	2451607.811
66	84°32'24.67"	22°09'03.98"	246309.763	2451606.478
67	84°32'26.67"	22°09'04.41"	246367.316	2451619.000
68	84°32'26.66"	22°09'05.14"	246367.320	2451641.262

Pillar Id	Longitude	Latitude	EASTING	NORTHING
0	84°32'23.96"	22°09'02.01"	246288.3482	2451546.182
1	84°32'25.74"	22°09'02.49"	246339.6027	2451560.166
2	84°32'31.28"	22°09'00.80"	246491.5887	2451508.783
3	84°32'33.08"	22°09'00.38"	246549.0142	2451492.002
4	84°32'39.96"	22°09'02.09"	246746.9246	2451541.36
5	84°32'40.73"	22°09'01.29"	246769.5891	2451546.579
6	84°32'41.76"	22°09'02.54"	246796.7795	2451554.982
7	84°32'41.13"	22°09'01.37"	246779.9568	2451535.636
8	84°32'31.99"	22°08'59.01"	246517.0016	2451450.231
9	84°32'28.86"	22°08'56.22"	246425.7667	2451465.958
10	84°32'26.20"	22°08'55.11"	246435.2454	2451334.745
11	84°32'30.42"	22°08'55.57"	246470.2787	2451345.194
12	84°32'30.55"	22°08'54.62"	246473.5238	2451315.763
13	84°32'30.00"	22°08'54.17"	246457.4138	2451302.131
14	84°32'28.92"	22°08'53.43"	246454.7442	2451279.566
15	84°32'28.40"	22°08'50.77"	246410.0354	2451198.443
16	84°32'26.53"	22°08'50.54"	246356.1386	2451192.033
17	84°32'23.84"	22°08'50.03"	246278.9141	2451177.591
18	84°32'26.63"	22°08'49.02"	246356.371	2451145.451
19	84°32'28.13"	22°08'48.10"	246400.8823	2451116.429
20	84°32'29.30"	22°08'46.34"	246433.4376	2451061.683
21	84°32'28.61"	22°08'45.70"	246413.4514	2451042.171
22	84°32'28.54"	22°08'45.61"	246411.2993	2451039.463
23	84°32'28.05"	22°08'45.57"	246397.8383	2451069.2
24	84°32'27.01"	22°08'49.65"	246366.687	2451112.146
25	84°32'25.87"	22°08'48.56"	246336.3749	2451111.442
26	84°32'24.44"	22°08'48.51"	246295.4534	2451130.707
27	84°32'22.85"	22°08'49.63"	246250.2274	2451185.836
28	84°32'21.06"	22°08'48.42"	246198.2918	2451129.463
29	84°32'17.31"	22°08'49.69"	246091.7011	2451170.37
30	84°32'18.09"	22°08'52.58"	246115.3579	2451258.852
31	84°32'17.89"	22°08'53.01"	246224.3913	2451270.287
32	84°32'23.50"	22°08'54.89"	246271.0001	2451330.548
33	84°32'24.41"	22°08'58.06"	246299.335	2451424.506

C. NET AREA = A-B = 109.0 HA - 10.0 HA = 99.0 HA

Forest Range Officer
Rajgangpur Range

Divisional Forest Officer
Rourkela Division

STEEL AUTHORITY OF INDIA LIMITED
BOLANI ORES MINES (5.10 Sq Miles ML),
KEONJHAR, ODISHA

MAP SHOWING DEGRADED FOREST LAND
OVER 99.0 HA IN CHHATAM RF (HATHIDHARSA BOCK)

REVISED MAP ON SOI TOPOSHEET SHOWING LAND FOR COMPENSATORY AFFORESTATION OVER 70.72 HA SUITABLE DEGRADED FOREST LAND WITHIN GURHIALI RESERVED FOREST (near san-Gurhiali, Luhuraberni and Jurajam) OF RAJGANGPUR FOREST RANGE (ROURKELA FOREST DIVISION) FOR DIVERSION OF 87.09 HA NON FOREST LAND RECORDED AS FOREST AS ON 25.10.1980 INSIDE 5.10 SQ MILES ML OF BOLANI ORES MINES ,M/s SAIL. Scale: 50,000

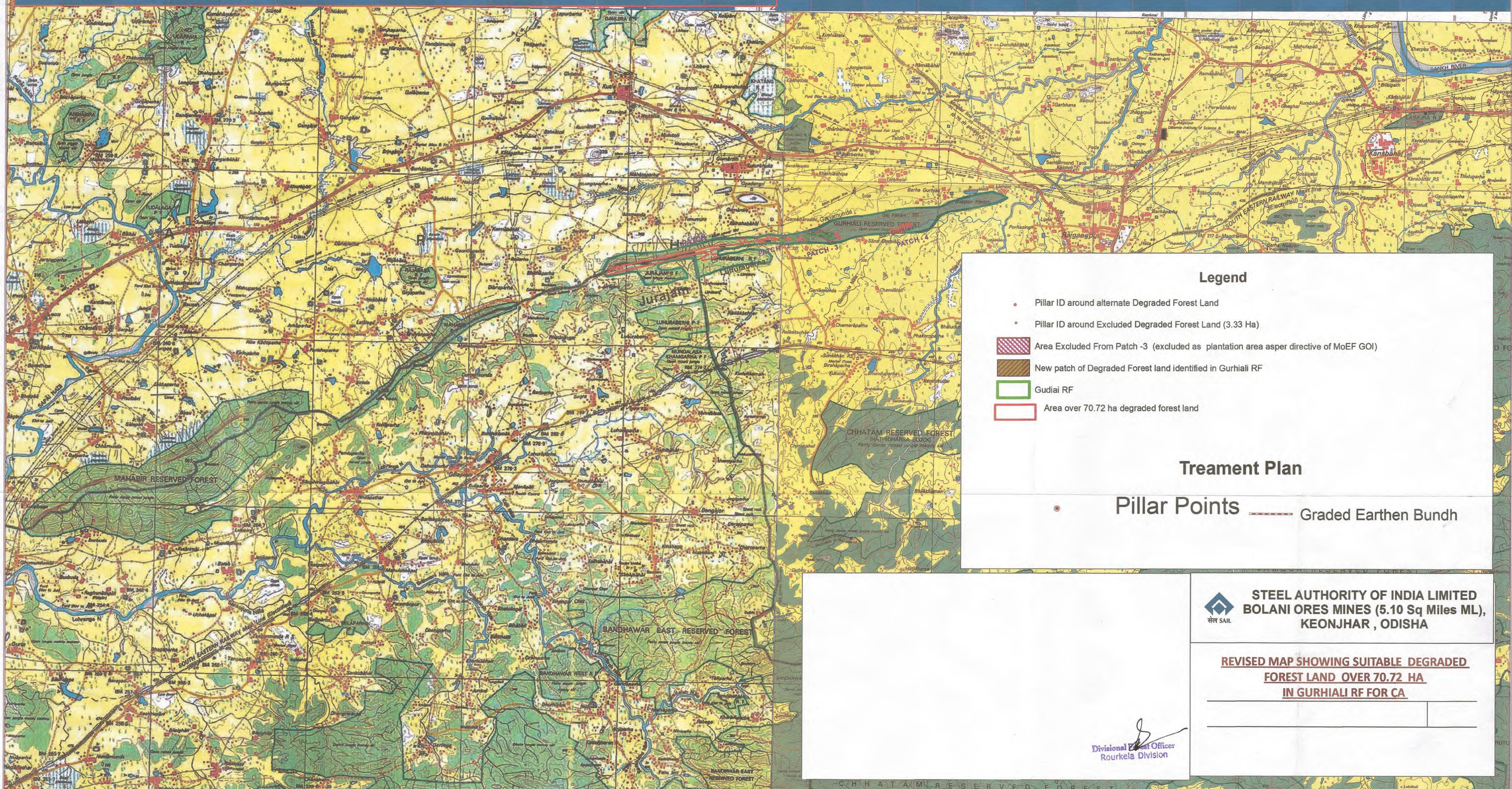
0 2,125 4,250 8,500 12,750 17,000 Meters
1:50,000



SOI TOPOSHEET NO : F45G/8 & F45G/12

SOI TOPOSHEET :
F45G/8

SOI TOPOSHEET :
F45G/12



Legend

- Pillar ID around alternate Degraded Forest Land
- Pillar ID around Excluded Degraded Forest Land (3.33 Ha)
- Area Excluded From Patch -3 (excluded as plantation area as per directive of MoEF GOI)
- New patch of Degraded Forest land identified in Gurhiali RF
- Gudai RF
- Area over 70.72 ha degraded forest land

Treatment Plan

Pillar Points Graded Earthen Bundh



STEEL AUTHORITY OF INDIA LIMITED
BOLANI ORES MINES (5.10 Sq Miles ML),
KEONJHAR , ODISHA

REVISED MAP SHOWING SUITABLE DEGRADED
FOREST LAND OVER 70.72 HA
IN GURHIALI RF FOR CA

Divisional Forest Officer
Rourkela Division

Annexure-V(A)



e-PayOrder Details

e-PayOrder Number CNAAGSPFD8

Debit Status Success

21-Dec-2017

ORRISA CAMPA

Two Crores Twenty Lakhs Sixty Four Thousand

2,20,64,000.00

only

00000011180766769

BOLANI

DEBASHISH BEHERA

Maker

RAJEEV KUMAR

Authorizer 1

RABINDRA NATH OJHA

Authorizer 2

"CNAAGSPFD8"

Counterfoil Description SAIL RMD BOM

Transaction Type NEFT Funds transfer

Debit Account Details

Account No.	Branch	Amount
00000011180766769	BOLANI	2,20,64,000.00

Credit Account Details

Beneficiary Name/Account No.	Bank/Branch/IFSCCode	Amount	Credit Status	UTR No.
ORRISA CAMPA/150825817936563	FCS BANGALORE/FCS BANGALORE/CORP0000633	2,20,64,000.00	Pending	SBIN617355279824

Annexure-V (B)



स्टील अथॉरिटी ऑफ इण्डिया लिमिटेड
STEEL AUTHORITY OF INDIA LIMITED
रॉ मेटेरियल्स डिवीजन
RAW MATERIALS DIVISION
बोलानी अयस्क खदान
BOLANI ORES MINES

Ref. No.-GM/B/07-18

Date: 30.05.2018

To

The Divisional Forest Officer,
Rourkela Division,
Rourkela.

Sub: Proposal for diversion of 87.09 ha of Sabik Kisam forest land as on 25.10.1980 in addition to already diverted forest land of 1225.78 ha for Iron Ore mining in their Bolani Ore Mines of 1321.45 ha. (5.10 sq. Mile) in Keonjhar District, Odisha by M/s Steel Authority of India Limited (SAIL)

X-Sub:Handed over of Vehicle in compliance to conditions no-ii stipulated in Stage-I FC issued vide F. NO. 8-17/2016-FC Dt.12.09.2017

Ref: Memo no. 24139 dated 13.11.2017 of Addl. PCCF, Forest Diversion and Nodal Officer, FC Act, Bhubaneswar

Sir,

In reference with the subject cited above it is to inform you that, Degraded forest land over 169.72 ha. i.e twice in extent of 84.86 ha. of virgin forest land being diverted (87.09 ha - 2.23 ha safety zone), has been identified in 2 RFs viz. 70.72 ha DFL within Gurhiali Reserve Forest & 99.0 ha DFL within Chhatam RF of Rajgangpur Forest Range of Rourkela Forest Division. Accordingly the site specific Compensatory Afforestation scheme was prepared & technically approved by Addl. PCCF, Forest Diversion and Nodal Officer, FC Act vides his memo no. 24139 dated 13.11.2017 with financial implication of Rs 2,40,64,000.00/- (Two Crores Forty Lakhs Sixty Four Thousand only) inclusive of a four wheeler vehicle of Rs.20,000,00.00 (Twenty Lakhs Only). In this regard Rs 2,20,64,000.00/- (Two Crores Twenty Lakhs Sixty Four Thousand only) has been transferred by the user agency through online portal in the account of Ad-hoc CAMPA vide e-PayOrder Number CNAAGSPFD8 on 21-Dec-2017 i.e. ORRISA CAMPA/150825817936563, FCS BANGALORE / FCS BANGALORE/CORP0000633, UTR no- SBIN617355279824 & the Four wheeler vehicle Scorpio model no - MAH SCORPIO S11 MH 2.2 Hawk-140 2WD 7S has been purchased vide Order No-RMD/C/MM/BOM-0264/5349 Dated.22.03.2018(Copy Enclosed)

In view of the above we request you to take possession of the purchased vehicle as per the approved scheme and acknowledge the same for compliance of the condition stipulated vide aforesaid Stage-I Grant Order.

Thanking You.

Encl: As Above

Yours Faithfully,

General Manager (Mines)
Bolani Ores Mines, M/s SAIL, Bolani
महाप्रबंधक (खनन) / General Manager (Mines)
सेल - आर एम डी - बोलानी-अयस्क खदान
SAIL-RMD-Bolani Ores Mines
बोलानी-758 037, क्योझर, ओडीशा
Bolani-758 037, Keonjhar, Odisha

स्टील अथॉरिटी ऑफ इण्डिया, लिमिटेड रॉ मेटेरियल्स डिवीजन, बोलानी अयस्क खदान, पो- बोलानी - 758037, जिला - क्योझर, उड़ीसा
Steel Authority of India Ltd., Raw Materials Division, Bolani Ores Mines, PO. : Bolani - 758037, Dist. Keonjhar, Odisha
दूरभाष / Telephone : 06767 - 260211 (O) फैक्स / Fax 06767 - 260172, Email : rmdbom@gmail.com, Website : www.sail.co.in



स्टील अथॉरिटी ऑफ इण्डिया लिमिटेड
STEEL AUTHORITY OF INDIA LIMITED
रॉ मटेरियल्स डिवीज़न
RAW MATERIALS DIVISION

Ref. No.: RMD/C/MM/BOM-0264/5349

Dt. 22.03.2018

M/s Mahindra & Mahindra Limited,
 Automotive Sector,
 7, Kyd Street,
 Kolkata - 700 016.

Subject : Purchase Order

Our ref.: Tender No. RMD/C/MM/BOM-0264 Dt. 13.02.2018.
 Your ref.: Quotation No. BBSR/F-Spl/F17/045 & 046 Dt. 15.02.2018.

Dear Sirs,

With reference to the above and subsequent correspondence, we are pleased to place an Order on you for supply of one number each of Scorpio [RF HWK], Model: S11 2WD, BS -IV, 140 - BHP, Colour : Pearl White and Bolero Model : ZLX Power Plus, 2WD [ARMADA], Colour : Diamond White of Mahindra Make to The Divisional Forest Officer, Rourkela Forest Division, Rourkela, Distt Sundergarh, Odisha, as per the following scope, price, terms and conditions :-

1. Scope of supply : Scorpio [RF HWK], Model: S11 2WD, BS -IV, 140 - BHP, Colour : Pearl White and Bolero Model : ZLX Power Plus, 2WD [ARMADA], Colour : Diamond White of Mahindra Make Confirming to Bharat Stage IV and Standard Equipments.
2. Quantity : 1 (One) number each.
3. Price :

S.NO.	Description	Amount in Rs.	
1		Ex - Show room Price [Scorpio [RF HWK], Model: S11 2WD, BS -IV, 140 - BHP, Colour : Pearl White]	Ex - Show room Price [Bolero Model : ZLX Power Plus, 2WD [ARMADA], Colour : Diamond White]
2	Special Govt NDP	8,89,726	5,67,812
3	Transportation from Plant Nashik to Rourkela.	17,483	17,483
4	GST (@ 28%) + Cess (@3%) on [Special Govt NDP + Transportation]		1,81,442
5	GST (@ 28%) + Cess (@ 20%) on [Special Govt NDP + Transportation]	4,35,460	
6	Final Price	13,42,669	7,66,737
7	Total	21,09,406	

Total Value : Rs 21,09,406 (Rupees Twenty One Lacs Nine Thousand Four Hundred Six Only).
 The price shall remain firm till the execution of the contract.

4. Delivery : Within 45 days.
5. Terms of Payment : 100 % payment against delivery. Proforma Invoice shall be submitted by you in advance on readiness of vehicles.

6. Consignee / Destination :

The Divisional Forest Officer, Rourkela Forest Division, Rourkela, Distt Sundergarh, Odisha.

7. Paying Authority :

Asstt. General Manager (F&A), Steel Authority of India Limited, Raw Materials Division,
Bolani Ores Mines, Dist: Keonjhar, Odisha - 758037.

8. Bolani Ores Mines, which is located in Odisha, the details regarding GST is as under :

i. The Principal Place of Business is :

Steel Authority of India Limited,
Rourkela Steel Plant,
Rourkela, Odisha - 769011

ii. Additional Place of Business is :

Steel Authority of India Limited,
Raw Materials Division,
Bolani Ores Mines, Dist: Keonjhar, Odisha - 758037.

iii. The provisional GST Registration No. (GSTIN) of Rourkela Steel Plant is 21AAAC57062F2ZP

9. Warranty : As per standard Warranty Policy stated in Owner's Manual.

M/s Mahindra & Mahindra Limited shall guarantee against defect arising out of workmanship, design and materials supplied, Guarantee is to be given for satisfactory performance of the equipment.

10. Liquidated Damages for delay in Delivery:

In event of non-completion of job in all respect within the scheduled completion period liquidated damages @1%, not by way of penalty, on basic price of equipment, per month of delay or part thereof, subject to maximum of 5%, is recoverable from the supplier without prejudice to the rights of Purchaser to procure the balance material at the risk and cost of the supplier. The payment or deduction of such damages shall not relieve the Supplier from the contractual obligations to complete the balance job or balance portion thereof in time as stipulated in the Contract.

11. Tools, Tackles & Manuals :

A set of standard tools, tackles and manuals provided with the vehicle is to be provided with each vehicle.

12. All other terms and conditions not specifically covered by the above would be governed by our Enquiry Terms and Conditions & General Conditions of Contract, The General conditions of contract governing supply contracts of SAIL (SAIL-P1) shall apply to all.

Thanking You,

Sincerely Yours,

Shankar Dalai
22-03-2018
(Shankar Dalai)
Dy. Manager (MM)

Copy to :

M/s Mahindra & Mahindra Limited,
Automotive Sector, Mahindra Tower,
511, Rasulgarh, Bhubaneswar
Odisha - 751 010.

cc : GM (Mines), BOM.

cc : AGM (MM), BOM.

cc.: AGM (E&L), BOM.

cc.: AGM (E&L), Kolkata. - For information of ED (RP&E).

cc : AGM (F&A), BOM. - BOM shall have arrange for Insurance, Registration, Road Tax, Extended Warranty, Road Side Assistance and Accessories of both the vehicles within the approved estimated cost of Rs. 4,28,519.00 for the purpose.

Shankar Dalai
22-03-2018

Annexure-VI



भारतीय स्टेट बैंक
State Bank of India

BOLANI BRANCH (06079)
AT/PO: BOLANI
DIST: KEONJHAR
PIN: 758 037
PHONE/FAX: 06767 260378

TO WHOMSOEVER IT MAY CONCERN

It is to certify that, a sum of Rs.6,35,75,700/(Rupees six crore thirty five lakh seventy five thousand seven hundred only) has been transferred from account no 11180766769 of SAIL RMD Bolani Ores Mines, Bolani to account no.344902010105428 of Union Bank of India,Sundar Nagar, New Delhi of CAF, Odisha, New Delhi on 08/03/2016 through RTGS UTR No.SBINR5201630826953046.

कृते भारतीय स्टेट बैंक
For STATE BANK OF INDIA

बोलानी शाखा

Branch Manager.

08/03/2016

Annexure-VII A

OFFICE OF THE REGIONAL CHIEF CONSERVATOR OF FORESTS: ROURKELA
CIRCLE, ROURKELA
PH. No. 0661-2664324, FAX No. 0661-2664325, E.mail: rccfrourkela@gmail.com

Memo No. 2991/3F(Divs.-K)-218/2011.
Dated, Rourkela the, 29th, August, 2012.

To

The Divisional Forest Officer,
Keonjhar Forest Division

Sub:-

Diversion of 1152.58 ha. of Forest land in the 5.10 sq. miles of mining lease of Bolani Ore Mines in favour of M/s SAIL in Bolani Ore mines, in Keonjhar District during 2nd renewal of mining lease (RML) period in Barbil Tahasil - Compliance with the condition of Stage-I approval order reg.-

Ref:-

Letter F.No.8-17/1997 FC(pt) dt.4.4.2011 of Gol, communicated vide Memo No.6255/F&E dt.7.4.2011 of the Govt. of Odisha, F&E Department and Memo No.328 dt.13.01.2012.

The following Schemes prepared at the prerevised wage rate of Rs.90/- were technically approved by the undersigned vide this office Memo No.135 dtd.17.01.2012. Consequent upon revision of the wage rate from Rs.90/- to Rs.125/-, the User Agency has revised the cost of the schemes in accordance with the current wage rate of Rs.125/- per man-day which are technically approved and sent herewith for necessary action at your end. Therefore, you are requested to please realize the amount in respect of the schemes to be implemented by you.

As per condition No.2-iv:

- (a) The scheme for Mitigative Measures to Minimize Soil Erosion and chocking of streams within the Mining lease area over 5.10 Sq. Miles of Bolani Iron Ore Mine of M/s SAIL for Rs.2,25,00,000/- prepared at the present wage rate of Rs.125/- per man-day.
- (b) The Scheme for Planting of Drought Hardy plant species and sowing of seeds within Mining lease to arrest Soil Erosion within the Mining lease area over 5.10 Sq. Miles of Bolani Iron Ore Mine of M/s SAIL for Rs.90,40,000/- prepared at the present wage rate of Rs.125/- per manday.
- (c) The Scheme for Construction of Check Dams, retention Wall/Toe walls to arrest sliding down of the excavated materials along with the Contour within the Mining lease area over 5.10 Sq. Miles of Bolani Iron Ore Mine of M/s SAIL for Rs.72,93,000/- prepared at the present wage rate of Rs.125/- per manday.
- (d) Plan to Stabilize the overburden, dumps by appropriate Grading/ Benching so as to ensure that angles of repose at any given place is less than 28° within the Mining lease area over 5.10 Sq. Miles of Bolani Iron Ore Mine of M/s SAIL for Rs.1,29,06,000/- prepared at the present wage rate of Rs.125/- per manday.

Condition No.2-iv(e) & (xvi):

Plan for Top Soil Management within the Mining lease area over 5.10 Sq. Miles of Bolani Iron Ore Mine of M/s SAIL for Rs.56,24,951/- or Rs.56,25,000/- prepared at the present wage rate of Rs.125/- per manday

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- Condition No.2(x). Scheme for fencing ,protection and regeneration of the safety zone area (7.5 metre strip all along the outer boundary of the area identified to undertake mining) over an area of 175.63 ha. of Forest land within the Mining lease area over 5.10 Sq. Miles of Bolani Iron Ore Mine of M/s SAIL for Rs.3,43,52,000 prepared at the present wage rate of Rs.125/- per man day .
- Condition No.2(xi). Scheme for Gap Plantation and Soil & Moisture Conservation Activities to Restock and Rejuvenate the degraded open Forests (having crown density less than 0.4), if any, located in the area within 100 M from outer perimeter fwithin the Mining lease area over 5.10 Sq. Miles of Bolani Iron Ore Mine of M/s SAIL for Rs.93,48,227/- or Rs.93,48,000/- prepared at the present wage rate of Rs.125/- per man day .

Further, in compliance with condition No. 2 (xvii) the scheme for establishment of ITC at Bolani with a financial outlay of Rs.118.00 lakh submitted by the User Agency is hereby technically approved .

Therefore, the schemes, each in duplicate, are forwarded to you for taking necessary action at your end.

Encl.:Each Scheme in one set.

SA/-
Regional Chief Conservator of Forests,
Rourkela Circle, Rourkela.

Memo No. 2992 /3F(Dis-K)-218/2011. Dated. 29.8.12

Copy forwarded to the Chief Conservator of Forests (Forest Diversion & Nodal Officer, FC Act), O/o the Principal Chief Conservator of Forests, Odisha for favour of information with reference to this office Memo No.136 dt.17.1.2012 & Memo No.329 dt.13.1.2012 of DFO, Keonjhar Forest Division.

Regional Chief Conservator of Forests,
Rourkela Circle, Rourkela.

o/c

OFFICE OF THE REGIONAL CHIEF CONSERVATOR OF FORESTS, ROURKELA
CIRCLE, ROURKELA PH. No.0661-2664324, FAX No.0661-2664325, E.mail:
rccrourkela@gmail.com.

Memo No. 3055 /3F(Dls-K)-218/2011.
Dated, Rourkela the, 03 th, September, 2012.

To

The Chief Conservator of Forests
(Forest Diversion & Nodal Officer, FC Act),
O/o the Principal Chief Conservator of Forests,
Odisha, Bhubaneswar.

Sub:-

Diversion of 1152.58 ha. of Forest land in the 5.10 sq. miles of mining lease of Bolani Ore Mines in favour of M/s SAIL in Bolani Ore Mines, in Keonjhar District during 2nd renewal of mining lease (RML) period in Barbil Tahasil- Compliance with the condition of Stage-I approval order reg.

Ref:-

Letter F.No.8-17/1997-FC(pt) dtd.4.4.2011 of GoI, MoEF communicated vide Memo No.6255/F&E dtd.7.4.2011 of the Govt. of Odisha, F&E Department and this office Memo No.2351 dtd.10.7.2012 and Memo No. 2992 dtd.29.08.2012.

In continuation of this office memo cited above, this is to inform you that consequent upon revision of the wage rate, the following schemes were submitted by the User Agency after revising them in accordance with the current wage rate of Rs.125/- per man-day which were technically approved by the undersigned and sent to the Divisional Forest Office, Keonjhar for necessary action at his end vide this office Memo No.2991 dt.29.08.2012 and Memo No.3041 dtd.3.9.2012 with copies endorsed to you in the next memos of even date for your kind information.

As per condition No.2-iv:

- (a) A plan containing appropriate mitigative measures to minimize soil erosion and choking of streams within the Mining lease area over 5.10 Sq. Miles of Bolani Iron Ore Mine of M/s SAIL for Rs.2,25,00,000/- prepared at the present wage rate of Rs.125/- per man-day.
- (b) The scheme for planting of adequate drought hardy plant species and sowing of seeds in the appropriate area within the Mining lease to arrest Soil Erosion for Rs.90,40,000/- prepared at the present wage rate of Rs.125/- per manday.
- (c) The scheme for construction of Check Dams, retention /Toe walls to arrest sliding down of the excavated materials along the contour for Rs.72,93,000/- prepared at the present wage rate of Rs.125/- per manday.
- (d) A Plan to stabilize the overburden dumps by appropriate grading/ benching so as to ensure that angles of repose at any given place is less than 28° for Rs.1,29,06,000/- prepared at the present wage rate of Rs.125/- per manday.

- Condition No.2-iv(e) & (xvi): Plan for Top Soil Management and conservation of top soil for 56,24,951/- prepared at the present wage rate of Rs.125/- per manday .
- Condition No.2(x). The Scheme for fencing ,protection and regeneration of the safety zone area (7.5 metre strip all along the outer boundary of the area identified to undertake mining) over an area of 175.63 ha. of Forest land within the Mining lease for Rs.3,43,52,000 prepared at the present wage rate of Rs.125/- per mandays
- Condition No.2-(xiii): A plan to undertake Corporate Social Responsibility (CSR) activities in the villages located in the vicinity of the area identified for Compensatory Afforestation in Patna Forest Range with the jurisdiction of Keonjhar Forest Division over an area of 205.0 ha for Rs.1,85,42,000/- prepared at the present wage rate of Rs.125/- per mandays
- Condition No.2(xi). The scheme for Gap Plantation and Soil & Moisture Conservation Activities to restock and rejuvenate the degraded open Forests(having crown density less than 0.4) , if any, located in the area within 100 M from outer perimeter within the Mining lease for Rs.93,48,227/- or Rs.93,48,000/- prepared at the present wage rate of Rs.125/- per mandays .
- Condition No.2(xviii). The Scheme for implementation of the recommendation of final study report of the XISS, Ranchi with an action plan with a financial out lay of Rs.27,85,00,000/-

As observed from above, the User Agency has complied with the conditions stipulated by Gol, MoEF & State Government and has demonstrated its commitment to fully comply with the statutory stipulations within the prescribed time frame except the condition relating to study of migratory routes of elephants stipulated by the State Government of Odisha. The grant of Stage-II approval in favour of the User Agency is recommended which may be considered.

Regional Chief Conservator of Forests,
Rourkela Circle,Rourkela.

Memo No. 3056 /3F(Dis-K)218/2011. Dated. 03.9.2012

Copy forwarded to the Divisional Forest Officer, Keonjhar Forest Division for information with reference to this office Memo No.2352 dt.10.07.2012.

Regional Chief Conservator of Forests,
Rourkela Circle,Rourkela.

Annexure-VII C



ANNEXURE-VII(C)
स्टील अथॉरिटी ऑफ इण्डिया लिमिटेड
STEEL AUTHORITY OF INDIA LIMITED
रॉ मेटेरियल्स डिवीजन
RAW MATERIALS DIVISION
बोलानी अयरस्क खदान
BOLANI ORES MINES

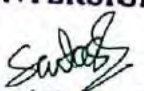
Date : 09.04.2018

UNDERTAKING

I, on behalf of Bolani Ores Mines, M/s SAIL, hereby submit and undertake to comply the following conditions as stipulated in Stage-I FC Order vide F.No.8-17/2016-FC(Vol.I) Dt.12.09.2017 granted by MoEF & CC,GOI :

1. That the technically approved scheme for mitigative measures for minimizing soil erosion and choking of streams with the financial outlay of Rs.2,25,000,00/- is already being implemented by us and all the activities shall be implemented within a period of three (3) years with effect from the issue of Stage-II Clearance at the cost of Bolani Ores Mines, M/s SAIL as per directives of DFO Keonjhar .
2. That the technically approved scheme for Planting of adequate drought hardy plant species and sowing of seeds, in the appropriate area within the mining lease to arrest soil erosion with a financial outlay of Rs.90,40,000/- is already being implemented by us and all the activities shall be implemented at the cost of Bolani Ores Mines, M/s SAIL as per directives of DFO Keonjhar .
3. That the technically approved scheme for Construction of check dams, retention/toe walls to arrest sliding down of the excavated material along the contour with a financial outlay of Rs.72,93,000/- is already being implemented by us and all the activities shall be implemented at the cost of Bolani Ores Mines, M/s SAIL as per directives of DFO Keonjhar .
4. That the technically approved scheme for Stabilization of the overburden dumps by appropriate grading/benching, so as to ensure that angles of repose at any given place is less than 28 degree with a financial outlay of Rs.1,29,06,000/-/- is already being implemented by us and all the activities shall be implemented at the cost of Bolani Ores Mines, M/s SAIL as per directives of DFO Keonjhar .
5. That the technically approved scheme for management of Top Soil prepared with a financial outlay of Rs. 56,24,951/- is already being implemented by us and all the activities shall be implemented at the cost of Bolani Ores Mines, M/s SAIL as per directives of DFO Keonjhar .
6. That the technically approved scheme for Fencing, protection and regeneration of the safety zone area prepared with a financial outlay of Rs 343.52 Lakhs is already being implemented by us and all the activities shall be implemented within a period of three (3) years with effect from the issue of Stage-II Clearance at the cost of Bolani Ores Mines, M/s SAIL as per directives of DFO Keonjhar .
7. That the technically approved scheme for gap planting and soil & moisture conservation activities to restock and rejuvenate the degraded open forest around the ML area prepared with a financial outlay of Rs 93.48 Lakhs is already being implemented by us and all the activities shall be implemented at the cost of Bolani Ores Mines, M/s SAIL, as per directives of DFO Keonjhar .
8. That the technically approved scheme for De-silting of village tanks within 5 km around the ML area prepared with a financial outlay of Rs 55.00 Lakhs is already being implemented by us and all the activities shall be implemented at the cost of Bolani Ores Mines, M/s SAIL, as per directives of DFO Keonjhar .

COUNTERSIGNED


Divisional Forest Officer,
Keonjhar Division


GENERAL MANAGER
BOLANI ORES MINES
डॉ. देवकार / D. DEVSARKAR
मैनेजर (बॉलानी ओरस मिन्स)
सेल - आर एम डी - बोलानी-अयरस्क खदान
SAIL-RMD-Bolani Ores Mines
बोलानी-758 037, कर्णोझर, ओड़ीसा
Bolani-758 037, Keonjhar, Odisha

स्टील अथॉरिटी ऑफ इण्डिया, लिमिटेड रॉ मेटेरियल्स डिवीजन, बोलानी अयरस्क खदान, पो० - बोलानी - ७५८०३७, जिला - कर्णोझर, उड़ीसा
Steel Authority of India Ltd., Raw Materials Division, Bolani Ores Mines, PO. : Bolani - 758037, Dist. Keonjhar, Odisha
दूरभाष / Telephone : 06767 - 260211 (O) फैक्स / Fax 06767 - 260172, Email : rmdbom@gmail.com, Website : www.sail.co.in

Annexure-VIII A

Scheme

ANNEXURE - V(A)

For

**MITIGATIVE MEASURES TO MINIMIZE SOIL EROSION AND
CHOKING OF STREAMS**

in compliance

of

Condition no – 2-IV(a) of Stage-I Forest Clearance grant Order

Vide Letter No.8-17/1997-FC (pt.) Dated.12.11.2010

of Govt. of India, Ministry of Environment & Forests, New Delhi

for

Diversion of 1152.58 Hects Forest land

within 5.10 sq Miles ML of

Bolani Iron Ore Mine of M/s SAIL,

in Champua Subdivision of Keonjhar District



1. INTRODUCTION

Bolani Iron Ore Mine of M/s Steel Authority of India Ltd. is an ongoing Mining Project over an area of 1321.45Ha (5.10 sq miles) and the current mining lease period was valid upto 10.04.2010. The total ML area involved 1181.66 Ha inside Karo Reserve Forest and 44.12 Ha of revenue/khesra forest in it. The total forest area broken prior to 25.10.1980 is 316.70 Ha. In the 1st RML period, as per the Stage-II clearance of MoEF vide letter no 8-17/97-FC dt.19.02.1998, Bolani Iron Ore Mine was allowed for diversion of total 1050.15 Ha forest land, with mining over 316.70Ha broken up land, 170.50Ha of virgin forest land and 562.95 Ha of forest land to be protected as such, excluding 175.63 Ha of Safety Zone in the 1st RML period. The Second RML application has been filed on 26.03.2009 and the lease is in deemed renewal. For the second renewal of the above said ML area, Bolani Iron Ore Mine has filed diversion proposal for total forest land inside lease i.e. 1152.58 ha. (Broken up forest land 392.80 ha. and Virgin forest land 759.78 ha.), excluding 73.2 Ha as safety zone. Stage-I forest clearance has been granted vide Letter No.8-17/1997-FC (pt.) dated. 12.11.2010 from Govt. of India, Ministry of Environment & Forests, New Delhi for the above said Diversion of 1152.58 ha. of Forest land subject to compliance of the conditions stipulated therein. Working permission was obtained from Govt. of India, Ministry of Environment & Forests, New Delhi vide No. 8-17/1997-FC(pt.) dated 04-04-2011 with validity up to 11-11-2011 and subsequently vide Letter No. 8-17/1997-FC(pt.) dated 09.11.2011 with validity up to 11-02-2012.

While granting Stage-I approval , the Ministry of Environment and Forest, Govt. of India has stipulated the following condition in Condition no-2(IV) (a) **is to take appropriate mitigative measures to prevent soil erosion at the mining area thereby preventing choking of streams at its down streams.** In compliance to the above condition a detailed plan for the said purpose has been duly prepared which is fully explained as below and shall be implemented in a time bound manner.

2. LOCATION

Bolani 5.1 sq. miles mining leasehold area is located in villages of Bolani, Balagoda and Karo Reserve Forest (R.F) in Barbil Tehsil of Champua sub division of Keonjhar district in Orissa. The mine falls under Survey of India topo sheet no. 73 F/8 and is located between 22°05'N - 22°08'N and 85°17'E - 85°20'E. The leasehold area is flanked by the Kiriburu-Meghahatuburu mines of SAIL on western side, the common boundary being defined by the



Interstate boundary of Jharkhand and Orissa. On the eastern side the leasehold shares common boundary with other lease (6.9 sq. miles lease) of M/s SAIL.

3. TOPOGRAPHY

The leasehold area consists of high hills in the western side and valley area in the eastern side. The area lies on the slope of an escarpment running in the SW-NE direction. Elevation of the lease area ranges from 920 m AMSL to 500 m AMSL. Inside the lease there are few peaks the highest of which are at 920 m AMSL near the western boundary and 870 m AMSL near the southern boundary of the lease. The western boundary of the lease is marked by a ridge line. The north western half of the study area is covered with forests.

4. SOIL TYPE

Soil type in the study area varies widely from hard rocks to sandy loam. Areas at higher elevations are usually hard rock consisting of Banded Hematite Quartzite (BHQ) and Banded Hematite Jasper. The top soil in the area is scanty. Whatever top soil is available is rocky in nature. The pH of the soil is slightly acidic in nature. Low hills and hill slopes are extensively lateritized and consist of lateritic profile of 10 to 12m. The lateritic area is rich in Iron and very often pisolitic in nature. Bushy vegetation are observed on this soil type. At some places, the lateritic horizons are observed to have a thin soil cover of about 10 to 15 cm on them. The lower elevations are dominantly sandy loam facilitating agriculture and growth of general type of vegetation.

5. CLIMATE

The study area lies in tropical region where climate is characterised by very hot summers and cool winters. Summer is typically from March to June when monthly temperature ranges from a maximum of 42°C during daytime to a minimum of 15°C at night. Winter is from November to February when the maximum temperature during day goes up to 33°C and minimum temperature at night becomes as low as 8°C. The average annual rainfall as recorded at IMD observatory at Keonjhar is 1269.1 mm, 80% of it during the Southwest monsoon.



6. DRAINAGE

At the eastern side of the lease area, there is a valley, drained by Karo river flowing from SW to NE. The lease area is drained by a number of seasonal drainage channels flowing from SW to NE viz. Chapua nala, Jhikaria nala, Panposh nala, Balagoda nala & Limture to join the Karo River. The Karo river (flowing from SW to NE) is the principal drainage channel of the study area. The study area has a dendritic drainage pattern due to hilly terrain and the area forms part of Karo nadi sub-basin which is perennial by nature. The sub water shed where the project falls is drained mainly by Karo river. Karo river lies at a distance of 1.0 km from the ML boundary.

7. EXISTING VEGETATION

The area consists of vegetation of dry deciduous species like Sal, Piasal, Kurum, Jamun, Dhala, Kendu, Asan etc. With canopy density 0.1 over virgin land and 0.01 over broken up land. Ecological studies have been conducted by various consultants like Centre of Science and Environment, Kalyani University, Kalyani, West Bengal and MECON Ranchi. As per the study report, the leasehold of Bolani mines and its surrounding areas have a wide variety of forest cover viz. pure sal forests, semi-evergreen(mixed) forests, evergreen forests, degraded forests, extensive plantations and open grazing areas. Along the river and stream corridors, evergreen riparian forests also exist. In general, various edaphic and climatic factors have contributed to the development of different types of forests. There is no defined protected areas like National Parks, Sanctuaty or Biosphere reserves In this region. The buffer zone (10Km radius) includes part of forest division of Keonjhar district of Orissa and part of the Saranda forest division of Jharkhand. The forests of 5.10 sq miles ML are part of Karo RF. There are a number of forest viz. Karo RF. Vegetation analysis (primary) shows that the forest is Sal dominated (>80%) forests. The dominance of Sal is followed by Kureli (*Holarrhena antidysenterica*) and Bahera (*Terminalia balcerica*). But in mixed forests, Kureli, Bahera, Bher, Kanchan are equally dominant with that of Sal. The frequency of Sal trees in reserve forests ranges from 50 to 100% with importance value index(IVI) ranges from 28.08 to 92.67. The analysis shows, Species Diversity Indices (SDI) value is high in semi-evergreen forests rather than mixed or deciduous sal forests. Both in core and buffer zone, there are good number of tree species (over 100) followed by herbs and shrubs. About 40 nos. species are listed for their utilities like timber, medicinal and other values. There is no endemic and endangered plant species in this area.



8. FACTORS FOR SOIL EROSION AND CHOKING OF STREAMS

The mining activities and OB dumps are the major factors of impacting any drainage system in the mining areas . The forms of erosion observed in this region include mainly rill and gully erosion. The storm water runoffs from the hills, mine faces and OB dump slope areas carry substantial amounts of solids in the lower order streamlets and choke the higher order streams . These lower order streamlets and gullies have high erosive capacity due to gradient and pick up rock fragments and transport them due to high velocity of the stream and deposit in the connecting high order streams due to velocity drop. Streams can also erode by undercutting their banks resulting in mass-wasting processes like slumps or slides. When the undercut material falls into the stream, the fragments are transported and deposited in the stream bed . The other mode of sediment transportation is very nominal.

9. OBJECTIVE OF THE SCHEME:

The objectives of the proposed scheme are as follows:

1. Prevention of erosion of top soil .
2. Prevention of obstruction of Natural water sources .
3. Proper Management of overburden materials so as to prevent siltation in the streams
4. Prevention of overflow of eroded soils from the mining areas to the cultivable lands, natural streams and inhabitations.

10. PROPOSED METHODOLOGY

To achieve the above objectives it has been proposed to take up both biological and structural works for soil and water conservation. The vegetative measures are to be adopted mostly in the upper reaches & around O.B dumping sites whereas the structural works are suggested in the drain & critical points around O.B. . As per current practice , check dams are constructed across seasonal streams arising from the up-slope areas to arrest the sediment load to prevent choking of streams followed by de-silting before monsoon . The following activities are proposed to be taken up to mitigate soil erosion and choking of streams :

1. Check Dams across seasonal streamlets will be constructed to reduce the flow velocity of run off and to settle the silts / sediments flown from the mining areas including overburden dumps, stockpiles, unmetalled murrom roads and areas cleared of vegetation. Series of dry boulder check-dams of different material will be constructed over streamlets arising from Mining areas of F, G, Panposh and D-area.



2. Periodic Sediment / silt removal / De-silting jobs will be undertaken in these streamlets and plantation will be carried out on these de-silted materials.
3. Along with the above sedimentation control measures, erosion from OB dump slope areas will be controlled by erecting retaining / toe walls etc.. The main purpose of these works will be to control of soil erosion from OB dump and mineral stockpile areas .

11. MEASURES ALREADY ADOPTED

(i) EXISTING BIOLOGICAL MEASURES:

Miscellaneous tree plantation activities have been taken up over an area of 148 hectares including some part in the Safety Zone around the mining lease. About 5000 nos of trees have been raised in stabilised dump area and about 15,000 no in the safety Zone area during the year 2011-12.

(ii) EXISTING STRUCTURAL MEASURES:

Masonry check dams have been constructed across seasonal streams arising from the up-slope areas, to arrest the sediment load and to prevent choking of streams followed by de-silting before monsoon (as a part of Monsoon preparation Plan) . Details of such existing structures the details of de-silting undertaken in various nallahs are listed in the following tables :

DETAILS OF MASONRY CHECK DAMS CONSTRUCTED DURING LAST FIVE YEARS

Sl No	Year	Location	Particulars of construction	Size (Total L X B X H) (m)
1	2006-07	Near Loading plant Stock Pile (i) On Upside (ii) On eastern side	Masonry with spill-way system & Sedimentation tank	L= 80 m, 40m H= 1.0 m, 1.0 m Top width= 1.0m, 0.6 m Bottom width=1.5m, 0.8 m
2	2007-08	Balagoda Nallah originating from Panposh Area near Magazine on the upper side	Masonry with PCC spill-way system	L= 60 m H= 1.5 m Top width= 1.0 m Bottom width=1.5 m
3	2008-09	Nallah originating from B & C Area (below water Storage Tank) near Engg Cell	Masonry with spill-way system	L= 50 m, H= 1.0 m Top width= 1.0m Bottom width=1.5m
4	20010-11	Panposh Nallah (Behind Office area)	Masonry with spill-way system	L= 60 m,H= 1.0 m Top width= 1.0m Bottom width=1.5m
5	2010-11	Nallah originating from Valley Plant Area near office main gate	Masonry with PCC spill-way system	L= 60 m, H= 1.5 m Top width= 1.5 m Bottom width=2.5 m



DETAILS OF DE-SILTING OF STREAMS UNDERTAKEN DURING LAST THREE YEARS

Sl No	Year	Locations	Length Covered
1	2008-09	De-silting of Panposh Nallah near Petrol Pump, Railway Culvert & De-silting of Balagoda Nallah behind Mount Club-Hospital Area	120 m
2	2010-11	De-silting of Panposh Nallah near Petrol Pump, Railway Culvert & De-silting of Balagoda Nallah behind Mount Club-Hospital Area	100m
3	2010-11	De-silting of Nallah / MIP dam in Bolani Basti	80m

12. MEASURES PROPOSED

A. Biological Measures

1. **Plantation**

Soil erosion and sediment control in areas covered with forests are minimal as the forest canopy protects the soil from getting eroded by drips and the natural binding of the soil due to the root system. As the 5.10 sq miles mining lease area is having the vegetation density less than 0.4 and most of the areas are barren and degraded, plantation over these bare patches will protect the soils from erosion. Hence it is proposed to undertake massive plantation over the degraded and barren patches inside the lease hold area as well as over OB dumps and along the approach roads. The areas will be stocked by way of raising plantation at the rate 1600 plants per hectare in block plantation method. Taking into consideration the site specific soil condition, indigenous species growing naturally are proposed to be planted in the area. It is also proposed to plant hardy hardy species such as Agave & Vetiver Plants as it can survive in degraded and poor soils along the slope & toe of O.B. dump would be most useful for controlling soil erosion. It is suggested to sow grass seed on the slope of terrace & at other barren place for preservation of top soil. The grasses recommended are -Napier, Para, grass etc. . The topsoil encountered during mining operation will be stored for utilization during plantation on OB dump areas. The five yearly afforestation programme of unutilised degraded and barren forest lands during 2nd renewal over a period of 20 years is enclosed in **Annexure – I** . The detailed cost estimate amounting to **Rs. 31,08,630.00** for first five years during 2011-2015 , in Block plantation mode has been furnished in **Annexure-II** .



The list of species to be adopted for the plantation is as follows:

1	Amla	<i>Emblica officinalis</i>
2	Bamboo	<i>Dendrocalamus strictus</i>
3	Karanja	<i>Pongamia pinnata</i>
4	Asan	<i>Terminalia tomentosa</i>
5	Sisoo	<i>Dalbergia sisoo</i>
6	Gambhar	<i>Gmelina arborea</i>
7	Neem	<i>Azadirachta indica</i>
8	Harida	<i>Terminalia chebula</i>
9	Bahada	<i>Terminalia bellerica</i>
10	Kasi	<i>Bridelia retusa</i>

Planting shall be done during July in pre-dug pits of size 30cmX30cmX30cm. A basal dose of N.P.K fertiliser shall be applied at the time of planting, besides mixing with insecticides to prevent termites & insects. Planning for plantation shall be such that fruit bearing trees and bamboo rhizomes should not be planted in close proximity. A minimum distance of 2.5 mt X 2.5 mt shall be maintained on every fourth plants in planting either of the species. Care should be taken to complete the planting during July while rains are still on during first or second week of July.

2. Weeding

Two weeding have been proposed along with soil working and manuring in the first year and due weeding, soil working and manuring of 2 doses of 15g each in a gap of 15 days in the second year and weeding proving in the third year. The first weeding along with manuring should be taken up soon after completion of plantation and the second weeding and soil working should be taken up after one month of the first weeding. Weeding should be done at a radius of one meter and soil working should be done to a depth of 15 cm. all the weeding along with soil working should be completed during November to December. The first weeding should be done along with replacement of causality that may occur during planting in the first year and after replacement of causality in the 2nd year.

3. Application of Insecticides.

The plantation site, after cleaning and burning, good quality seedlings may cause influx of insects which usually eats and damage the tender leaves and shoots of the plants. To get rid of such insect attack, application of insecticides should be taken up in required doses at desired intervals. Spraying of insecticides shall be done preferably in a sunny day and before forenoon.



4. Fire line Tracing & Maintenance

Fire causes heavy loss to the forest during fire season. To prevent incidences of fire, the area should be divided into suitable blocks by tracing fire lines. Boundaries of plantation patches and these blocks should be scrapped of forest growth to a width of three meters during Feb.-March and cut back materials and dry leaves stacked along these lines should be burnt under strict supervision. This operation should be carried out for three years.

5. Inspection, Monitoring and Evaluation

For success of this soil and water conservation programme, intensive inspection and technical guidance from concerned technical wing is required. It is proposed to provide sufficient fuel/conveyance charges for technical experts for proper execution of these programmes to State Forest Department.

6. Executing Agency

Previously all such works have been executed by the mine through it's technical persons available. The proposed biological measures along with the maintenance works will also be executed with internal resources by the user agency in consultation with local Forest Deptt.

B. Structural Measures

Construction of Check Dams/Retaining Walls, Garland Drain & Settling Pit for prevention of wash offs:

A) PRESERVATION OF TOP SOIL.

In any excavation work/expansion of mining operation, the top soil is separately stored for future use. Preservation of the top soil is done with top priority for its use in top dressing of refilling area, terrace slope and other places where plantation measures are to be taken up. The top soil storage will be done through the internal resources at the designated sites .

B) TERRACING OF OB DUMP SLOPE

It is proposed to construct 3 step bench terraces of the O.B.dump. The slope of individual terrace should be within the permissible range considering the angle of repose of the soil and space available, thereby maintaining the overall angle of repose within 28° . The terracing will be done through the internal resources by deploying the operating mining equipment.



C) LOOSE BOULDER CHECK DAMS (LB CD)

The slope of the degraded areas within the lease is steep in the western side due to which gullies are formed by heavy erosion. Considering the gradient of the site & run-off, soil conservation measure is indispensable and need to be appropriately designed. Taking into the consideration of the degradation of the area due to soil erosion it has been proposed to take up Soil Conservation Measures by construction of **Loose Boulder Structures (LBS)** such as, check dams and staggered trenches over the area (1mt. 2mt., 3mt. & 4 mt. span) as follows :

PLAN FOR ERECTION OF LOOSE BOULDER CHECK DAMS

	SPAN			
	1mt	2mt	3mt	4mt
Nos. of LBS	150	80	40	50
COST TO BE INCURRED	@ Rs. 1615/- per LBS = 2,42,250/-	@ Rs. 3200/- per LBS = Rs 2,56,000/-	@ Rs. 6714/- per LBS= Rs 2,68,560/-	@ Rs. 11370/- per LBS = Rs 5,68,500/-
TOTAL				Rs 13,35,310.00

The details of estimate of different size of Loose Boulder Structure are given in **ANNEXURE-III.**

D) MASONARY CHECK DAMS

Masonry Check Dams across seasonal streamlets will be constructed to reduce the flow velocity of run off and to settle the silts / sediments flown from the mining areas including overburden dumps, stockpiles, unmetalled murrom roads and barren areas devoid of vegetation. These masonry check-dams will be constructed over streamlets arising from Mining areas of F, G, Panposh and D-area.

Location wise proposal for construction of masonry check dams is given as follows:



**PLAN FOR ERECTION OF CHECK /SEDIMENTATION DAMS FOR CONTROL OF
FLOW VELOCITY ALONG STREAMS/CHANNELS**

SI No	Location	Size (Total L X B X H) (m)	Estimate/ Approx Cost (Rs Lakh)
1	Seasonal Nallah near office behind petrol pump 300m east from main gate	L= 40m, H= 1.5 m Top width= 1.5m Bottom width=2.0 m	Rs 3.83 Lakhs (Construction completed)
2	Seasonal Nallah near Valley plant (DH-5 stock pile) area, 50 m south from main gate	L= 8m, H= 1.5 m Top width= 1.5m Bottom width=2.0 m	Rs 0.83 Lakhs (Construction completed)
3	Perennial Jhikaria and Chapua Nallah in upper Solani Basti below hill top plant (parallel to the channel course)	L= 73m, H= 1.5 m Top width= 1.5m Bottom width=2.0 m	Rs 7.61 Lakhs (Construction in progress)
4	Seasonal Nallah Near Engg Cell office 100m westward from main gate	L= 90m, H= 1.5 m Top width= 1.5m Bottom width=3m	Rs 9.30 Lakhs (Work order in process)
5	Seasonal Balagoda Nallah near Magazine on the upper side of the existing check dam	L= 80m, H= 1.5 m Top width= 1.5m Bottom width=2.0 m	Rs 8.26 Lakhs
6	Perennial Panposh Nallah on the upper side of the existing check dam (near road side)	L= 70m, H= 1.5 m Top width= 1.50 Bottom width=2.0m	Rs 7.23 Lakhs
7	Seasonal Nallah originating from F - Mining area	L= 70 m, H= 1.5 m Top width= 1.5m Bottom width=2.0 m	Rs 7.23 Lakhs
8	Seasonal Nallah originating from G-Mining area	L= 50 m, H= 1.5 m Top width= 1.5 m Bottom width=2.0m	Rs 5.17 lakhs
TOTAL			Rs 49.43 Lakhs = Rs 50.00 Lakhs

E) SETTLING TANKS.

1 No.s of settling tanks with dimensions L=8m, W=2m, B=2m at the cost of Rs 5.73 lakhs are proposed to be constructed along the seasonal nallah course near valley plant 50 m south from main gate and 1 No.s of settling tanks with dimensions L=6m, W=2m, B=2m at the cost of Rs 4.50 lakhs are proposed to be constructed along the course of garland drain around the G-area O8 dump in the eastern side of dump to arrest sediment load thereby decreasing the silt flow to the downstream.



F) CATCH DRAIN

Each terrace should be inward sloping and catch drain at each inward slope of terraces. Catch of individual terrace should be connected to garland drain outside the periphery of the dump. These catch drains should be made up of half concrete open pipes to avoid wash offs.

(G) DESILTATION

The de-silting works of the streams will be taken up as a regular measure to prevent sedimentation and choking of streams, as a part of yearly monsoon preparation program. This de-silting of streams will provide space and retention basins to hold the sediment laden runoff thereby allowing settling and clear water to flow down stream. This de-silting work will be undertaken at regular intervals at the rate of 20 running meters along each of 5 nos of nallahs inside lease area (120 cu m per year). The list of seasonal streams inside the ML area where regular de-silting jobs during will be undertaken over next five years are : Panposh Nallah, Balagoda Nallah, Limtur Nallah, Nallahs originating from F& G-area .The implementation of the plans will be site specific in nature depending upon the severity of the sedimentation and choking of the streams .

(H) STAGGERED TRENCHES : To check soil erosion and the rain water draining out of the area, it has been proposed to take up special soil conservation measures by digging staggered trenches along the contour over the area @ 250 nos per hectare over 50 hectares area in upslope steep areas . The size of the trenches will be 2 Mtr x 0.5 Mtr x 0.5 mtr at a spacing 14 mtr . Digging of staggered trenches will be done during Sept of 1st year. Agave planting will also be taken up on the dugout soil of the trench for it's stabilization and to restrict the dugout soil from re-filling into the trench. Thus an amount of Rs 11,42,375/- is required for 65.0 Ha considering Rs 17,575/- per ha for carrying out such special soil & Moisture conservation measures. The cost norm for the same is enclosed in **Annexure -IV** .

(H) RETAINING WALLS/TOE WALLS /CHECK DAMS AROUND OB DUMPS

A plan for erosion control measures from OB dump slope and mineral stock pile areas to prevent the wash offs at the source itself has been prepared separately.



13. INSPECTION, MONITORING AND EVALUATION

For successful implementation of the above Mitigative measures, intensive inspection and technical guidance from concerned technical wing is required . Sufficient fuel/ conveyance charges for technical experts shall be provided by the user agency for proper execution of these programmes. Infrastructural facilities like GIS software along with GPS equipments will be provided by the user agency for the above post implementation monitoring

14. EXECUTING AGENCY


In all the cases, the works shall be executed by the User Agency having specialised departments headed by qualified persons with outsourced man and machinery as and where required . To facilitate this, the user agency shall establish it's own executing and supervision cells along with required infrastructural facilities. In order to maintain the quality of work, in house supervision through competent personnel shall be provided. The entire work shall be carried out through close coordination with the Forest Department.

15. REQUIREMENT OF FUNDS

The total cost of the implementation of mitigative measures will be Rs. **1,45,00,000/-** as detailed in **Annexure-VI** . For implementation of the above mitigation measures, the above expenditure of Rs145.00 lakh will be made over the next five years period . Therefore, budget provision of Rs. 145.00 lakh will be kept by the user agency for implementation of the above mitigation measures a period of next five years. This budget will subject to increase in amount considering the increase in materials and labour charges. The tentative annual expenditure planned for the next five year for the implementation of mitigative measures is given in the following table :

Sl. No.	Description	Amount
1.	1 st year plan of expenditure	Rs 28.00 Lakhs
2.	2 nd year plan of expenditure	Rs 30.00 Lakhs
3.	3 rd year plan of expenditure	Rs 30.00 Lakhs
4.	4 th year plan of expenditure	Rs 30.00 Lakhs
5.	5 th year plan of expenditure	Rs 27.00 Lakhs
6.	Total:-	Rs 145.00 Lakhs


(N P PRAMANIK)
GENERAL MANAGER
SAIL-BOLANI ORES MINES


RANGE OFFICER
BARKUL RANGE, BARKUL

Technically Approved

COUNTERSIGNED


Divisional Forest Officer
Keonjhar Division

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6.	Total:-	Rs 145.00 Lakhs


(N P PRAMANIK)
GENERAL MANAGER
SAIL-BOLANI ORES MINES


Divisional Forest Officer
Keonjhar Division


COUNTERSIGNED


Divisional Forest Officer
Keonjhar Division

FIVE YEARLY AFFORESTATION PROGRAMME

OVER 415.0 HA UNUTILISED AND DEGRADED FOREST LANDS

Year	Area of plantation in Hectares	Plantation Mode	Locations
2011-2015	65.5 Ha	Block Plantation	Barren / degraded lands inside ML area
2016-2020	100 Ha	Block Plantation	Barren / degraded lands inside ML area
2021-2025	100 Ha	Block Plantation	Barren / degraded lands inside ML area
2026-2030	150.0 Ha	Block Plantation	Barren / degraded lands inside ML area
TOTAL	415.5		


(N P PRAMANIK)
GENERAL MANAGER
SAIL-BOLANI ORES MINES

ANNEXURE-II

**COST ESTIMATE FOR BLOCK PLANTATION OF 1600 SEEDLINGS/ HECT.
AT 2.5 m X 2.5 m SPACING.**

1	Name of the Plantation	Block Plantation
2	No. of Seedlings to be planted	1600 Nos / Hect.
3	Spacing to be adopted	2.5 m x 2.5 m
4	Size of Pits	30cm x 30cm x 30cm.
5	Wage rate	Rs.90.00 / manday
6	Species to be planted	Teak, Bamboo, Sisoo, Gambhar, Neem and other miscellaneous species.
7	The user agency will pay the wage rate as and when enhanced.	

A. NURSERY COST FOR 1600 SEEDLINGS:

Sl No	Name of activity	Period of activity	Mandays	Labour rate @ Rs.90/-	Material Cost	Total
1	2	3	4	5	6	7
1	Cost of seeds including Transport	Mar-April	-		120.00	120.00
2	Preparation of nursery beds (40' x 4') by getting good earth and mixing cow dung manure	April	3	270.00	-	270.00
3	Treatment of seeds (alternate soaking and drying) and dibbling of treated seeds on beds	April-May	3	270.00	-	270.00
4	Cost of watering the beds	May-June	26	2340.00	-	2340.00
5	Weeding of beds	Aug-Sept	4	360.00	-	360.00
6	Contingencies		3	270.00	-	270.00
7	Fencing of Temporary nursery site	Feb-Mar Dec-Jan	1.5	135.00	-	135.00
8	Cost of fencing materials		-	-	85.00	85.00
9	Cost of polythene bags (9" x5": -125 gauge)*		-	-	365.00	365.00
10	Cost of soil and CDM		-	-	600.00	600.00

(* SAIL-Bam has permanent Nursery beds for poly bags)

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11	Cost of Chemical Fertilizer (8 kg. @ Rs.25/-)		-	-	200.00	200.00
12	Cost of insecticide		-	-	50.00	50.00
13	Preparation of soil mixture (Soil, Sand, CDM, 1:1:1)	Mar-April <i>Jan - Feb</i>	2	180.00	-	180.00
14	Filling of Polythene bags and setting into beds	Mar-April <i>Jan - Feb</i>	5	450.00	-	450.00
15	Preparation of stumps.	Mar-April	5	450.00	-	450.00
16	Transportation of stumps to temp. nursery	Mar-April	2	180.00	-	180.00
17	Transplanting the stumps to polythene bags. <i>e dibling of treatment</i>	Mar-April	3	270.00	-	270.00
18	Watering the polypots	Mar-June	12	1080.00	-	1080.00
19	Weeding, grading & sorting of polypots.	April-May	4	360.00	-	360.00
20	Application of insecticides/ chemical manure in nursery	April-May	1	90.00	-	90.00
21	Contingencies.				150.00	150.00
Total			74.5	6705.00	1650.00	8265.00

B. ADVANCE WORK (PRE-PLANTING OPERATION):

1	Survey, Demarcation and Pillar Posting	April	2	180.00		180.00
2	Site Preparation	April	8	720.00		720.00
3	Alignment and stacking of pits	May	2	180.00		180.00
4	Digging of pits of 30 Cum	May	40	3600.00		3600.00
5	Contingencies				150.00	150.00
Total			52	4680.00	150.00	4830.00

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C. FIRST YEAR PLANTING :

1	Transportation of seedlings with poly-pots	July	5	450.00	-	450.00
2	Planting including casualties replacement, manuring (Basal dose) & insecticide application	July-Aug	16	1440.00	-	1440.00
3	Cost of fertilizer	Jul-Aug			1320.00	1320.00
4	First Weeding(complete weeding)	Aug-Sept	7	630.00	-	630.00
5	Manuring (2 doses one at the time of planting(basal dose) and other during Aug-sept on a rainy day)	Aug-Sept	5	450.00	-	450.00
6	Second weeding (complete weeding)	Oct-Nov	7	630.00	-	630.00
7	Soil working (50 cms radius around the plant)	Oct-Nov	7	630.00	-	630.00
8	Fire tracing and inspection path	Jan-Feb	3	270.00	-	270.00
9	Soil conservation measures in the form of staggered rubble stone check dams	Jan-Feb	10	900.00	-	900.00
10	Honey Comb structure for soil conservation for 400 plants in a hectare	Oct-Nov	50	4500.00	1000.00	5500.00
11	600 percolation pits 45cm ³ @25 pits per mandays		24	2160.00	-	2160.00
12	100 contour trenches (2mx0.5mx0.5m) per ha.		45	4050.00	-	4050.00
13	Entry point activities				1000.00	1000.00
14	Watch and Ward	Oct-Mar	7	630.00	-	630.00
15	Contingency				200.00	200.00
Total (1st Year)			186	16740.00	3520.00	20260.00

D. SECOND YEAR – MAINTENANCE :

1	Casualty Replacement with nursery cost	Mar-Jul	12	1080.00		1080.00
2	Application of fertilizer	Aug-Sept	4	360.00		360.00
3	Cost of fertilizer	Aug-Sept			600.00	600.00

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4	Weeding (complete weeding)	Aug-Sept	6	540.00		540.00
5	Soil working (50cm radius around the pit)	Oct-Nov	7	630.00		630.00
6	Fire tracing (2m wide fire line over 400mt. Long)	Mar-Jan June	3	270.00		270.00
7	Entry point activities				500.00	500.00
8	Watch and ward	Whole yr.	15	1350.00		1350.00
9	Contingency				150.00	150.00
Total (2nd Year)			47	4230.00	1050.00	5280.00

E. THIRD YEAR – MAINTENANCE:

1	Weeding & application of Fertilizer	Aug-Sept	7	630.00		630.00
2	Cost of fertilizer	Aug-Sept			600.00	600.00
3	Soil Working (50 Cm radius around the pit)	Oct-Nov	7	630.00		630.00
4	Fire tracing (2m. wide fire line Over 400m long)	Mar-Jun	3	270.00		270.00
5	Entry point activities				195.00	195.00
6	Watch and Ward	Whole yr.	15	1350.00		1350.00
7	Contingency				150.00	150.00
Total (3rd Year)			32	2880.00	945.00	3825.00

F. FOURTH YEAR – MAINTENANCE

1	Weeding & soil working (50cm around each plant)	Oct-Nov	7	630.00		630.00
2	Fire tracing(2mtr wide fire line over 400mtr long)	Mar-Jun	3	270.00	-	270.00
3	Watch & ward	Whole yr.	15 22	1350.00 1980.00		1350.00 1980.00
4	Contingency				150.00	150.00
Total (4th Year)			25	2250.00	150.00	2400.00




G. FIFTH YEAR – MAINTENANCE

Sl No	Name of activity	Period of activity	Mandays	Labour rate @ Rs.90/-	Material Cost	Total
1	2	3	4	5	6	7
1	Weeding & soil working(50cm around each plant)	Oct-Nov	7	630.00		630.00
2	Fire tracing(2mtr wide fire line over 400mtr long)	Mar-Jun	3	270.00	-	270.00
3	Watch & ward	Whole yr.	15 22	1350.00 1980.00		1350.00 1980.00
4	Contingency				150.00	150.00
Total (5th Year)			25	2250.00	150.00	2400.00
GRAND TOTAL PER HA			441.5	39735.00	7725.00	47460.00

ABSTRACT

Nursery.	Rs. 8265.00 / for 65.5 Ha	Rs 5,41,357.50
Advance Work.	Rs 4830.00 / for 65.5 Ha	Rs 3,16,365.00
Plantation 1 st year.	Rs.20260.00 / for 65.5 Ha	Rs 13,27,030.00
Maintenance 2 nd year.	Rs 5480.00 / for 65.5 Ha	Rs 3,58,940.00
Maintenance 3 rd year.	Rs. 3825.00 / for 65.5 Ha	Rs 2,50,537.50
Maintenance 4 th year.	Rs. 2400.00 / for 65.5 Ha	Rs 1,57,200.00
Maintenance 5 th year.	Rs. 2400.00 / for 65.5 Ha	Rs 1,57,200.00
Total cost for plantation over 65.5 hectares	Rs. 47,460.00 x65.5 Ha = Rs. 31,08,630.00 (Rupees Thirty one lakhs eight thousand six hundred thirty only)	


(N P PRAMANIK)
 GENERAL MANAGER
 SAIL-BOLANI ORES MINE5

1. Detail Estimate of Loose Boulder Structure (S.C.M.)**Span-1 mt. Ht. = 0.6 mt. Slope-U/S:- 1:1.5 D/S slope: 1:2**

1. Leveling the unshape surface of the selected site & layout the structure foundation L.S. 1 MD. Rs. 90.00

2. Excavation of foundation in hard soil within initial lead of 50 mtr. including rough dressing and breaking of clods to maximum size 5 cm. to 7 cm. laying in layer not exceeding 0.3 in depth to strengthening both side U/S approx. bund of loose boulder structure.

Base with apron- $1 \times 3.60 \times 1.60 \times 0.30 =$	1.728		
Wing wall - $4 \times 0.50 \times 0.30 \times 0.30 =$	<u>0.180</u>	1.908 cum	Rs. 76.00
@ Rs. 3948.00 per 100 cum.			

3. Rough stone dry packing up to GL

Base with apron - $1 \times 3.60 \times 1.60 \times 0.30 =$	1.728	
Wing wall - $4 \times 0.50 \times 0.30 \times 0.30 =$	<u>0.180</u>	1.908 cum
Above GL		

Super structure- $1 \times 1.00 \times \frac{2.60 + 0.50}{2} \times 0.60 =$	0.930
---	-------

Wing wall - $4 \times 0.50 \times 0.30 \times 0.30 =$	0.180
---	-------

Side wall-

i. $2 \times \frac{0.3 + 0.9}{2} \times 0.3 =$	0.324
--	-------

ii. $2 \times 0.3 + \frac{0.9 \times 1.2}{2} \times 0.3 =$	0.432
--	-------

iii. $2 \times 0.5 \times 0.9 \times 0.3 =$	
---	--

iv. $2 \times 1.0 \times 0.3 \times 0.3 =$	0.270
--	-------

<u>0.180</u>	<u>2.316 cum</u>	
	4.224	Rs. 1,449.00


cum

@ Rs. 343.00 per

cum

G. Total Rs. 1,615.00

(Rupees one thousand six hundred fifteen only)


(N P PRAMANIK)
 GENERAL MANAGER
 SAIL-BOLANI ORES MINES

Detail Estimate of Loose Boulder Structure (S.C.M.)**Span-2 mt. Ht. = 0.6 mt. Slope-U/S:- 1:1.5 D/S slope: 1:2**

1. Leveling the unshape surface of the selected site & layout the structure foundation L.S. 1 MD. **Rs. 90.00**
2. Excavation of foundation in hard soil within initial lead of 50 mtr. including rough dressing and breaking of clods to maximum size 5 cm. to 7 cm. laying in layer not exceeding 0.3 in depth to strengthening both side U/S approx. bund of loose boulder structure.
- | | | | |
|--|-------------|----------|-------------------|
| Base with apron- $1 \times 3.70 \times 3.00 \times 0.30 =$ | 3.33 | | |
| Wing wall - $4 \times 0.50 \times 0.50 \times 0.30 =$ | <u>0.30</u> | 3.63 cum | Rs. 144.00 |
- @ Rs. 3948.00 per 100 cum.**

3. Rough stone dry packing up to GL
- | | | | |
|---|-------------|--|--|
| Base with apron - $1 \times 3.70 \times 3.00 \times 0.30 =$ | 3.33 | | |
| Wing wall - $4 \times 0.50 \times 0.50 \times 0.30 =$ | 0.30 | | |
| Above GL | | | |
| Super structure- $1 \times 2.00 \times \frac{2.70 + 0.60}{2} \times 0.60 =$ | 1.98 | | |
| Wing wall - $4 \times 0.50 \times 0.50 \times 0.50 =$ | 0.50 | | |
| Side wall- | | | |
| i. $2 \times \frac{0.50 + 1.10}{2} \times 0.9 \times 0.5 =$ | 0.72 | | |
| ii. $2 \times \frac{0.5 + 1.10}{2} \times 1.2 \times 0.5 =$ | 0.96 | | |
| iii. $2 \times 0.6 \times 0.6 \times 0.5 =$ | 0.36 | | |
| iv. $2 \times 1.0 \times 0.5 \times 0.5 =$ | <u>0.50</u> | | |
- 8.65 cum @ **Rs. 2,966.00**
Rs. 343.00 per cum

G. Total Rs. 3,200.00**(Rupees three thousand two hundred only)**


(N P PRAMANIK)
GENERAL MANAGER
SAIL-BOLANI ORES MINES

ANNEXURE-III(C)

Detail Estimate of Loose Boulder Structure (S.C.M.)

Span-3 mt. Ht. = 1.0mt. Slope-U/S:- 1:1.5 D/S slope: 1:2.0

1. Leveling the unshape surface of the selected site & layout the structure foundation L.5. 1 MD. **Rs. 90.00**

2. Excavation of foundation in hard soil within initial lead of 50 mtr. including rough dressing and breaking of clods to maximum size 5 cm. to 7 cm. laying in layer not exceeding 0.3 in depth to strengthening both side U/S approx. bund of loose boulder structure.

Base with apron- $1 \times 5.10 \times 4.00 \times 0.30 =$

6.12

Wing wall - $4 \times 0.50 \times 0.50 \times 0.30 =$

0.30

6.42 cum

Rs. 254.00

@ Rs. 3948.00 per 100 cum.

3. Rough stone dry packing up to GL

Base with apron - $1 \times 5.10 \times 4.00 \times 0.30 =$

6.12

Wing wall - $4 \times 0.50 \times 0.50 \times 0.30 =$

0.30

Above GL

Super structure- $1 \times \frac{4.10 + 0.60}{2} \times 1.00 \times 3.0 =$

7.05

Wing wall - $4 \times 0.50 \times 0.50 \times 0.50 =$

0.50

Side wall-

i. $2 \times \frac{0.50 + 1.50}{2} \times 1.5 \times 0.5 =$

1.50

ii. $2 \times \frac{0.5 + 1.50}{2} \times 2.0 \times 0.5 =$

2.0

iii. $2 \times 0.6 \times 1.0 \times 0.5 =$

0.60

iv. $2 \times 1.0 \times 0.5 \times 0.5 =$


0.50

18.57 cum @ **Rs. 6,370.00**

Rs. 343.00 per cum

G. Total Rs. 6,714.00

(Rupees six thousand seven hundred fourteen only)



(N P PRAMANIK)
GENERAL MANAGER
SAIL-BOLANI ORES MINES

Detail Estimate of Loose Boulder Structure (S.C.M.)**Span-4 mt. Ht. = 1.3mt. Slope-U/S:- 1:1.S D/S slope: 1:2.0**

1. Leveling the unshape surface of the selected site & layout the structure foundation L.S. 1 MD. **Rs. 90.00**

2. Excavation of foundation in hard soil within initial lead of 50 mtr. including rough dressing and breaking of clods to maximum size 5 cm. to 7 cm. laying in layer not exceeding 0.3 in depth to strengthening both side U/S approx. bund of loose boulder structure.

Base with apron- $1 \times 6.15 \times 5.00 \times 0.30 =$

9.225

Wing wall - $4 \times 0.50 \times 0.50 \times 0.30 =$

0.30

9.525 cum

Rs. 376.00

@ Rs. 3948.00 per 100 cum.

3. Rough stone dry packing up to GL

Base with apron - $1 \times 6.15 \times 5.00 \times 0.30 =$

9.225

Wing wall - $4 \times 0.50 \times 0.50 \times 0.30 =$

0.30

Above GL

Super structure- $1 \times \frac{5.15 + 0.60}{2} \times 1.30 \times 4.0 =$

14.95

Wing wall - $4 \times 0.50 \times 0.50 \times 0.50 =$

0.50

Side wall-

i. $2 \times \frac{0.50 + 1.80}{2} \times 1.95 \times 0.5 =$

2.24

ii. $2 \times \frac{0.5 + 1.80}{2} \times 2.6 \times 0.5 =$

2.99

iii. $2 \times 0.6 \times 1.8 \times 0.5 =$

1.08

iv. $2 \times 1.0 \times 0.5 \times 0.5 =$

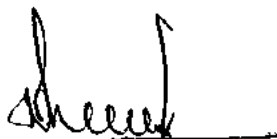
0.50

31.785 cum @ **Rs. 10904.00**

Rs. 343.00 per cum

G. Total Rs. 11370.00

(Rupees eleven thousand three hundred seventy only)



(N P PRAMANIK)
GENERAL MANAGER
SAIL-80LANI ORES MINES

Estimate for digging one no of staggered trench of size 2Mtr x 0.54 Mtr x 0.5 Mtr along with Agave Plant on the dugout soil

1. Earth work in excavation of staggered trench in hard soil including Rough dressing and leveling the beds and heaping the dugout soil at the downhill side of the trench and leveling the same too.

Size of the trench = 2.0 Mtr x 0.5 Mtr x 0.5 Mtr = 0.5 Cum
@177.70 per 2.83 Cum

Rs 31.30

2. Cost of Agava Planting on the dugout soil and it's maintenance including weeding, soil working, manuring, cost of fertilizer etc. for three years


03 nos Agave plants per trench
@ Rs 13.00 per plant on LS

Rs 39.00

TOTAL :- Rs 70.30
(Rupees eventy and paise thirty)only

Cost of 250 nos of staggered trenches covering one Ha
= 250 x 70.30 = Rs 17,575.00

Cost of digging staggered trenches over an area of 65.0 ha will be Rs 17,575/- x 65.0 Ha = Rs 11,42,375.00


(N P PRAMANIK)
GENERAL MANAGER
SAIL-BOLANI ORES MINES

ANNEXURE - V

ESTIMATE FOR CONSTRUCTION OF DRY BOULDER TOE / RETAINING WALL / DE-SILTING OF NALLAH


(Length = 1m , Width : 2.0 m , Height : 1.5m)

1	Earth work excavation in over areas.	L	B	D	TOTAL	
	Cum	1	1.00	2.0	1.5	3.00
					Total	3.00

2 Transportation by manual means up to 100 mts

Cum	1	1.00	2.0	1.50	3.00
			Total		3.00

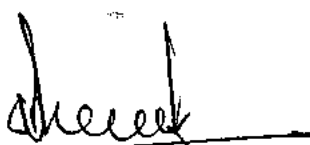
DESCRIPTION OF ITEM	UNIT	QTY.	RATE	AMOUNT (Rs)	REMARKS
Earth work in excavation in foundation trenches or drains (not exceeding 1.5 m in width or 10 sqm on plan) including dressing of sides and ramming of bottoms, lift up to 1.5m, including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m, in All kinds of soil.	CUM	3.00	125.21	375.63	Analysed Rate as per DSR-07
Collection, loading, unloading and stacking of Desilted material from collecting area lead up to 100 mtr by mechanical means of 4.5 cum capacity including the cost labour for loading & unloading as directed by Engg - in - charge.	CUM	3.00	588.44	1765.33	Analysed Rate as per DSR-07
Cost of desilting of 1 CUM from nallah bed				2140.96	



(N P PRAMANIK)
 GENERAL MANAGER
 SAIL-BOLANI ORES MINE


TOTAL COST OF THE PROJECT

Sl.No	Description of the work	Funds Required (in Rs)
1	Biological Measures Afforestation over degraded and barren forest lands including safety zone inside lease area	Rs. 31,08,630.00
2	Structural Measures	
a.	Loose boulder Checkdams 1 mt. size 150 nos. @ Rs.1615/-	Rs. 2,42,250.00
b.	Loose boulder Checkdams 2 mt. size 80 nos. @ Rs.3200/-	Rs. 2,56,000.00
c.	Loose boulder Checkdams 3 mt. size 40 nos. @ Rs.6714/-	Rs. 2,68,560.00
d.	Loose boulder Checkdams 4 mt. size 50 nos. @ Rs.11370/-	Rs. 5,68,500.00
3.	Special SCM such as staggered trenches (250 nos per hectare) @Rs 17575/- per Ha over 65.0 Ha	Rs 11,42,375.00
4.	8 nos Masonary check/silt retention dams	Rs 50,00,000.00
5	2 nos Settling Tanks	Rs 10,23,000.00
6.	De-siltation of seasonal nallahs Rs 2140.96/- per cum for 600 cum	Rs 12,84,576.00
7.	Maintenance of previously constructed structures(L/S)	Rs 2,00,000.00
8.	Contingency including supervision charges(L/S)	Rs. 50,000.00
	TOTAL	Rs 1,31,43,891.00
	Price escalation @ 10%	Rs 13,14,389.10
	Grand Total	Rs 1,44,58,280.10 = Rs 1.45 crores


In case of any increase in the man, material and machinery charges , provision for additional funds will be made as and when required .


(N P PRAMANIK)
GENERAL MANAGER
SAIL-BOLANI ORES MINES
Technically
Approved.


Regional Chief Conservator of Forests
Rourkela Circle


Forest Range Officer
BARAN LANGE, BARDA

COUNTERSIGNED

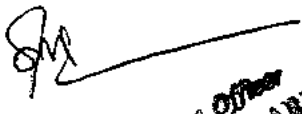

Divisional Forest Officer
Keonjhar Division

TOTAL COST OF THE PROJECT

Sl.No	Description of the work	Funds Required (in Rs)
1	Biological Measures Afforestation over degraded and barren forest lands including safety zone inside lease area	Rs. 31,08,630.00
2	Structural Measures	
a.	Loose boulder Checkdams 1 mt. size 150 nos. @ Rs.1615/-	Rs. 2,42,250.00
b.	Loose boulder Checkdams 2 mt. size 80 nos. @ Rs.3200/-	Rs. 2,56,000.00
c.	Loose boulder Checkdams 3 mt. size 40 nos. @ Rs.6714/-	Rs. 2,68,560.00
d.	Loose boulder Checkdams 4 mt. size 50 nos. @ Rs.11370/-	Rs. 5,68,500.00
3.	Special SCM such as staggered trenches (250 nos per hectare) @Rs 17575/- per Ha over 65.0 Ha	Rs 11,42,375.00
4.	8 nos Masonary check/silt retention dams	Rs 50,00,000.00
5	2 nos Settling Tanks	Rs 10,23,000.00
6.	De-siltation of seasonal nallahs Rs 2140.96/- per cum for 600 cum	Rs 12,84,576.00
7.	Maintenance of previously constructed structures(L/5)	Rs 2,00,000.00
8.	Contingency including supervision charges(L/S)	Rs. 50,000.00
	TOTAL	Rs 1,31,43,891.00
	Price escalation @ 10%	Rs 13,14,389.10
	Grand Total	Rs 1,44,58,280.10 = Rs 1.45 crores

In case of any increase in the man, material and machinery charges , provision for additional funds will be made as and when required .

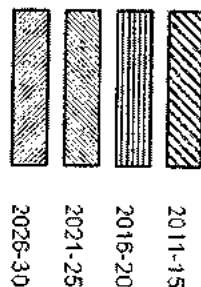

(N P PRAMANIK)
GENERAL MANAGER
SAIL-BOLANI ORES MINE5


Divisional Forest Officer
Keonjhar Division

COUNTERSIGNED


Divisional Forest Officer
Keonjhar Division

MAP SHOWING EXISTING & PROPOSED MINING AREAS AND YEAR-WISE AFFORESTATION PLAN INSIDE ML & GAP PLANTATIONS ALONGWITH SMC WORKS WITHIN 100M FROM OUTER PERIMETER OF ML.



GAP PLANTING & SMC WITHIN 100 M FROM OUTER PERIMETER OF ML

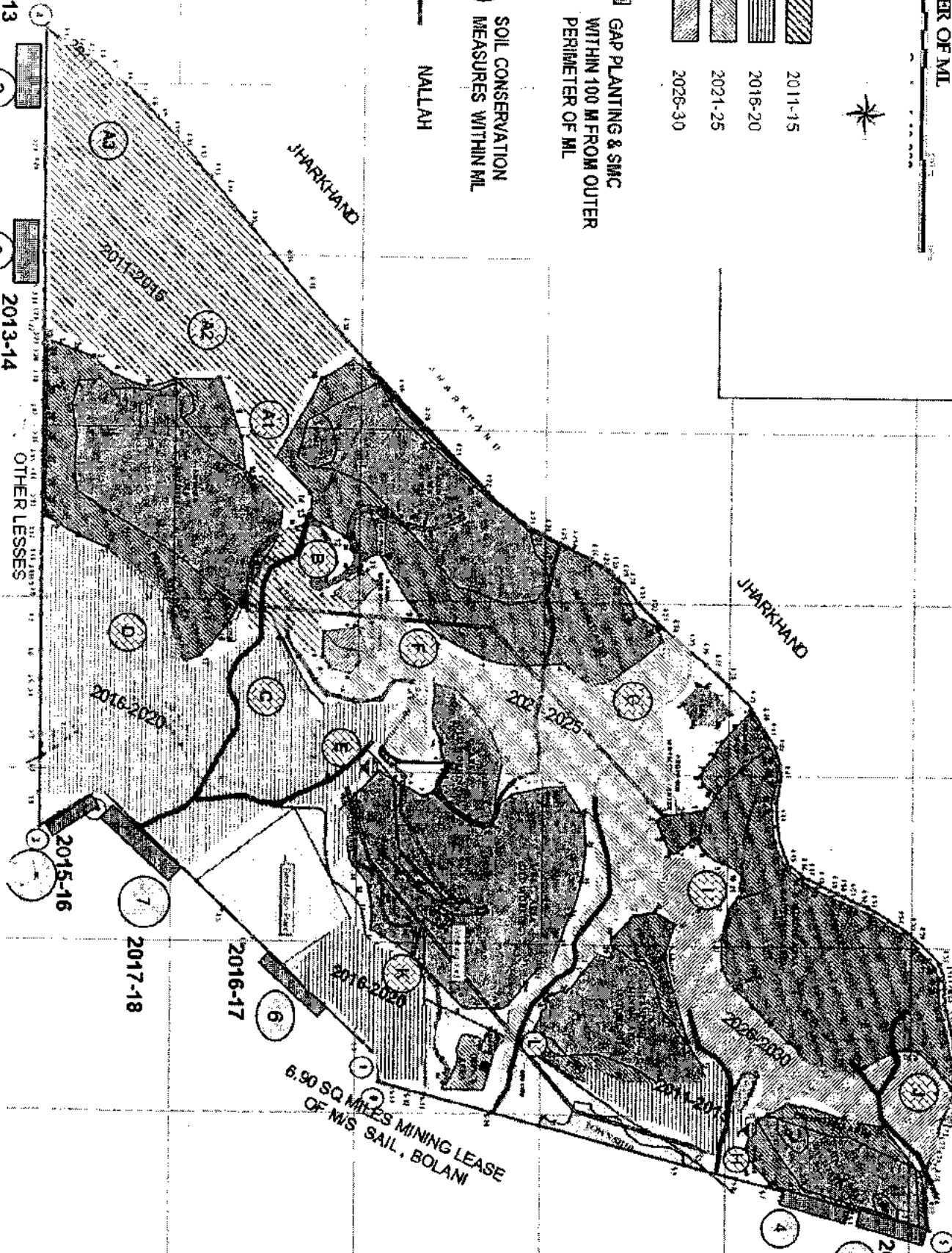
SOIL CONSERVATION MEASURES WITHIN ML

NALLAH

2012-13

2013-14

OTHER LESSEES



COUNTERSIGNED

Divisional Forest Officer
Keonjhar Division

Forest Range Officer
KANDAMBA, BARAN

Annexure -II

REVISED FINANCIAL OUTLAY OF SCHEME FOR MITIGATIVE MEASURES TO MINIMIZE SOIL EROSION AND CHOKING OF STREAMS IN COMPLIANCE OF CONDITION NO - 2-IV(A) OF STAGE-I FOREST CLEARANCE GRANT ORDER (WAGE RATE - RS 125/- PER MANDAY)

**COST ESTIMATE FOR BLOCK PLANTATION OF 1600 SEEDLINGS/ HECT.
AT 2.5 m X 2.5 m SPACING.**

1	Name of the Plantation	Block Plantation
2	No. of Seedlings to be planted	1600 Nos / Hect.
3	Spacing to be adopted	2.5 m x 2.5 m
4	Size of Pits	30cm x 30cm x 30cm.
5	Wage rate	Rs.125.00 / manday
6	Species to be planted	Bamboo, Sisoo, Neem and other miscellaneous species.
7	The user agency will pay the wage rate as and when enhanced.	

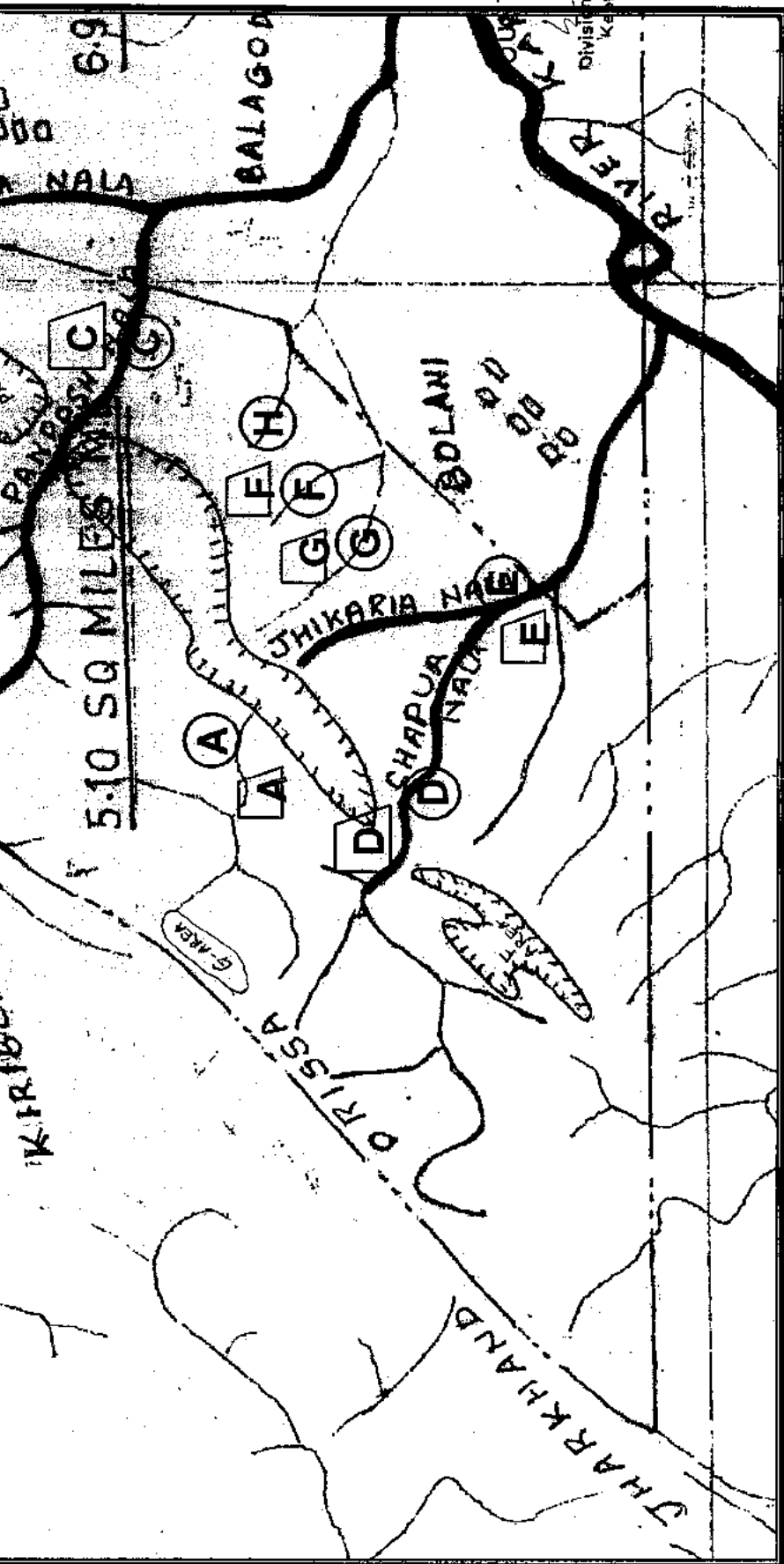
Sl. No.	Item of work	Mandays	Labour cost @ Rs.125	Material Cost (In Rs.)	Total Cost (In Rs.)
1	2	3	4	5	6
	0th Year (Advance work / Pre-planting)				
1	Survey, Demarcation & Pillar posting	2	250	0	250
2	Site preparation	12	1500	0	1500
3	Alignment & stacking of pits	2	250	0	250
4	Digging of pits (30 cm cube)	40	5000	0	5000
5	Nursery cost (one year old seeding) part	80	5000	5000	10000
6	Contingencies & overheads	3	0	0	375
	Total =	139	12000	5000	17375
	1st year / Planting year/ Year of Creation				
7	Nursery cost (one year old seeding) balance	25	2625	500	3125
8	Carriage, planting, CR manuring, insecticide application	30	3750	0	3750
9	cost of insecticide & Fertilizer	24	0	3000	3000
10	1st Weeding (Complete weeding)	10	1250	0	1250
11	Manuring	5	625	0	625
12	2nd Weeding (Complete weeding)	6	750	0	750
13	Soil working (50cms, Radius around plants)	8	1000	0	1000
14	Fire Line Tracing & inspection path	3	375	0	375
15	Soil conservation measures in the form of staggered trenches of 2m.1x 50 cm D& drainage line treatment, percolation pits etc.	10	1250	0	1250
16	Watch & ward and brush wood/ live fencing at 15% length of periphery to prevent cattle entry	15	1875	0	1875
17	Contingencies & overheads	4	500	0	500
	Total =	140	13500	3500	17500
	2nd Year Maintenance				
18	Casualty replacement with nursery cost	12	1500	0	1500

19	Weeding (Complete weeding)	8	1000	0	1000
20	Application of Fertilizer	4	500	0	500
21	Cost of fertilizer	12	0	1500	1500
22	Soil working (50cms, Radius around plants)	7	875	0	875
23	Fire Line Tracing (2m. Wide fire line over 400m long)	3	375	0	375
24	Watch and ward and fence maintenance	18	2250	0	2250
25	Contingencies & overheads	3	375	0	375
	Total =	67	6500	1500	8375
	<u>3rd Year Maintenance</u>				
26	Weeding & Pruning & application of fertilizer	8	1000	0	1000
27	Cost of Fertilizer	12	1500	0	1500
28	Soil working (50 cms, Radius around plants)	8	1000	0	1000
29	Fire line tracing (2mt. wide fireline over 400 mt. long)	3	375	0	375
30	Watch & ward and fence maintenance	18	2250	0	2250
31	Contingencies & overheads	3	375	0	375
	Total =	52	5000	1500	6500
	<u>4th Year Maintenance</u>				
32	Weeding & Pruning	8	1000	0	1000
33	Watch & Ward and fence maintenance	18	2250	0	2250
34	Fire line tracing (2mt. wide fireline over 400 mt. long)	3	375	0	375
35	Contingencies & overheads	3	375	0	375
	Total =	32	4000	0	4000
	<u>5th Year Maintenance</u>				
36	Weeding & Pruning	8	1000	0	1000
37	Watch & Ward and fence maintenance	18	2250	0	2250
38	Fire line tracing (2mt. wide fireline over 400 mt. long)	3	375	0	375
39	Contingencies & overheads	3	375	0	375
	Total =	32	4000	0	4000
	<u>6th Year Maintenance</u>				
40	Weeding & Pruning	8	1000	0	1000
41	Watch & Ward and fence maintenance	18	2250	0	2250
42	Fire line tracing (2mt. wide fireline over 400 mt. long)	3	375	0	375
43	Contingencies & overheads	3	375	0	375
	Total =	32	4000	0	4000
	Grand Total =	494	11500	47500	61750

Drainage map showing locations of
proposed check dams and de-silting
within 5.10 sq miles ML area

- A Proposed Check dams
- A Proposed De-silting

KIRITBORD

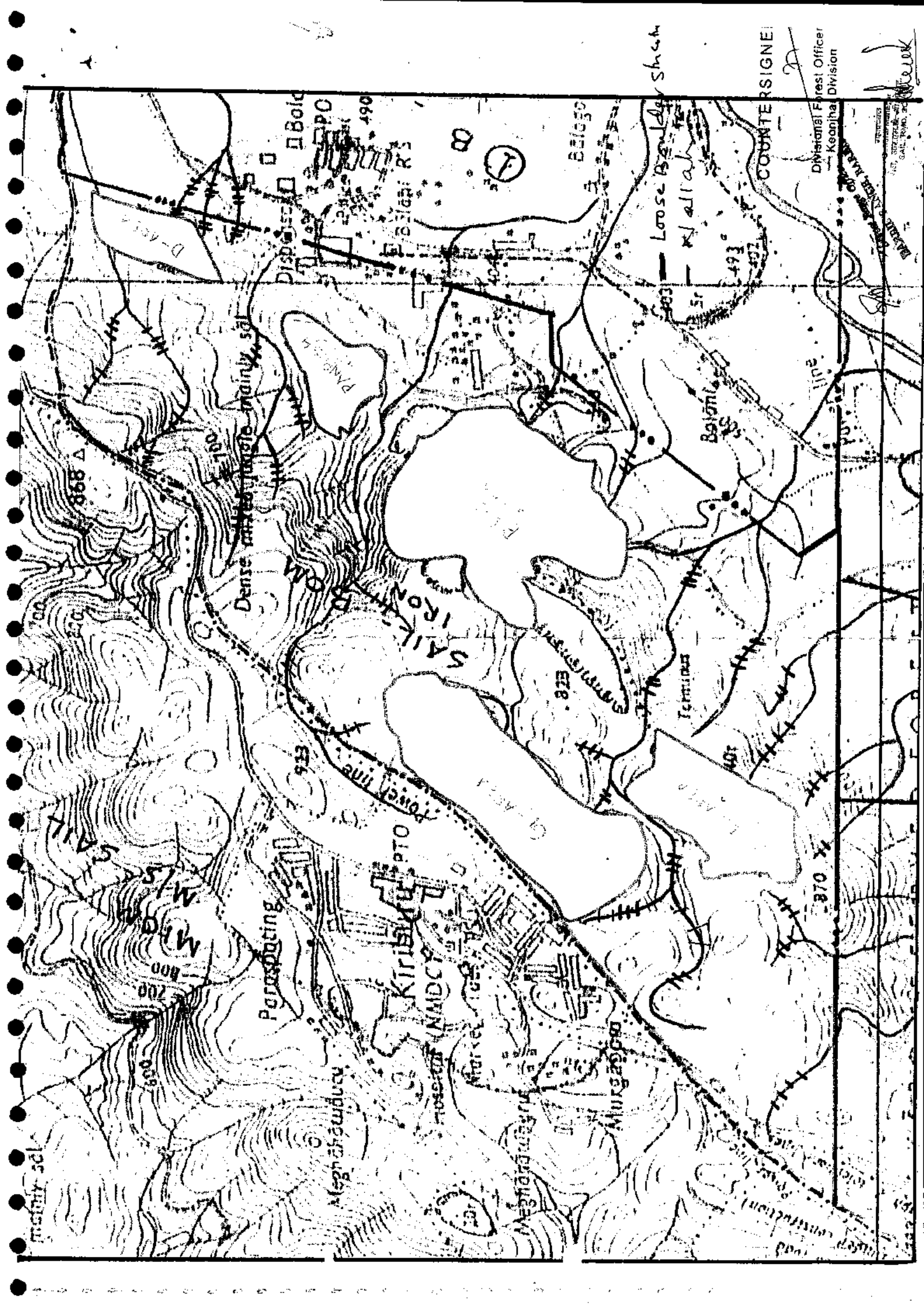


TERNSIGNED

Divisional Forest Officer
Kanjhar Division

[Signature]

For Range Officer
BAREIL RANGOL, BARHUI



ABSTRACT FOR @ 1600/- SEEDLINGS PER HA.

Year	Labour	Material	Contingencies	Total
0 th Year	12000.00	5000.00	375.00	17375.00
1 st . Year	13500.00	3500.00	500.00	17500.00
2 nd . Year	6500.00	1500.00	375.00	8375.00
3 rd . Year	4625.00	0	1875.00	6500.00
4 th Year	3625.00	0	375.00	4000.00
5 th Year	3625.00	0	375.00	4000.00
6 th Year	3625.00	0	375.00	4000.00
Total	47,500.00	10,000.00	4,250.00	61,750.00
	380	80	34	494
Additional incentive(3%) for Fr/Fg/ Proposed for more than 80% survival and verygood growth during 4th year of maintenance as per recommendations of DFO and RCCF				1853.00
Additional EPA expenses if implemented through VSS at the rate of Rs 1000/- in 0th year , Rs 2000 in 1st Year, Rs.1500 in 2nd Year, Rs .500/- in 3rd year Rs 500/-in 4th Year Rs.500 in 5th Year and Rs 500 in 6th year				6500.00
Total Norm per Hectare in Non JFM mode with incentives				70103.00
Total cost for plantation over 65.5 Hectares	Rs. 70,103.00 /- x 65.5 Ha = Rs. 45, 91, 746.5 i.e Rs. 45, 91, 747.00 (Forty five Lakhs ninety one thousand seven hundred forty seven only)			


 GENERAL MANAGER
 SAIL-BOLANI ORES MINES

I. Detail Estimate of Loose Boulder Structure (5.C.M.)

Span-1 mt. Ht. = 0.6 mt. Slope-U/S:- 1:1.5 D/S slope: 1:2

1. Leveling the unshaped surface of the selected site & layout the structure foundation L.S. 1 M0. Rs. 125.00

2. Excavation of foundation in hard soil within initial lead of 50 mtr. including rough dressing and breaking of clods to maximum size 5 cm. to 7 cm. laying in layer not exceeding 0.3 in depth to strengthening both side U/S approx. bund of loose boulder structure.

Base with apron- $1 \times 3.60 \times 1.60 \times 0.30 =$ Wing wall - $4 \times 0.50 \times 0.30 \times 0.30 =$

1.728

@ Rs. 5556.00 per 100 cum.

0.180

1.908 cum

Rs. 106.00

3. Rough stone dry packing up to GL

Base with apron - $1 \times 3.60 \times 1.60 \times 0.30 =$

1.728

Wing wall - $4 \times 0.50 \times 0.30 \times 0.30 =$ 0.180

1.908 cum

Above GL

Super structure- $1 \times 1.00 \times \frac{2.60 + 0.50}{2} \times 0.60 =$

0.930

0.180

Wing wall - $4 \times 0.50 \times 0.30 \times 0.30 =$

0.324

Side wall-

0.432

i. $2 \times \frac{0.3 + 0.9}{2} \times 0.3 =$

0.270

2

0.180

2.316 cumii. $2 \times 0.3 + \frac{0.9 \times 1.2}{2} \times 0.3 =$

4.224 cum

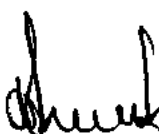
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iii. $2 \times 0.5 \times 0.9 \times 0.3 =$ iv. $2 \times 1.0 \times 0.3 \times 0.3 =$

@Rs. 476.56 per cum.

Rs. 2,013.00**G. Total Rs. 2,244.00**

(Rupees Two thousand two hundred forty four) only


 GENERAL MANAGER
 SAIL-BOLANI ORES MINES

ANNEXURE III (B)

II. Detail Estimate of Loose Boulder Structure (S.C.M.)

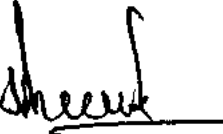
Span-2 mt. Ht. = 0.6 mt. Slope-U/S:- 1:1.5 D/5 slope: 1:2

1. Leveling the unshaped surface of the selected site & layout the structure foundation L.S. 1 MD. Rs. 125.00
2. Excavation of foundation in hard soil within initial lead of 50 mtr. including rough dressing and breaking of clods to maximum size 5 cm. to 7 cm. laying in layer not exceeding 0.3 In depth to strengthening both side U/S approx. bund of loose boulder structure.
- Base with apron- $1 \times 3.70 \times 3.00 \times 0.30 =$
- Wing wall - $4 \times 0.50 \times 0.50 \times 0.30 =$ 3.33
- @ Rs. 5510.00 per 100 cum. 0.30 3.63 cum Rs. 200.00
3. Rough stone dry packing up to GL
- Base with apron - $1 \times 3.70 \times 3.00 \times 0.30 =$ 3.33
- Wing wall - $4 \times 0.50 \times 0.50 \times 0.30 =$ 0.30
- Above GL
- Super structure- $1 \times 2.00 \times \frac{2.70 + 0.60}{2} \times 0.60 =$ 1.98
- 0.50
- Wing wall - $4 \times 0.50 \times 0.50 \times 0.50 =$ 0.72
- Side wall- 0.96
- I. $2 \times \frac{0.50 + 1.10}{2} \times 0.9 \times 0.5 =$ 0.36
- 0.50
- ii. $2 \times \frac{0.5 + 1.10}{2} \times 1.2 \times 0.5 =$ 8.65 cum
- iii. $2 \times 0.6 \times 0.6 \times 0.5 =$
- iv. $2 \times 1.0 \times 0.5 \times 0.5 =$
- @ Rs. 476.18 per cum

Rs. 4,119.00

G. Total Rs. 4444.00

(Rupees Four thousand four hundred forty four only)


 GENERAL MANAGER
 SAIL-BOLANI ORES MINES

ANNEXURE- III(C)**III. Detail Estimate of Loose Boulder Structure (5.C.M.)**

Span-3 mt. Ht. = 1.0mt. Slope-U/S:- 1:1.5 D/S slope: 1:2.0

1. Leveling the unshaped surface of the selected site & layout the structure foundation L.S. 1 MD. Rs.125.00

2. Excavation of foundation in hard soil within initial lead of 50 mtr. including rough dressing and breaking of clods to maximum size 5 cm. to 7 cm. laying in layer not exceeding 0.3 in depth to strengthening both side U/S approx. bund of loose boulder structure.

Base with apron- $1 \times 5.10 \times 4.00 \times 0.30 =$	6.12		
Wing wall - $4 \times 0.50 \times 0.50 \times 0.30 =$	0.30	6.42 cum	Rs. 353.00
@ Rs. 5498.00 per 100 cum.			

3. Rough stone dry packing up to GL

Base with apron - $1 \times 5.10 \times 4.00 \times 0.30 =$	6.12	
Wing wall - $4 \times 0.50 \times 0.50 \times 0.30 =$	0.30	

Above GL

Super structure- $1 \times \frac{4.10 + 0.60}{2} \times 1.00 \times 3.0 =$	7.05	
	0.50	

Wing wall - $4 \times 0.50 \times 0.50 \times 0.50 =$	1.50	
---	------	--

Side wall-	2.00	
------------	------	--

i. $2 \times \frac{0.50 + 1.50}{2} \times 1.5 \times 0.5 =$	0.60	
---	------	--

2

18.57 cum

ii. $2 \times \frac{0.5 + 1.50}{2} \times 2.0 \times 0.5 =$		
---	--	--

2

iii. $2 \times 0.6 \times 1.0 \times 0.5 =$		
---	--	--

iv. $2 \times 1.0 \times 0.5 \times 0.5 =$		
--	--	--

@ Rs. 476.00 per cum

Rs. 8847.00

G. Total Rs. 9,325.00

(Rupees Nine thousand three hundred twenty five only)



**GENERAL MANAGER
SAIL-BOLANI ORES MINES**

ANNEXURE-III(D)

IV. Detail Estimate of Loose Boulder Structure (5.C.M.)

Span-4 mt. Ht. = 1.3mt. Slope-U/S:- 1:1.5 D/5 slope: 1:2.0

1. Leveling the unshaped surface of the selected site & layout the structure foundation L.S. 1 MD. Rs. 125.00

2. Excavation of foundation in hard soil within initial lead of 50 mtr. including rough dressing and breaking of clods to maximum size 5 cm. to 7 cm. laying in layer not exceeding 0.3 in depth to strengthening both side U/S approx. bund of loose boulder structure.

Base with apron- $1 \times 6.15 \times 5.00 \times 0.30 =$ Wing wall - $4 \times 0.50 \times 0.50 \times 0.30 =$

9.225

@ Rs. 5480.00 per 100 cum.

0.30

9.525 cum

Rs. 522.00

3. Rough stone dry packing up to GL

Base with apron - $1 \times 6.15 \times 5.00 \times 0.30 =$

9.225

Wing wall - $4 \times 0.50 \times 0.50 \times 0.30 =$

0.30

Above GL

Super structure- $1 \times \frac{5.15 + 0.60}{2} \times 1.30 \times 4.0 =$

14.95

0.50

Wing wall - $4 \times 0.50 \times 0.50 \times 0.50 =$

2.24

Side wall-

2.99

i. $2 \times \frac{0.50 + 1.80}{2} \times 1.95 \times 0.5 =$

1.08

0.50

31.785 cum

ii. $2 \times \frac{0.5 + 1.80}{2} \times 2.6 \times 0.5 =$ iii. $2 \times 0.6 \times 1.8 \times 0.5 =$ iv. $2 \times 1.0 \times 0.5 \times 0.5 =$

@ Rs. 476.45 per cum

Rs. 15144.00Rs. 15,791.00

(Rupees Fifteen thousand seven hundred ninety one only)


GENERAL MANAGER
SAIL-BOLANI ORES MINES

ANNEXURE - IV

Estimate for digging one no of staggered trench of size 2Mtr x 0.5 Mtr x 0.5 Mtr along with Agave Plant on the dugout soil

1. Earth work in excavation of staggered trench in hard soil including Rough dressing and leveling the beds and heaping the dugout soil at the downhill side of the trench and leveling the same too.

Size of the trench = 2.0 Mtr x 0.5 Mtr x 0.5 Mtr = 0.5 Cum

@246.80 per 2.83 Cum

Rs 43.00

2. Cost of Agava Planting on the dugout soil and it's maintenance including weeding, soil working, manuring, cost of fertilizer etc. for seven years

03 nos Agave plants per trench

@ Rs 18.00 per plant on LS

Rs 54.00

TOTAL :-

Rs 97.00

(Rupees Ninety seven) only

Cost of 250 nos of staggered trenches covering one Ha

= 250 x 97

= Rs 24,250.00

Cost of digging staggered trenches over an area of 65.0 ha, as per revised, will be Rs 24,250/- x 65.5 Ha = Rs 15,88,375/-



GENERAL MANAGER
SAIL-BOLANI ORES MINES

ANNEXURE - V

ESTIMATE FOR CONSTRUCTION OF DRY BOULDER TOE / RETAINING WALL
(Length = 1m , Width : 2.0 m , Height : 1.5m)

1	Earth work excavation in over areas.	L	B	D	TOTAL	
	Cum	1	1.00	2.0	1.5	3.00
					Total	3.00
2	Transportation by manual means up to 100 mts	L	B	D	TOTAL	
	Cum	1	1.00	2.0	1.50	3.00
					Total	3.00

DESCRIPTION OF ITEM	UNIT	QTY.	RATE	AMOUNT (Rs)	REMARKS
Earth work in excavation in foundation trenches or drains (not exceeding 1.5 m in width or 10 sqm on plan) including dressing of sides and ramming of bottoms, lift up to 1.5m, including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m, In All kinds of soil.	CUM	3.00	125.21	375.63	Analysed Rate as per DSR-07
Collection, loading, unloading and stacking of Desilted material from collecting area lead up to 100 mtr by mechanical means of 4.5 cum capacity including the cost labour for loading & unloading as directed by Engg - in - charge.	CUM	3.00	588.44	1765.33	Analysed Rate as per DSR-07
Cost of desilting of 1 CUM from nallah bed				2140.96	
Total cost accommodating revised wage rate @125/- per day				$\frac{2140.96 \times 125}{90}$ = Rs 2973.55	


 GENERAL MANAGER
 SAIL-BOLANI ORES MINES


ANNEXURE -VI

REVISED FINANCIAL OUTLAY OF SCHEME FOR MITIGATIVE MEASURES TO MINIMIZE SOIL EROSION AND CHOKING OF STREAMS IN COMPLIANCE OF CONDITION NO - 2-IV(A) OF STAGE-I FOREST CLEARANCE GRANT ORDER (WAGE RATE – RS 125/- PER MANDAY)

TOTAL COST OF THE PROJECT

Sl.No	Description of the work	Funds Required (in Rs)
1	Biological Measures Afforestation over degraded and barren forest lands including safety zone inside lease area	Rs. 45, 91, 747.00
2	Structural Measures	
a.	Loose boulder Checkdams 1 mt. size 150 nos. @ Rs.2244/-	Rs 3,36,600/-
b.	Loose boulder Checkdams 2 mt. size 80 nos. @ Rs.4444/-	Rs 3,55,520/-
c.	Loose boulder Checkdams 3 mt. size 40 nos. @ Rs.9325/-	Rs 3,73,000/-
d.	Loose boulder Checkdams 4 mt. size 50 nos. @ Rs.15791/-	Rs 7,89,550/-
	Total =	Rs 18,54,670/-
3.	Special SCM such as staggered trenches (250 nos per hectare) @ Rs 24,250/- per Ha over 65.5 Ha	Rs 15,88,375/-
4.	8 nos Masonary check/silt retention dams	Rs 69,44,444.00
5.	2 nos Settling Tanks	Rs 14,20,833.00
6.	De-siltation of seasonal nallahs Rs 2973.55/- per cum for 600 cum	Rs 17,84,130.00
7.	Maintenance of previously constructed structures(L/S)	Rs 2,77,777.00
8.	Contingency including supervision charges(L/S)	Rs. 70000.00
9.	TOTAL	Rs 1,85,31,976.00
	Price escalation @ 10%	Rs 18,53,197.60
	Sub Total	Rs 2,03,85,173.6 = 2,03,85,174.00
	10% amount to be paid to VSS for motivation	Rs 20,38,517.36
	GRAND TOTAL	Rs 2,24,23,690.96 = Rs 2,24,23,691.00 i.e Rs 225.00 Lakhs

In case of any increase in the man, material and machinery charges, provision for additional funds will be made as and when required.


GENERAL MANAGER
SAIL-BOLANI ORES MINES

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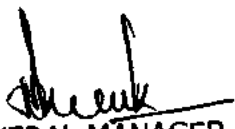
Regional Chief Conservator of Forests
Rourkela Rourkela Circle, Rourkela

24.08.2012

15. REQUIREMENT OF FUNDS (After Revision of wage rate)

The total cost of the implementation of mitigative measures will be Rs. **2,25,00,000/-** as detailed in **Annexure-VI** . For implementation of the above mitigation measures, the above expenditure of Rs 225.00 lakh will be made over the next 7 years period. Therefore, budget provision Rs. 225.00 lakhs will be kept by the user agency for implementation of the above mitigation measures a period of next seven years. This budget will subject to increase in amount considering the increase in materials and labour charges. The tentative annual expenditure planned for the next seven years for the implementation of mitigative measures is given in the following table :

Sl. No.	Description	Amount
1.	1 st year plan of expenditure	Rs 30.00 Lakhs
2.	2 nd year plan of expenditure	Rs 30.00 Lakhs
3.	3 rd year plan of expenditure	Rs 30.00 Lakhs
4.	4 th year plan of expenditure	Rs 33.00 Lakhs
5.	5 th year plan of expenditure	Rs 34.00 Lakhs
6.	6 th year plan of expenditure	Rs 34.00 Lakhs
7.	7 th year plan of expenditure	Rs 34.00 Lakhs
	Total:-	Rs 225.00 Lakhs


GENERAL MANAGER
SAIL-BOLANI ORES MINES

Technically Approved

Technically
Approved

Regional Chief Conservator of Forests
Rourkela

Regional Chief Conservator of Forests
Rourkela Circle, Rourkela

29.08.2012

Annexure-VIII B

Scheme

For

**PLANTING OF DROUGHT HARDY PLANT SPECIES AND
SOWING OF SEEDS WITHIN MINING LEASE TO ARREST
SOIL EROSION**

in compliance

to

Condition no – 2-IV(b) of Stage-I Forest Clearance grant Order

**Vide Letter No.8-17/1997-FC (pt.) Dated.12.11.2010
of Govt. of India, Ministry of Environment & Forests, New Delhi**

for

Diversion of 1152.58 Hects Forest land

**within 5.10 sq Miles ML of
Bolani Iron Ore Mine of M/s SAIL,
in Champua Subdivision of Keonjhar District**




SCHEME FOR PLANTING OF DROUGHT HARDY PLANT SPECIES AND SOWING OF SEEDS WITHIN MINING LEASE TO ARREST SOIL EROSION

The ministry of Environment & Forest, Govt. of India have granted Stage-I approval vide letter No F.No.8-17/19976-FC (Pt.) dated 12th November,2010 to 5.1 Sq. Miles mining lease of Bolani Ore Mines of Steel Authority of India Ltd. (SAIL) subject to implementation of some conditions for environmental safeguards in the 5.1 Sq Miles Lease of Bolani Ores Mine, at present only 392.8 ha (30%) out of 1321.45 ha leasehold area has been utilized. During the 2nd lease renewal period, the existing mining area will be expanded further. Hence , to prevent the soil erosion as well as to increase the vegetation cover for restoring the area, plantation and sowing of seeds are required under the following potential places within the mining lease area :

- OB Dump Area: on the dump surface & dump slope
- Permanent Dump Slope
- Permanent Rock Slope, which is due to end of mining and advancement of the quarry to the ore boundary
- Intermediate areas within the lease which is non-mineralized and spaces between the infrastructures
- Avenues around approach roads & haul Roads
- Temporary roads created in the mine while development of the mine which is susceptible to air born dust and hence to suppress the dust plantation of high canopy trees are required.

Existing Practice for Plantation in the mine:

As per the regular practice followed in the mine, principle of minimum standing land is followed i.e. except for the active quarry faces; the exposed surface is undertaken for the plantation immediately. The photograph below shows the biological reclamation undertaken in the dump area of D-area.



Futuristic Plan during the lease renewal period:

Planning for plantation is done keeping the following objective:

- Compensate the damage to vegetation due to setting up and operation of the mine.
- Prevent the spread of fugitive dust generated due to mining and allied activities.
- Attenuate noise generated by the mine.
- Reduce soil erosion.
- Help stabilize the slope of external over-burden dumps.
- Increases green cover and improve aesthetics.
- Attract animals to re-colonies the area when the mine is abandoned.

Green belt and afforestation will be carried inside the mine lease area to restore and increase the green cover of the region. Progressive Green belt development and plantation in and around the mining complex shall continue to improve the control of soil erosion. Progressive green belt development and plantation in the available areas will be carried out in a phase wise manner till end of work. Saplings will be planted at the rate of 1600 trees /ha in block plantation mode in external/internal dumps and backfilled areas and in other areas & green belt. Stretches of un-worked areas in the lease area, which will not be covered by any activity, will also be selected for afforestation. Plantation will commence there from the initial years of the excavation and plantation will be expanded in such areas in progressive stages. Bolani Ores Mines has already carried out plantation on some of the dumps, quarries, vacant areas and township.

Attempts will be made for plantation of drought resistant plant such as *Jatropha Curcas* and grass like *Vetiveria Zizanioides*, will be selected for degraded lands, which will improve the environment and supply raw material for local communities for some economic benefits. Plantation of Agave will be undertaken along toe of hill slopes . These will be grown as a boundary fence or live hedge and can be used to reclaim eroded areas. The species for green belt development will be selected in consultation with the State Forest Department.

339.38 hecatres the unutilised intermediate forest lands included in diversion proposal and 76.1 hecatres safety zone around the ML boundary will be considered for undertaking plantation activities . A map showing the proposed phase wise plantation activities in the intermediate



areas is enclosed in Annexure - III. Phase wise plantation activities on the OB dumps and excavated / mined out areas are dealt in the reclamation plan .

The year wise afforestation program for Bolani Ores Mines as per the Environmental Management Program is given in Table as follows:

PHASE WISE AFFORESTATION PROGRAM

Year	Area of plantation over unutilized lands in Hectares (Map is enclosed in Annexure – VI)	Area of plantation over mined out lands in Hectares	Plantation Mode
2011-2015	65.5 Ha		Block mode
2016-2030	350 Ha		Block mode
Post mining plantation by the end of the work	-	680.0 Hectares	Block mode
TOTAL	415.5 Ha	680.0 Hectares	1095.50 Ha

SAIL mines in the Singhbhum – Bonai- Keonjhar region has taken the experimental plantation on the dump slopes of Vetiver (Nilgiri Species) in consultation with IIT Kharagpur. It is proposed to take the extensive plantation of Vetiver on the dump slopes for stablisaion and moisture conservation. Bolani Ores Mines is also in consultation process with IIT Kharagpur for field trial of Vetiver technology for erosion and sedimentation control from the old fines dumps and OB dumps. The communications in this regard is enclosed in **Annexure-V** .

The plantation program for the first five years is given as follows

Planation details	Quantity
Plantation of miscellaneous forest species in consultation with forest department	65.5 hecatres
Agave Plantation Along contours and hill slopes	2500 mts
Plantation of vetiveria on OB / fines dump slopes	5000 sq m

Based on the guidelines and as per the discussion with the State Forest Department, it is proposed to plant the saplings at the rate of 1600 trees/ ha. For the stretches of un-worked



areas in the lease area which will not be covered by any activity and is proposed to be selected for afforestation. In these areas, plantation shall commence from the initial years of the excavation and plantation shall be expanded in such areas in progressive stages.

CHOICE OF SPECIES :

The choice of species will be based on the following parameters : (i) Drought hardy, (ii) it should prevent soil erosion. Selection of the plant species shall be based on the inventory of the local forest species and as per the suggestion of the State Forest Department. Some soil binding grasses will be introduced . The grasses proposed are stylos (*Stylosanthes scabra*), Napier (*Pennisetum purpureum*), Para (*Brachiaria mutica*) etc. . The shrubby stylos are hardy plants. Plant species suitable for plantation should not only be able to flourish in the area but must also have rapid growth rate, evergreen habit, large crown volume and small / pendulous leaves with smooth surfaces. All these traits are difficult to get in a single species. Therefore a combination of these is sought while selecting trees for green belt / vegetation cover.

METHODOLOGY

It is proposed to plant the Saplings in pits at about 2.5 m intervals along contours so that the tree density is about 1600 trees per ha. The pits shall be filled with a mixture of good quality soil and organic manure (cow dung, agricultural waste, kitchen waste). Since, tests on the soil of the lease area have shown availability of phosphorus, a limiting nutrient, is low, phosphoric fertilizers shall also be added. The saplings shall be planted just after the commencement of the monsoons to ensure maximum survival. The species selected for plantation must be locally growing varieties with fast growth rate and ability to flourish even in poor quality soils. The species for green belt development will be selected in consultation with the State Forest Department.

Plantation on the large overburden dumps cannot start till dumping activities have ceased at least in a part of the dump and the site is prepared for plantation. Once dumping is completed, a path will be cleared to the designated area so that the basic inputs (water, manure, and seedlings) can be carried up to the site. Next, a layer of top soil has to be spread over the area and roughly leveled. Grass seeds / seedlings will be planted on the soil layer to stabilize the soil. Trenches of 45 cm X 45 cm will be dug on the flat top of the dumps and the excavated material used to form a bund on the dip side of the trenches to trap maximum water in the trenches



during rains. 60 cm X 60 cm pits will be dug in the contour trenches at 2-3 m intervals. The pits will be filled with a mixture of top-soil, organic manure and phosphoric fertilisers. Saplings will be planted in these pits once monsoon has commenced to ensure maximum survival of the saplings.

Acacia mangium is widely used in the mining industry for rehabilitation of the waste dumps as it is a drought resistant species and binds the sterile mine waste consisting of lateritic strata. Like many other legumes, it is able to fix nitrogen in the soil. Initially hardy pioneering species, *Acacia mangium* will be planted to help build up the soil. Subsequently these will be replaced by species such as *Azadirachta indica*, *Annona squamosa*, *Lucaena leucocephala*, *Zizyphus mauritiana* etc.

Plantation on slope of the dumps will commence as soon as the first bench is ready. The terraces on the slopes will be sloped inward. 60 cm X 60 cm pits will be dug at 1.5 m intervals and filled with a mixture of top soil and organic manure. Before the commencement of the monsoon the slopes and terraces will be covered with a layer of soil and sprinkled with water. Just before the commencement of the monsoon, seeds of grasses and small shrubs will be sprinkled on the soil covering of the dump slopes or seedlings of such plants will be planted on the slopes. Tree species suggested for plantation on the dump slopes are the same as those suggested for dump tops.

Post Plantation Care:-

Prescribed Post Plantation care shall be adopted to ensure maximum survival of the plants. Funds for maintenance of the plants for the first five years after the plantation shall be kept. Plantation care such as immediately after planting the seedlings, watering will be done. Further watering will depend on the rainfall. In the dry seasons watering will be regularly done especially during March to June. Watering in one year planted saplings will be more frequent (thrice a week). Manuring will be done using organic manure (animal dung, agricultural waste, kitchen waste, etc.). Younger saplings will be surrounded with tree guards. Diseased and dead plants will be uprooted and destroyed and replaced by fresh saplings. Growth / health and survival rate of saplings will be regularly monitored and remedial actions will be undertaken as required.



Pre-planting and Planting Operation

Different operations those will be taken up for plantation are as follows:

i) Raising of nursery:

Seedling required for plantation shall be raised in a temporary nursery nearer to the plantation site and perennial water sources. Nursery work will be started one year before the year of plantation so that second year seedling will be available for plantation. Teak, Neem, Bija, Mahul stumps and bamboo rhizomes shall be collected from Brahmani nursery at Bonai. For other species, seeds shall be collected from plus trees and should be treated before dibbling to Polythene bag. The seedling should be raised 20% extra besides the actual requirement to compensate the casualties. Standard nursery practice will be followed for raising such polythene bag nursery.

ii) Alignment and pitting

Alignment and pitting will be taken up in the month of March-April, Pits of size 30cm X 30cm X 30cm will be dug maintaining a spacing of 2.5mtr X 2.5mtr.

iii) Actual Planting

The seedling will be planted in the dug out pits of size 30cm X 30cm X 30cm with spacing of 2.5mtr X 2.5mtr. Plantation should be taken up after first regular shower of monsoon and should be completed by the end of July. Species shall be planted as per suitability of the soil condition. NPK fertilizer @ 30gms per plant should be given as basal dosage. Anti-termite insecticide should also be applied to each pit while planting. Casualty if any noticed will be replaced with the excess seedling raised for the purpose. During second year also casualty replacement will be done for which seedling shall be raised.

iv) Weeding, Soil working & Manuring :

For establishment and better growth of the planted seedlings, weeding, soil working and manuring are necessary. It is prescribed to carryout two weedings, soil working and manuring during first year and second year of plantation and one weeding and soil working during third year. During the first year and second year first weeding and manuring shall be carried out during August-September and the second one during October-November. First weeding shall be



an area weeding and the second will be of strip weeding. The weeding of third year will be an area weeding which will be carried out during August.

After each weeding, soil working will be done around each plant at radius of 0.5mtr and manuring of each plant will be done @30gms of NPK per plant.

v) Application of insecticides:

The plantation site after planting good healthy seedling may cause influx of insects, which usually eat and damage the tender leaves and shoots of the plants. To get rid of such insects attack application of the insecticides will be taken up in required doses at desired intervals. Spraying of insecticides shall be done preferably in a sunny day before forenoon.

vi) Fire line tracing and Maintenance:

Fire causes heavy losses to the forest during fire session. To prevent incidence of fire, the area shall be divided in to suitable blocks by tracing fire lines. Boundaries of the plantation patches and these block lines will be scrapped of forest growth to a width of 3.0 mtr during February-March and the cut back materials and the dry leaves stacked along these lines will be burnt under strict supervision. This operation shall be carried out for three years.

Post Plantation Care:-

Immediately after planting the seedlings, watering will be done. Further watering will depend on the rainfall. In the dry seasons watering will be regularly done especially during March to June. Watering in one year planted saplings will be more frequent (thrice a week). Manuring will be done using organic manure (animal dung, agricultural waste, kitchen waste, etc.). Younger saplings will be surrounded with tree guards. Diseased and dead plants will be uprooted and destroyed and replaced by fresh saplings. Growth / health and survival rate of saplings will be regularly monitored and remedial actions will be undertaken as required.

INSPECTION, MONITORING AND EVALUATION

For successful implementation of the above Mitigative measures, intensive inspection and technical guidance from concerned technical wing is required . Sufficient fuel/ conveyance charges for technical experts shall be provided by the user agency for proper execution of these programmes.



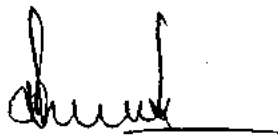
14. EXECUTING AGENCY

In all the cases, the works shall be executed by the User Agency having specialised departments headed by qualified persons with outsourced man and machinery as and where required . To facilitate this, the user agency shall establish it's own executing and supervision cells along with required infrastructural facilities . In order to maintain the quality of work, in house supervision through competent personnel shall be provided. The entire work shall be carried out through close coordination with the Forest Department.

15. REQUIREMENT OF FUNDS

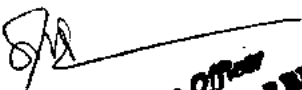
The total cost of the implementation of Plantation Project will be **Rs 48.72 lakhs** as detailed in **Annexure-IV** . For implementation of the above Plantation Project, the above expenditure will be made over the next five years period . Therefore, budget provision of **Rs 48,72,200.00** lakh will be kept by the user agency for implementation of the above plantation program a period of next five years. This budget will subject to increase in amount considering the increase in materials and labour charges. The tentative annual expenditure planned for the next five year for the implementation of the above plantation programm is given in the following table :

Sl. No.	Description	Amount
1.	1 st year plan of expenditure	Rs 17.35 lakhs
2.	2 nd year plan of expenditure	Rs 7.85 Lakhs
3.	3 rd year plan of expenditure	Rs 7.85 Lakhs
4.	4 th year plan of expenditure	Rs 7.85 Lakhs
5.	5 th year plan of expenditure	Rs 7.82 Lakhs
	Total:-	Rs 48.72 Lakhs


(N P PRAMANIK)
GENERAL MANAGER
SAIL-BOLANI ORES MINES

Technically
Approved.


Regional Chief Conservator of Forests
Rourkela Circle


Forest Range Officer
BAREIL RANGER, BAREIL

COUNTERSIGNED


Divisional Forest Officer
Keonjhar Division

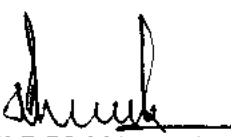
14. EXECUTING AGENCY

In all the cases, the works shall be executed by the User Agency having specialised departments headed by qualified persons with outsourced man and machinery as and where required . To facilitate this, the user agency shall establish it's own executing and supervision cells along with required infrastructural facilities . In order to maintain the quality of work, in house supervision through competent personnel shall be provided. The entire work shall be carried out through close coordination with the Forest Department.

15. REQUIREMENT OF FUNDS


The total cost of the implementation of *Plantation Program* will be **Rs 48.72 lakhs** as detailed in **Annexure-IV** . For implementation of the above *Plantation Program*, the above expenditure will be made over the next five years period . Therefore, budget provision of **Rs 48,72,200.00** lakh will be kept by the user agency for implementation of the above plantation program a period of next five years. This budget will subject to increase in amount considering the increase in materials and labour charges. The tentative annual expenditure planned for the next five year for the implementation of the above plantation programm is given in the following table :

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5.	5 th year plan of expenditure	Rs 7.82 Lakhs
	Total:-	Rs 48.72 Lakhs


(N P PRAMANIK)
GENERAL MANAGER
SAIL-BOLANI ORES MINES


Forest Range Officer
BABUL RANGEL, BARBUD

COUNTERSIGNER


Divisional Forest Officer
Keonjhar Division

ANNEXURE-I

**COST ESTIMATE FOR BLOCK PLANTATION OF 1600 SEEDLINGS/ HECT.
AT 2.5 m X 2.5 m SPACING.**

1	Name of the Plantation	Block Plantation
2	No. of Seedlings to be planted	1600 Nos / Hect.
3	Spacing to be adopted	2.5 m x 2.5 m
4	Size of Pits	30cm x 30cm x 30cm.
5	Wage rate	Rs.90.00 / manday
6	Species to be planted	Bamboo, Sisoo, , Neem and other miscellaneous species .
7	The user agency will pay the wage rate as and when enhanced.	

A. NURSERY COST FOR 1600 SEEDLINGS:

Sl No	Name of activity	Period of activity	Mandays	Labour rate @ Rs.90/-	Material Cost	Total
1	2	3	4	5	6	7
1	Cost of seeds including Transport	Mar-April	-	-	120.00	120.00
2	Preparation of nursery beds (40' x 4') by getting good earth and mixing cow dung manure	April	3	270.00	-	270.00
3	Treatment of seeds (alternate soaking and drying) and dibbling of treated seeds on beds	April-May	3	270.00	-	270.00
4	Cost of watering the beds	May-June	26	2340.00	-	2340.00
5	Weeding of beds	Aug-Sept	4	360.00	-	360.00
6	Contingencies		3	270.00	-	270.00
7	Fencing of Temporary nursery site	Dec-Jan	1.5	135.00	-	135.00
8	Cost of fencing materials		-	-	85.00	85.00
9	Cost of polythene bags (9" x5": -125 gauge)*		-	-	365.00	365.00
10	Cost of soil and CDM		-	-	600.00	600.00
11	Cost of Chemical Fertilizer (8 kg. @ Rs.25/-)		-	-	200.00	200.00
12	Cost of insecticide		-	-	50.00	50.00
13	Preparation of soil mixture (Soil, Sand, CDM, 1:1:1)	Jan-Feb	2	180.00	-	180.00
14	Filling of Polythene bags and setting into beds	Jan-Feb	5	450.00	-	450.00
15	Preparation of stumps.	Mar-April	5	450.00	-	450.00
16	Transportation of stumps to temp. nursery	Mar-April	2	180.00	-	180.00

(* SAIL-BOM has permanent beds for polypots)



Sl No	Name of activity	Period of activity	Mandays	Labour rate @ Rs.90/-	Material Cost	Total
1	2	3	4	5	6	7
17	Transplanting the stumps to polythene bags & dibbling of treated seeds	Mar-April	3	270.00	-	270.00
18	Watering the polypots	Mar-June	12	1080.00	-	1080.00
19	Weeding, grading & sorting of polypots.	April-May	4	360.00	-	360.00
20	Application of insecticides/ chemical manure in nursery	April-May	1	90.00	-	90.00
21	Contingencies.				150.00	150.00
Total			74.5	6705.00	1650.00	8265.00

B. ADVANCE WORK (PRE-PLANTING OPERATION):

1	Survey, Demarcation and Pillar Posting	April	2	180.00		180.00
2	Site Preparation	April	8	720.00		720.00
3	Alignment and stacking of pits	May	2	180.00		180.00
4	Digging of pits of 30 Cum	May	40	3600.00		3600.00
5	Contingencies				150.00	150.00
Total			52	4680.00	150.00	4830.00

C. FIRST YEAR PLANTING :

1	Transportation of seedlings with poly-pots	July	5	450.00	-	450.00
2	Planting including casualties replacement, manuring (Basal dose) & insecticide application	July-Aug	16	1440.00	-	1440.00
3	Cost of fertilizer	Jul-Aug			1320.00	1320.00
4	First Weeding(complete weeding)	Aug-Sept	7	630.00	-	630.00
5	Manuring in 2 doses of 15g each in 15days duration	Sept-Oct	5	450.00	-	450.00
6	Second weeding (complete weeding)	Oct-Nov	7	630.00	-	630.00
7	Soil working (50 cms radius around the plant)	Oct-Nov	7	630.00	-	630.00
8	Fire tracing and inspection path	Jan-Feb	3	270.00	-	270.00
9	Soil conservation measures in the form of staggered rubble stone check dams	Jan-Feb	10	900.00	-	900.00
10	Honey Comb structure for soil conservation for 400 plants in a hectare	Oct-Nov	50	4500.00	1000.00	5500.00
11	600 percolation pits 45cm3@25 pits per mandays		24	2160.00	-	2160.00
12	100 contour trenches (2mx0.5mx0.5m) per ha.		45	4050.00	-	4050.00
13	Entry point activities in shape of community articles like mats etc.				1000.00	1000.00



SI No	Name of activity	Period of activity	Mandays	Labour rate @ Rs.90/-	Material Cost	Total
1	2	3	4	5	6	7
14	Watch and Ward	Oct-Mar	7	630.00	-	630.00
15	Contingency				200.00	200.00
Total (1st Year)			186	16740.00	3520.00	20260.00

D. SECOND YEAR – MAINTENANCE :

1	Casualty Replacement with nursery cost	Mar-Jul	12	1080.00		1080.00
2	Application of fertilizer	Aug-Sept	4	360.00		360.00
3	Cost of fertilizer	Aug-Sept			600.00	600.00
4	Weeding (complete weeding)	Aug-Sept	6	540.00		540.00
5	Soil working (50cm radius around the pit)	Oct-Nov	7	630.00		630.00
6	Fire tracing (2m wide fire line over 400mt. Long)	Mar-June	3	270.00		270.00
7	Entry point activities				500.00	500.00
8	Watch and ward	Whole yr.	15	1350.00		1350.00
9	Contingency				150.00	150.00
Total (2nd Year)			47	4230.00	1050.00	5280.00

E. THIRD YEAR – MAINTENANCE:

1	Weeding & application of Fertilizer	Aug-Sept	7	630.00		630.00
2	Cost of fertilizer	Aug-Sept			600.00	600.00
3	Soil Working (50 Cm radius around the pit)	Oct-Nov	7	630.00		630.00
4	Fire tracing (2m. wide fire line Over 400m long)	Mar-Jun	3	270.00		270.00
5	Entry point activities				195.00	195.00
6	Watch and Ward	Whole yr.	15	1350.00		1350.00
7	Contingency				150.00	150.00
Total (3rd Year)			32	2880.00	945.00	3825.00

F. FOURTH YEAR – MAINTENANCE

1	Weeding & soil working (50cm around each plant)	Oct-Nov	7	630.00		630.00
2	Fire tracing(2mtr wide fire line over 400mtr long)	Mar-Jun	3	270.00	-	270.00
3	Watch & ward	Whole yr.	15	1350.00		1350.00
4	Contingency				150.00	150.00
Total (4 th Year)			25	2250.00	150.00	2400.00


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G. FIFTH YEAR – MAINTENANCE

Sl No	Name of activity	Period of activity	Mandays	Labour rate @ Rs.90/-	Material Cost	Total
1	2	3	4	5	6	7
1						
2	Fire tracing(2mtr wide fire line over 400mtr long)	Mar-Jun	3	270.00	-	270.00
3	Watch & ward	Whole yr.	15 22	1980.00		1980.00
4	Contingency			1350.00		1350.00
Total (5 th Year)			25	2250.00	150.00	150.00
GRAND TOTAL			441.5	39735.00	7725.00	2400.00
						47460.00

ABSTRACT

Nursery.	Rs. 8265.00 / 65.5 Ha	Rs 5,41,357.50
Advance Work.	Rs 4830.00 / 65.5 Ha	Rs 3,16,365.00
Plantation 1 st year.	Rs.20260.00 / 65.5 Ha	Rs 13,27,030.00
Maintenance 2 nd year.	Rs 5480.00 / 65.5 Ha	Rs 3,58,940.00
Maintenance 3 rd year.	Rs. 3825.00 / 65.5 Ha	Rs 2,50,537.50
Maintenance 4 th year.	Rs. 2400.00 / 65.5 Ha	Rs 1,57,200.00
Maintenance 5 th year.	Rs. 2400.00 / 65.5 Ha	Rs 1,57,200.00
Total	Rs. 47,460.00 / 65.5 Ha = Rs. 31,08,630.00 (Rupees Thirty one lakhs eight thousand six hundred thirty only)	


(N P PRAMANIK)
 GENERAL MANAGER
 SAIL-BOLANI ORES MINES

ANNEXURE-II

COST NORM FOR AGAVE PLANTATION

(FOR 5 ROWS & 40 mts)

Wage Rate: Rs. 90.00

FIRST YEAR OPERATION				
Sl.No	Name of the Work	Man Day	Material Rs.	Total Cost in Rs
1	Site clearance ,alignment and stacking	2	-	180
2	Cost of lining materials including transportation.	-	200	200
3	Digging of pits and application of line.	6	-	540
4	Cost of 200 Pc. Including transportation.	-	1000	1000
5	Carriage and planting	2	-	180
6	Soil working and application of fertilisers(twice)	8	-	720
7	Cost of fertiliser	-	200	200
8	Contingency	-	200	200
	Total	18	1600	3220
2 nd YEAR OPERATION				
9	Casualty replacement (20%) including cost of suckers & pitting.	2	200	380
10	Weeding and application of fertilisers	6	-	540
11	Cost of fertilisers and insecticides	-	150	150
12	Total	8	350	1070
3 rd YEAR OPERATION				
13	Weeding, soil working and application of fertilisers.	6	-	540
14	Cost of fertilisers and insecticides	-	150	-
15	Plant protection measures including fertiliser cost.	-	150	-
	Total	6	300	840
	Grand Total			5310

Cost for Agave fencing with five rows 01 Kms = $\frac{5310}{40} \times 1000 = \text{Rs.1, 28,250/-}$

Cost for Agave fencing with five rows 2.5 Kms = $\text{Rs.1, 28,250/-} \times 2.5 = \text{Rs 3,20,625/-}$



(N P PRAMANIK)
GENERAL MANAGER
SAIL-BOLANI ORES MINES

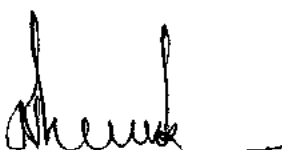
ANNEXURE-III

Estimate for vetiveria plantation on the OB dump slopes for 5,000 sq meter

1. Cost of Planting vetiveria including procurement of seeds , micronutrients and development of seedlings including institutional overheads as per Budgetary offer of IIT Kharagpur

Rs 9.5 Lakhs

(* Copy of the budgetary offer of IIT is enclosed in Annexure -V)




(N P PRAMANIK)
GENERAL MANAGER
SAIL-BOLANI ORES MINES

ANNEXURE-IV**TOTAL COST OF THE PROJECT**

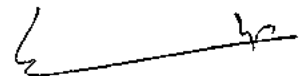
Sl.No	Description of the work	Funds Required (in Rs)
1	Afforestation over degraded and barren forest lands including safety zone inside lease area	Rs. 31,08,630.00
2	Plantation of Agave for 2500 mtrs	Rs 3,20,625.00
3.	Plantation of vetiveria zizinioids on slopes of OB/Fines dumps	Rs 9,50,000.00
4.	Contingency including supervision charges(L/S)	Rs. 50,000.00
	TOTAL	Rs 44,29,255.00
	Price escalation @ 10%	Rs 4,42,925.50
	Grand Total	Rs 48,72,180.50 = Rs 48,72,200.00

In case of any increase in the man, material and machinery charges , provision for additional funds will be made as and when required .


(N P PRAMANIK)
GENERAL MANAGER
SAIL-BOLANI ORES MINES


Forest Range Officer
BARIH, RANGE, BARUDA

COUNTERSIGNED

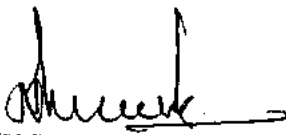

Divisional Forest Officer
Keonjhar Division

ANNEXURE-IV

TOTAL COST OF THE PROJECT

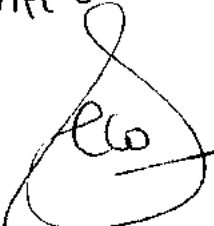
Sl.No	Description of the work	Funds Required (in Rs)
1	Afforestation over degraded and barren forest lands including safety zone inside lease area	Rs. 31,08,630.00
2	Plantation of Agave for 2500 mtrs	Rs 3,20,625.00
3.	Plantation of vetiveria zizinioids on slopes of OB/Fines dumps	Rs 9,50,000.00
4.	Contingency including supervision charges(L/S)	Rs. 50,000.00
	TOTAL	Rs 44,29,255.00
	Price escalation @ 10%	Rs 4,42,925.50
	Grand Total	Rs 48,72,180.50 = Rs 48,72,200.00

In case of any increase in the man, material and machinery charges , provision for additional funds will be made as and when required .


(N P PRAMANIK)
GENERAL MANAGER
JAIL-BOLANI ORES MINES


Forest Range Officer
BARDIL RANGH. BARBIS

Technically
Approved


Regional Chief Conservator of Forests
Rourkela Circle

COUNTERSIGNED


Divisional Forest Officer
Keonjhar Division

Annexure -I

REVISED FINANCIAL OUTLAY OF SCHEME FOR PLANTING OF DROUGHT HARDY PLANT SPECIES AND SOWING OF SEEDS WITHIN MINING LEASE TO ARREST SOIL EROSION IN COMPLIANCE TO CONDITION NO - 2-IV(B) OF STAGE-I FOREST CLEARANCE GRANT ORDER (WAGE RATE - Rs 125 PER MAN DAY)

COST ESTIMATE FOR BLOCK PLANTATION OF 1600 SEEDLINGS/ HECT. AT 2.5 m X 2.5 m SPACING.

1	Name of the Plantation	Block Plantation
2	No. of Seedlings to be planted	1600 Nos / Hect.
3	Spacing to be adopted	2.5 m x 2.5 m
4	Size of Pits	30cm x 30cm x 30cm.
5	Wage rate	Rs.125.00 / manday
6	Species to be planted	Bamboo, Sisoo, Neem and other miscellaneous drought hardy species.
7	The user agency will pay the wage rate as and when enhanced.	

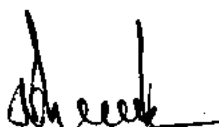
Sl. No.	Item of work	Mandays	Labour cost @ Rs.125	Material Cost (In Rs.)	Total Cost (In Rs.)
1	2	3	4	5	6
	0th Year (Advance work / Pre-planting)				
1	Survey, Demarcation & Pillar posting	2	250	0	250
2	Site preparation	12	1500	0	1500
3	Alignment & stacking of pits	2	250	0	250
4	Digging of pits (30 cm cube)	40	5000	0	5000
5	Nursery cost (one year old seeding) part	80	5000	5000	10000
6	Contingencies & overheads	3	0	0	375
	Total =	139	12000	5000	17375
	1st year / Planting year/ Year of Creation				
7	Nursery cost (one year old seeding) balance	25	2625	500	3125
8	Carriage, planting, CR manuring, insecticide application	30	3750	0	3750
9	cost of insecticide & Fertilizer	24	0	3000	3000
10	1st Weeding (Complete weeding)	10	1250	0	1250
11	Manuring	5	625	0	625
12	2nd Weeding (Complete weeding)	6	750	0	750
13	Soil working (50cms, Radius around plants)	8	1000	0	1000
14	Fire Line Tracing & inspection path	3	375	0	375
15	Soil conservation measures in the form of staggered trenches of 2m.lx 50 cm D& drainage line treatment, percolation pits etc.	10	1250	0	1250
16	Watch & ward and brush wood/ live fencing at 15% length of periphery to prevent cattle entry	15	1875	0	1875
17	Contingencies & overheads	4	500	0	500
	Total =	140	13500	3500	17500

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	2nd Year Maintenance				
18	Casualty replacement with nursery cost	12	1500	0	1500
19	Weeding (Complete weeding)	8	1000	0	1000
20	Application of Fertilizer	4	500	0	500
21	Cost of fertilizer	12	0	1500	1500
22	Soil working (50cms, Radius around plants)	7	875	0	875
23	Fire Line Tracing (2m. Wide fire line over 400m long)	3	375	0	375
24	Watch and ward and fence maintenance	18	2250	0	2250
25	Contingencies & overheads	3	375	0	375
	Total =	67	6500	1500	8375
	3rd Year Maintenance				
26	Weeding & Pruning & application of fertilizer	8	1000	0	1000
27	Cost of Fertilizer	12	1500	0	1500
28	Soil working (50 cms, Radius around plants)	8	1000	0	1000
29	Fire line tracing (2mt. wide fireline over 400 mt. long)	3	375	0	375
30	Watch & ward and fence maintenance	18	2250	0	2250
31	Contingencies & overheads	3	375	0	375
	Total =	52	5000	1500	6500
	4th Year Maintenance				
32	Weeding & Pruning	8	1000	0	1000
33	Watch & Ward and fence maintenance	18	2250	0	2250
34	Fire line tracing (2mt. wide fireline over 400 mt. long)	3	375	0	375
35	Contingencies & overheads	3	375	0	375
	Total =	32	4000	0	4000
	5th Year Maintenance				
36	Weeding & Pruning	8	1000	0	1000
37	Watch & Ward and fence maintenance	18	2250	0	2250
38	Fire line tracing (2mt. wide fireline over 400 mt. long)	3	375	0	375
39	Contingencies & overheads	3	375	0	375
	Total =	32	4000	0	4000
	6th Year Maintenance				
40	Weeding & Pruning	8	1000	0	1000
41	Watch & Ward and fence maintenance	18	2250	0	2250
42	Fire line tracing (2mt. wide fireline over 400 mt. long)	3	375	0	375
43	Contingencies & overheads	3	375	0	375
	Total =	32	4000	0	4000
	Grand Total =	494	11500	47500	61750

ABSTRACT FOR @ 1600/- SEEDLINGS PER HA.

Year	Labour	Material	Contingencies	Total
0 th Year	12000.00	5000.00	375.00	17375.00
1 st . Year	13500.00	3500.00	500.00	17500.00
2 nd . Year	6500.00	1500.00	375.00	8375.00
3 rd . Year	4625.00	0	1875.00	6500.00
4 th Year	3625.00	0	375.00	4000.00
5 th Year	3625.00	0	375.00	4000.00
6 th Year	3625.00	0	375.00	4000.00
Total	47,500.00	10,000.00	4,250.00	61,750.00
	380	80	34	494
Additional incentive(3%) for Fr/Fg/ Proposed for more than 80% survival and verygood growth during 4th year of maintenance as per recommendations of DFO and RCCF				1853.00
Additional EPA expenses if implemented through VSS at the rate of Rs 1000/- in 0th year , Rs 2000 in 1st Year, Rs.1500 in 2nd Year, Rs .500/- in 3rd year Rs 500/-in 4th Year Rs.500 in 5th Year and Rs 500 in 6th year				6500.00
Total Norm per Hectare in Non JFM mode with incentives				70103.00
Total cost for plantation over 65.5 Hectares	Rs. 70,103.00 /- x 65.5 Ha = Rs. 45, 91, 746.5 I.e Rs. 45, 91, 747.00 (Forty five Lakhs ninety one thousand seven hundred forty seven only)			



GENERAL MANAGER
SAIL-BOLANI ORES MINES

ANNEXURE-II

COST NORM FOR AGAVE PLANTATION
(FOR 5 ROWS & 40 mts) Wage Rate: Rs.125.00, Seven years maintenance

Sl.No	Name of the Work	Man Day	Material Rs.	Total Cost In Rs
0th Year Operation				
1	Site clearance ,alignment and stacking	2	-	250
2	Cost of lining materials including transportation.	-	278	278
3	Digging of pits and application of line.	6	-	750
4	Cost of 200 Ac. including transportation.	-	1389	1389
5	Carriage and planting	2	-	250
6	Soil working and application of fertilisers(twice)	8	-	1000
7	Cost of fertiliser	-	278	278
8	Contingency	-	278	278
	Total	18	2223.00	4473.00
1st YEAR OPERATION				
1	Casualty replacement (20%) including cost of suckers & pitting.	2	278	528
2	Weeding and application of fertilisers	6	-	750
3	Cost of fertilisers and insecticides	-	208.00	208
	Total	8	350.00	1486
2nd YEAR OPERATION				
13	Weeding, soil working and application of fertilisers.	6	-	750
14	Cost of fertilisers and insecticides	-	208	208
15	Plant protection measures including fertiliser cost.	-	208	208
	Total	6	416	1166
3rd YEAR OPERATION				
1	Weeding, soil working and application of fertilisers.	7	-	875
2	Cost of fertilisers and insecticides	-	243	243
3	Plant protection measures including fertiliser cost.	-	243	243
	Total	7	486	1361
4th YEAR OPERATION				
1	Weeding, soil working and application of fertilisers.	7	-	875
2	Cost of fertilisers and insecticides	-	243	243
3	Plant protection measures including fertiliser cost.	-	243	243
	Total	7	486	1361
5th YEAR OPERATION				
1	Weeding, soil working and application of fertilisers.	8	-	1000
2	Cost of fertilisers and insecticides	-	278	278
3	Plant protection measures including fertiliser cost.	-	278	278
	Total	8	556	1556
6th YEAR OPERATION				
1	Weeding, soil working and application of fertilisers.	8	-	1000
2	Cost of fertilisers and insecticides	-	278	278
3	Plant protection measures including fertiliser cost.	-	278	278
	Total	8	556	1556
	GRAND TOTAL	62	5209.00	12959.00

Cost for Agave fencing with five rows 01 Kms= $\frac{12959}{40} \times 1000 = \text{Rs.} 3,23,975/-$


GENERAL MANAGER
SAIL-BOLANI ORES MINES

ANNEXURE-III

(A) Esitmate for vetiveria plantation on the OB dump slopes for 5,000 sq meter

1. Cost of Planting vetiveria including procurement of seeds , micronutrients and development of seedlings including institutional overheads as per Budgetary offer of IIT Kharagpur (based on offer of IIT Kharagpur) :
Rs 10 Lakhs

(B) Esitmate for sowing Seed within the lease area on degraded lands and on the OB dumps

Cost of grass seeding including procurement of seeds and broadcasting over degraded lands and on the OB dumps (@ 5kg / ha) 1000 kg per annum @ Rs 200.00 / kg for seven years

Rs 10 Lakhs


GENERAL MANAGER
SAIL-BOLANI ORES MINES

ANNEXURE-IV

REVISED FINANCIAL OUTLAY OF SCHEME FOR PLANTING OF DROUGHT HARDY PLANT SPECIES AND SOWING OF SEEDS WITHIN MINING LEASE TO ARREST SOIL EROSION IN COMPLIANCE TO CONDITION NO - 2-IV(B) OF STAGE-I FOREST CLEARANCE GRANT ORDER

(WAGE RATE – Rs 125 PER MAN DAY) , SEVEN YEARS MAINTENANCE

TOTAL COST OF THE PROJECT

Sl.No	Description of the work	Funds Required (in Rs)
1	Afforestation in block plantation mode over degraded and barren forest lands including safety zone inside lease area, Rs 61,750/- ha for 65.5 Ha	Rs. 45, 91, 747.00
2	Plantation of Agave for 2500 mtrs @ Rs.3, 23,975/- per km	Rs 8,09,937.50
3.	Plantation of vetiveria zizinoids on slopes of O8/Fines dumps and sowing of seeds on degraded lands within lease	Rs 20,00,000.00
4.	Contingency including supervision charges(L/S)	Rs. 70,000.00
5.	TOTAL	Rs 74,71,684.50
	Price escalation @ 10%	Rs 7,47,168.45
	SUB TOTAL	Rs 82,18,852.95
	10% amount to be paid to VSS for motivation	Rs 8,21,885.29
	GRAND TOTAL	Rs 90,40,738.24 = Rs 90.40 Lakhs

In case of any increase in the man, material and machinery charges , provision for additional funds will be made as and when required .


GENERAL MANAGER
 SAIL-BOLANI ORES MINES

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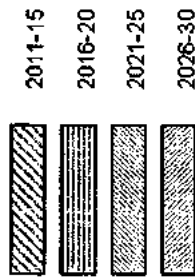
Technically
Approved

Regional Chief Conservator of Forests
Rourkela

Regional Chief Conservator of Forests
Rourkela Circle, Rourkela

29.08.2022

MAP SHOWING EXISTING & PROPOSED MINING
AREAS AND YEAR-WISE AFFORESTATION PLAN
INSIDE ML & GAP PLANTATIONS ALONGWITH
SMC WORKS WITHIN 100M FROM OUTER
PERIMETER OF ML

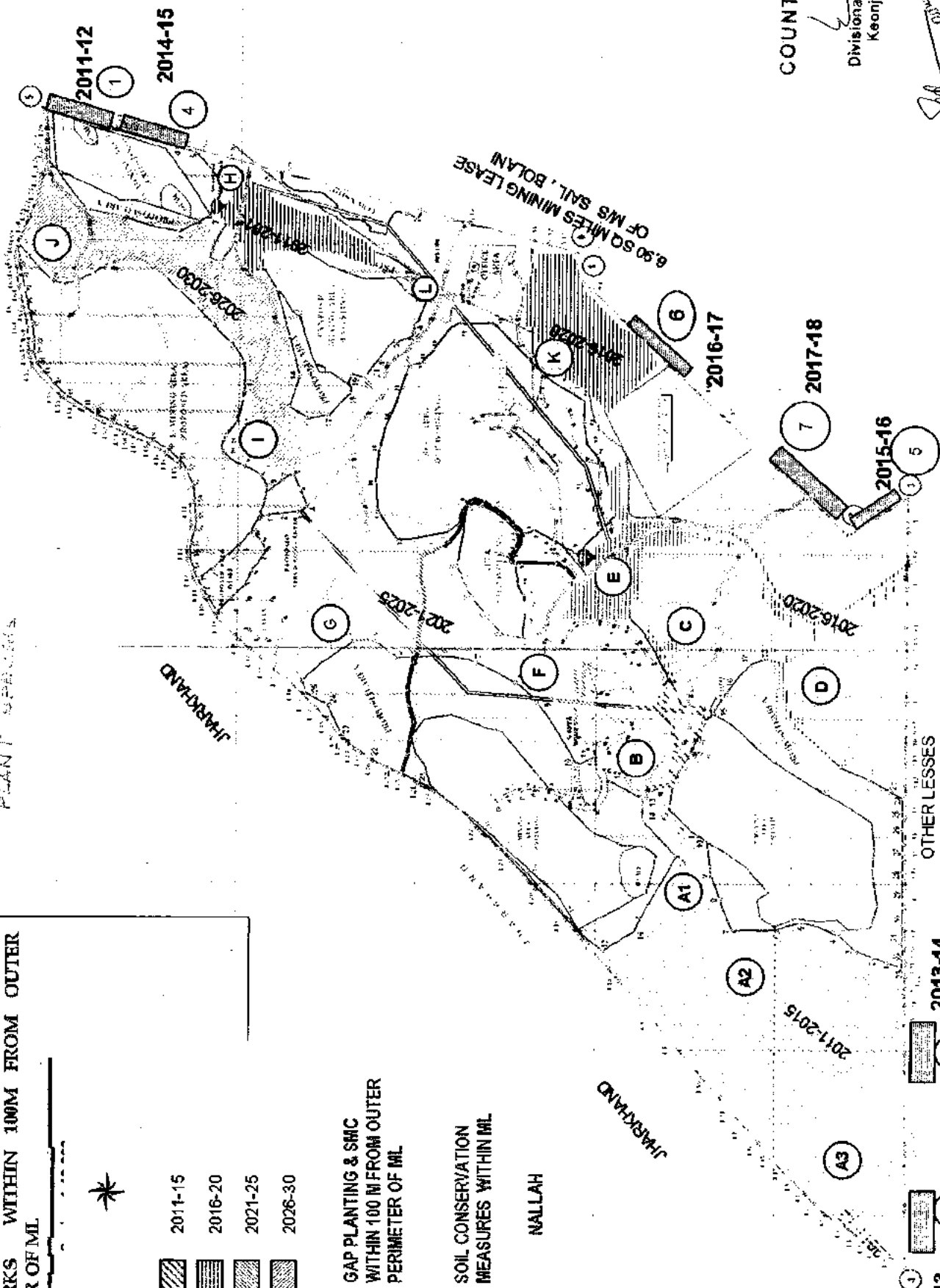


GAP PLANTING & SMC
WITHIN 100 M FROM OUTER
PERIMETER OF ML

1

A
SOIL CONSERVATION
MEASURES WITHIN ML

NALLAH



COUNTERSIGNED

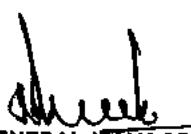
Divisional Forest Officer
Keonjhar Division

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Date: 15/07/2024
Page: 1 of 1

15. REQUIREMENT OF FUNDS (After revision of wage rate)

The total cost of the implementation of plantation and seed sowing program will be **Rs 90.40 lakhs** as detailed in **Annexure-IV** . For implementation of the above Plantation and seed sowing program program, the above expenditure will be made over the next seven years period . Therefore, budget provision of **Rs 90.40 Lakhs** will be kept by the user agency for implementation of the above plantation and seed sowing program a period of next seven years. This budget will subject to increase in amount considering the increase in materials and labour charges. The tentative annual expenditure planned for the next seven years for the implementation of the above plantation and seed sowing program is given in the following table :

Sl. No.	Description	Amount
1.	1 st year plan of expenditure	Rs 20.00 lakhs
2.	2 nd year plan of expenditure	Rs 20.0 lakhs
3.	3 rd year plan of expenditure	Rs 10.40 lakhs
4.	4 th year plan of expenditure	Rs 10.0 lakhs
5.	5 th year plan of expenditure	Rs 10.0 lakhs
6.	6 th year plan of expenditure	Rs 10.0 lakhs
7.	7 th year plan of expenditure	Rs 10.0 Lakhs
Total:-		Rs 90.40 Lakhs


 GENERAL MANAGER
 SAIL-BOLANI ORES MINES

Technically Approved

Technically
Approved

Regional Chief Conservator of Forests
 Regional Chief Conservator of Forests Circle, Rourkela
 Rourkela

29.08.2012

Annexure-VIII C

Scheme

For

**CONSTRUCTION OF CHECK DAMS, RETENTION WALL/TOE WALLS
TO ARREST SLIDING DOWN OF THE EXCAVATED MATERIALS
ALONG THE CONTOUR**

in compliance

to

Condition no – 2-IV(c) of Stage-I Forest Clearance grant Order

of

**Vide Letter No.8-17/1997-FC (pt.) Dated.12.11.2010
of Govt. of India, Ministry of Environment & Forests, New Delhi**

for

Diversion of 1152.58 Hects Forest land

**within 5.10 sq Miles ML of
Bolani Iron Ore Mine of M/s SAIL,
in Champua Subdivision of Keonjhar District**



1.0 INTRODUCTION:

The ministry of Environment & Forest, Govt. of India have granted Stage-I approval vide letter No F.No.8-17/19976-FC(Pt.) dated 12th November, 2010 to 5.1 Sq. Miles mining lease of Bolani Ore Mines of Steel Authority of India Ltd. (SAIL) subject to implementation of some conditions for environmental safeguards. One of the conditions i.e. condition No. 2 v(c) is to construct check dams, retention walls / toe walls to arrest sliding down of the excavated materials along the contour. In compliance to this condition a comprehensive scheme for construction of check dams, retention wall/toe walls to arrest sliding down of the excavated materials along the contour in 5.1 sq. miles mining lease of Bolani Ores Mines of SAIL which will be implemented in the due course of time.

2.0 OBJECTIVE OF THE SCHEME:

In this scheme, considering the topography and contours of the lease area, emphasis has been given to arrest sliding down of excavated materials along the contour by constructing check dams, retention walls / toe walls at specified locations in the mining lease. Locations are judiciously selected within the leasehold and plans are prepared. A Plan has been prepared by engaging our consultant M/s MECON, Ranchi for undertaking appropriate mitigative measures to arrest sliding down of the excavated material along the contour and minimize the impact on surface water body.

The Salient features of the above drainage management plan scheme are as follows:

1. The overall drainage planning has been done in such a manner which follows the existing pre mining drainage routing to the extent possible, maintaining the overall slope in the direction of pre mining flow direction so that run off distribution is not affected.
2. Garland drains have been planned on sides of quarries and external dumps (depending on contours). The garland drains shall be routed through catch pits and settling tanks to settle out suspended solids in the storm water. The clarified water will be discharged to natural water courses.
3. Small grasses and bushes in drains hold back solid particles from draining away. Small stone barriers across the drain will check water current and arrest solids.
4. Stone pitching will be made at suitable places to regulate water flow. Some of the drains which will serve for a long time shall be made pucca.
5. Settling pits and drains shall be cleaned regularly, especially during monsoons.
6. Outer side of the cross-check dams on the drainage lines shall be reinforced with easy to root vegetative non-browsable materials like *Jatropha*, *Vitex*, *Gliricidia*, *Boswellia* etc. On the inner side of the check dam etc. liberal broadcasting of seeds of species like *Anola*, *Acacia*, *Neem*, *Asan*, *Arjun*, *Bija*, *Karada*, *Dhaura* etc. shall be undertaken.

3.0 PROPOSED PLAN

The lease area in an iron ore formation generally exhibits uneven topography marked by ridges of moderate heights with intervening valleys and small mounds. The leasehold area lies on the slope of an escarpment running in the 5W-NE direction. Elevation of the lease area ranges from 920 m AMSL to 500 m AMSL. The top most part of the lease has a relatively gentle slope whereas midway the slope is steep. Inside the lease there are few peaks the highest of which are at 920 m AMSL near the western boundary and 870 m AMSL near the southern boundary of the lease. The existing and proposed ultimate depth of the working quarries is shown in the table below.

Sl. No.	Area/block	Adjoining ground level	Backfilled surface level	Ultimate pit bottom
1.	F area	840-860	865	715
2.	G area	860-880	875	790
3.	D area	500-540	520	452

Figures are in m AMSL

Due to the geological feature of the lease, the external dumps will be higher than the adjoining ground level. The materials from the slopes of these dumps are likely to flow during heavy rains and disturb the topography of its adjoining land, till it is completely stabilized by biological means. In order to curb this situation retaining walls of minimum one & half meter height has been planned all along the peripheral contour of the external dumps to arrest the possibility of material running down on the hill slopes. The case is also similar to those backfilled portions of the pit, which are cut at the edges by the prevailing topography in the neighborhood. Waste dumping has been planned in a manner such that backfilling can be maximized with a view to reclaim the degraded land as much as possible and at the same time minimizing external dumping. External dumping has been planned only when backfilling is not feasible. On completion of external dumping/ backfilling, top soil will be spread on the dumped material and water sprinkling on the soil will be carried out. Grasses will be planted on the soil. Subsequently, saplings of selected species of trees will be planted in soil filled pits on the stabilized dumps.

4.0 METHODOLOGY

Hence the retaining wall serves the dual purpose of protection against rolling boulders on the slopes. Immediately outside the retaining wall/parapet wall a garland drain of around 1.5 meters depth will be dug to further arrest the solids passing through the retaining wall. The drains will be provided with a settling tank of 4m to 6m (L) x 3m (W) x 1.5m (D). The settling tank will be having three inherent compartments inside it. The first part of the compartment will arrest the heavier solids. The overflow of the first compartment will then reach the second compartment wherein any oil/ grease materials, if any in the downstream water will be pumped out from the top of the compartment as it is lighter than water. The clean water

will be allowed to pass from the bottom of the 2nd compartment to the 3rd compartment. This water will be totally free from the solids and oil and can be discharged downstream or used for plantation purpose. After physical reclamation, top soil shall be spread on the dumped material and water sprinkling on the soil will be carried out. Grasses will be planted on the soil with subsequent plantation of saplings of selected species of trees for totaling stabilizing the dumps / backfilled areas by biological means.

4.1 MEASURES ALREADY ADOPTED

Toe walls / Retaining walls have been constructed around the existing OB dumps to arrest the excavated material from the dump slopes. Details of such existing structures are listed in the following table:

DETAILS OF EXISTING TOE WALLS / RETAINING WALLS AROUND OB DUMPS

The details of existing check dams, retaining walls already constructed across the seasonal channels to arrest the wash offs have been mentioned in the plan for mitigative measures. The existing retaining / toe walls to arrest sliding down of excavated and dumped materials from the OB dumps and contours of the mine benches are as follows :

Sl No	Year	Location	Particulars of construction	Size (Total L X B X H) (m)
1	1996-97	Toe wall around Old DB dump of F-area (D1)	Dry boulder toe wall	L= 200 m, H= 1.5 m, Top width= 1.2m, Bottom width=1.5m
2	2006-07	Toe wall around Panposh quarry near Magzine area(D4)	Cemented Retaining wall	L= 180 m, H= 1.5 m, Top width= 0.8m, Bottom width=1.5m
3	2010-11	Toe wall around OB dump of D-area (D8)	Cemented Retaining wall followed by Garland drain	L= 550 m H= 1.5 m Top width= 1.0 m Bottom width=1.5 m
4	2011-12	Toe wall around DB dump of G-area(D5)	Dry boulder toe wall (construction completed in Oct 2011)	L= 310 m H= 1.5 m Top width= 1.0 m Bottom width=1.5 m

The details of retaining / toe walls proposed to be constructed are discussed in the next paragraphs.

4.2 MEASURES PROPOSED TO BE ADOPTED

DETAILS OF PROPOSED RETAINING WALLS

The proposed toe walls to arrest sliding down of excavated and dumped materials from the quarries to be expanded and opened in future, existing and new OB dumps and contours of the quarry benches are shown in map enclosed in **Annexure - III**. However the details of retaining walls proposed to be constructed in the first five years are summarized in the following table:

Sl	Location	Purpose	Particulars of construction Toe wall (L x B x H)	Cost of Toe wall (Rs Lakhs)	Cost of Garland drain	Cost of settling tank
1	D-area	To arrest excavated material from D-area OB dump (D6)	200 m Dry boulder toe wall followed by garland drain and settling pond (work order in process) (200m x 1.5m x 1.5m)	Rs 3.14 lakhs	Rs 2.33 lakhs	Rs 7,613/-
2	D-area	To prevent arrest excavated material from D-area OB dump (D7 & D-8)	100 m Dry boulder toe wall followed by garland drain and settling tank (work order in process) (100m x 1.5m x 1.5m)	Rs 1.57 lakhs	Rs 1.16 lakhs	Rs 7,613/-
3	G-area	To arrest excavated material from G-area Dump - D5	300 m Dry boulder toe wall followed by garland drain and settling tank (300m x 1.5m x 1.5m)	Rs 4.71 lakhs	Rs 3.50 lakhs	Rs 7,613/-
4	F-area	To arrest excavated material from F-area Dump - D2	280 m Dry boulder toe wall followed by garland drain and settling tank (280m x 1.5m x 1.5m)	Rs 4.39 lakhs	Rs 3.26 lakhs	Rs 7,613/-
5	Panposh	To arrest excavated material from dump-D3 near Panposh Quarry	250 m Dry boulder toe wall followed by garland drain and settling tank (250m x 1.5m x 1.5m)	Rs 3.93 lakhs	Rs 2.91 Lakhs	Rs 7,613/-
Total				Rs 17.74 lakhs	Rs 13.16 lakhs	Rs 0.38 Lakhs
Grand Total				Rs 31.28 lakhs		

The size of the earthen settling pond is proposed to be 4m x 3m x 1.5m with pitching of 0.225m boulder size, at the cost Rs 7613/- and the The size of the garland drain is proposed to be 1.2m x 0.6m along the length of toe wall. The detailed cost estimate of toe wall, garland drain and settling pond is enclosed in **Annexure - I (A), (B) & (C)**

The water beneath the retaining walls will be collected by network of garland drains which lead to the settling pits. Drainage management is shown in the Drawing & Size, location and significance of the drains showing location of drains is elaborated in the following table:

The run off / storm water flowing through the network of garland drains around quarries and dumps will be led to settling pits to settle out suspended solids. The clear water will be discharged to the nearby seasonal streams/ nala. Coagulants, if necessary, will be added in the settling pits in monsoon season. Water management showing location of drains, settling pits etc. is shown in the Drawing & Size, location and significance of each of settling pit is given in the following table:

INSPECTION, MONITORING AND EVALUATION

For successful implementation of the above proposed programme, intensive inspection and technical guidance from concerned technical wing is required. Sufficient fuel/conveyance charges for the executing agency and technical experts shall be provided by the user agency for proper execution of these programme.

EXECUTING AGENCY

In all the cases, the works shall be executed by the User Agency having specialised departments headed by qualified persons with outsourced man and machinery as and where required . To facilitate this, the user agency shall establish it's own executing and supervision cells along with required infrastructural facilities . In order to maintain the quality of work, in house supervision through competent personnel shall be provided. The entire work shall be carried out through close coordination with the Forest Department.

REQUIREMENT OF FUNDS

The total cost of the implementation of proposed programmes will be **Rs 43,75,800.00** as detailed in **Annexure-II** . For implementation of the above *Scheme/measures*, the above expenditure will be made over the next five years period . Therefore, budget provision of Rs. 43.76 lakhs will be kept by the user agency for implementation of the above *scheme/measures* a period of next five years. This budget will subject to increase in amount considering the increase in materials and labour charges. The tentative annual expenditure planned for the next five year for the implementation of *Scheme/measures* is given in the following table :

Sl. No.	Description	Amount
1.	1 st year plan of expenditure	Rs 8.75 Lakhs
2.	2 nd year plan of expenditure	Rs 8.75 Lakhs
3.	3 rd year plan of expenditure	Rs 8.75 Lakhs
4.	4 th year plan of expenditure	Rs 8.75 Lakhs
5.	5 th year plan of expenditure	Rs 8.76 Lakhs
6.	Total:-	Rs 43.76 Lakhs

Technically
Approved

Regional Chief Conservator of Forest
Bourkela Circle

The water beneath the retaining walls will be collected by network of garland drains which lead to the settling pits. Drainage management is shown in the Drawing & Size, location and significance of the drains showing location of drains is elaborated in the following table:

The run off / storm water flowing through the network of garland drains around quarries and dumps will be led to settling pits to settle out suspended solids. The clear water will be discharged to the nearby seasonal streams/ nala. Coagulants, if necessary, will be added in the settling pits in monsoon season. Water management showing location of drains, settling pits etc. is shown in the Drawing & Size, location and significance of each of settling pit is given in the table:

INSPECTION, MONITORING AND EVALUATION

For successful implementation of the above proposed programme, intensive inspection and technical guidance from concerned technical wing is required. Sufficient fuel/conveyance charges for the executing agency and technical experts shall be provided by the user agency for proper execution of these programme.


EXECUTING AGENCY


In all the cases, the works shall be executed by the User Agency having specialised departments headed by qualified persons with outsourced man and machinery as and where required . To facilitate this, the user agency shall establish it's own executing and supervision cells along with required infrastructural facilities . In order to maintain the quality of work, in house supervision through competent personnel shall be provided. The entire work shall be carried out through close coordination with the Forest Department.

REQUIREMENT OF FUNDS

The total cost of the implementation of proposed programmes will be **Rs 43,75,800.00** as detailed in **Annexure-II** . For implementation of the above scheme measures, the above expenditure will be made over the next five years period . Therefore, budget provision of Rs. 43.76 lakhs will be kept by the user agency for implementation of the above scheme measures a period of next five years. This budget will subject to increase in amount considering the increase in materials and labour charges. The tentative annual expenditure planned for the next five year for the implementation of Above measures is given in the following table :

Sl. No.	Description	Amount
1.	1 st year plan of expenditure	Rs 8.75 Lakhs
2.	2 nd year plan of expenditure	Rs 8.75 Lakhs
3.	3 rd year plan of expenditure	Rs 8.75 Lakhs
4.	4 th year plan of expenditure	Rs 8.75 Lakhs
5.	5 th year plan of expenditure	Rs 8.76 Lakhs
6.	Total:-	Rs 43.76 Lakhs


(N P PRAMANIK)
GENERAL MANAGER
SAIL-BOLANI ORES MINE


Range Officer
SAIL RANGE, BARAM

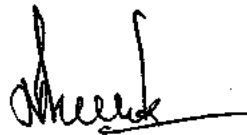
COUNTERSIGNED

ANNEXURE-I(A)

ESTIMATE FOR CONSTRUCTION OF DRY BOULDER TOE / RETAINING WALL
(Length = 1m , Width : 1.5 m , Height : 1.5m)

1	Earth work excavation in over areas.	L	B	D	TOTAL
	Cum 1	1.00	1.50	0.30	0.45
			Total		0.45
2	Collection, loading, unloading and stacking of local boulder (laterite)				
	Cum 1	1.00	1.50	0.300	0.45
	Cum 1	1.00	1.20	1.250	1.50
			Total		1.95

DESCRIPTION OF ITEM	UNIT	QTY.	RATE	AMOUNT (Rs)	REMARKS
Earth work in excavation in foundation trenches or drains (not exceeding 1.5 m in width or 10 sqm on plan) including dressing of sides and ramming of bottoms, lift up to 1.5m, including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m, In All kinds of soil.	CUM	0.45	125.21	56.34	Analysed Rate as per DSR-07
Supplying and stacking local laterite stone boulders at site & dry stone pitching laid in courses & required profile with hammer dressed stones including preparing the bedding surface etc all complete.	CUM	1.95	775.77	1512.75	Analysed Rate as per DSR-07
Cost for construction of 1 M dry stone retaining wall				1569.10	


(N P PRAMANIK)
 GENERAL MANAGER
 SAIL-BOLANI ORES MINE

ANNEXURE-I(B)

ESTIMATE FOR CONSTRUCTION OF DRY BOULDER TOE / RETAINING WALL (Length = 1m , Width : 1.2m , Height : 0.6m)

(Garland drain)

1	Cleaning of jungles along garland drain :	L	B	D	TOTAL
	Sq m 1	1.00	10.00	10.00	10.00
				Total	10.00
2	Earth Work in excavation in foundation trenches or drains	L	B	W/H	TOTAL
	Cum 1	1.00	1.20	0.6	0.72
				Total	0.72
3	PCC 1:4:8	L	B	W/H	TOTAL
	Cum 1	1.00	1.00	1.20	0.12
				Total	0.12
4	RR Masonary	L	B	W/H	TOTAL
	Cum 1	1.00	0.40	0.50	0.20
				Total	0.20
5	20 mm cement Plaster (1:6)	L	B	W/H	TOTAL
	Cum 1	1.00	1.00		1.00
				Total	1.00
6	25 mm cement concrete flooring (1:2:4)	L	B	W/H	TOTAL
	Cum 1	1.00	0.60		0.60
				Total	0.60

DESCRIPTION OF ITEM	UNIT	QTY.	RATE	AMOUNT (Rs)	REMARKS
Cleaning jungle including uprooting of rank vegetation, grass, brush wood, trees and saplings of girth up to 30 cm measured at a height of 1 m above ground level and removal of rubbish up to a distance of 50 m outside the periphery of the area cleared.	5QM	10.00	3.61	36.10	Analysed Rate
Earth work in excavation in foundation trenches or drains (not exceeding 1.5 m in width or 10 sqm on plan) including dressing of sides and ramming of bottoms, lift up to 1.5m, Including getting out the excavated soil and disposal of surplus excavated so	CUM	0.72	125.21	90.15	Analysed Rate as per D5R
Providing and laying in position cement concrete 1:4:8 (1 Cement: 4 coarse sand: 8 graded stone aggregate 40 mm nominal size) of specified grade excludng the cost of centring and shuttering - All work upto plinth level.	CUM	0.12	3484.56	418.15	do
Random rubble masonry with local available hard stone (laterite) in foundation and plinth at plinth level and superstructure with cement mortar 1:6 (1 cement: 6 coarse sand).	CUM	0.20	1545.55	309.11	do
20 mm cement plaster of mix 1:6 (1 cement: 6 fine sand).	5QM	1.00	138.78	138.78	do
25 mm thick cement concrete flooring 1:2:4 (1 cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size) finished with a floating coat of neat cement including cement slurry, but excluding the cost of nosing of steps etc. complete.	5QM	0.60	287.20	172.32	do
Cost for construction of 1 M Garland drain				1164.61	

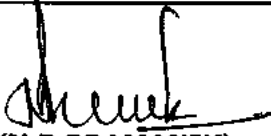

(N P PRAMANIK)
GENERAL MANAGER
SAIL-BOLANI ORES MINE

ANNEXURE-I(C)

ESTIMATE FOR CONSTRUCTION OF DRY BOULDER TOE / RETAINING WALL

(Length = 1m , Width : 3.0m , Height : 1.5m) (Settling tank)

DESCRIPTION OF ITEM	UNIT	QTY.	RATE	AMOUNT(Rs)	REMARKS
Earth work in excavation by mechanical means (Hydraulic excavator) / manual means over areas in (exceeding 30 cm in depth 1.5 m in width as well as 10 sqm on plan) including disposal of excavated earth, lead up to 50 m and lift up to 1.5 m, disposed earth to be levelled and neatly dressed, in all kinds of soil.	CUM	4.50	123.16	554.22	Analysed rate based on D.S.R 07
Collection, loading, unloading and stacking of local boulder (laterite) from collecting area to work site including the cost of transportation of boulder at site, lead up to 10 Km as directed by Engg - in - charge.	CUM	1.01	775.77	785.47	Analysed rate based on D.S.R 07
Dry stone pitching 22.50 cm thick excluding the cost of supply of hard stone (laterite) and including the cost of preparing surface complete.	SQM	4.50	125.22	563.49	Analysed rate based on D.S.R 07
Cost for construction of 1 Settling Tank				1903.18	

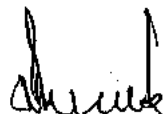

(N P PRAMANIK)
 GENERAL MANAGER
 SAIL-BOLANI ORES MINE

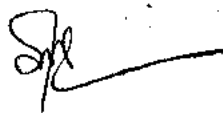
ANNEXURE-II

TOTAL COST OF THE PROJECT

Sl.No	Description of the work	Funds Required (in Rs)
1	Cost for erection of 5 nos.Dry boulder toe/retaining walls	Rs 17,74,000.00
2	Cost for construction of 5 nos.Garland drains	Rs 13,16,000.00
3	Cost for construction of 5 nos.Settling Tanks	Rs. 38,000.00
4.	Expenditure for planting on the drainage line and on the inner side of the check dams / garland drains / drains etc. (L/S)	Rs 3,00,000.00
5.	Maintenance /de-silting of previously constructed structures(L/S)	Rs 5,00,000.00
6.	Contingency including supervision charges(L/S)	Rs. 50,000.00
	TOTAL	Rs 39,78,000.00
	Price escalation @ 10%	Rs 3,97,800.00
	Grand Total	Rs 43,75,800.00

In case of any increase in the man, material and machinery charges , provision for additional funds will be made as and when required .


(N P PRAMĀNIK)
 GENERAL MANAGER
 SAIL-BOLANI ORES MINE



Forest Range Officer
 RAIPUR, RAIPUR, RAIPUR

Technically
 Approved


 Regional Chief Conservator of Forests
 Rourkela Circle


COUNTERSIGNED


 Divisional Forest Officer
 Keonjhar Division

ANNEXURE-II**TOTAL COST OF THE PROJECT**

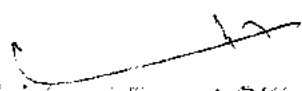
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2	Cost for construction of 5 nos.Garland drains	Rs 13,16,000.00
3	Cost for construction of 5 nos.Settling Tanks	Rs. 38,000.00
4.	Expenditure for planting on the drainage line and on the inner side of the check dams / garland drains / drains etc. (L/S)	Rs 3,00,000.00
5.	Maintenance /de-silting of previously constructed structures(L/S)	Rs 5,00,000.00
6.	Contingency including supervision charges(L/S)	Rs. 50,000.00
	TOTAL	Rs 39,78,000.00
	Price escalation @ 10%	Rs 3,97,800.00
	Grand Total	Rs 43,75,800.00

In case of any increase in the man, material and machinery charges , provision for additional funds will be made as and when required .


(N P PRAMANIK)
GENERAL MANAGER
SAIL-BOLANI ORES MINE

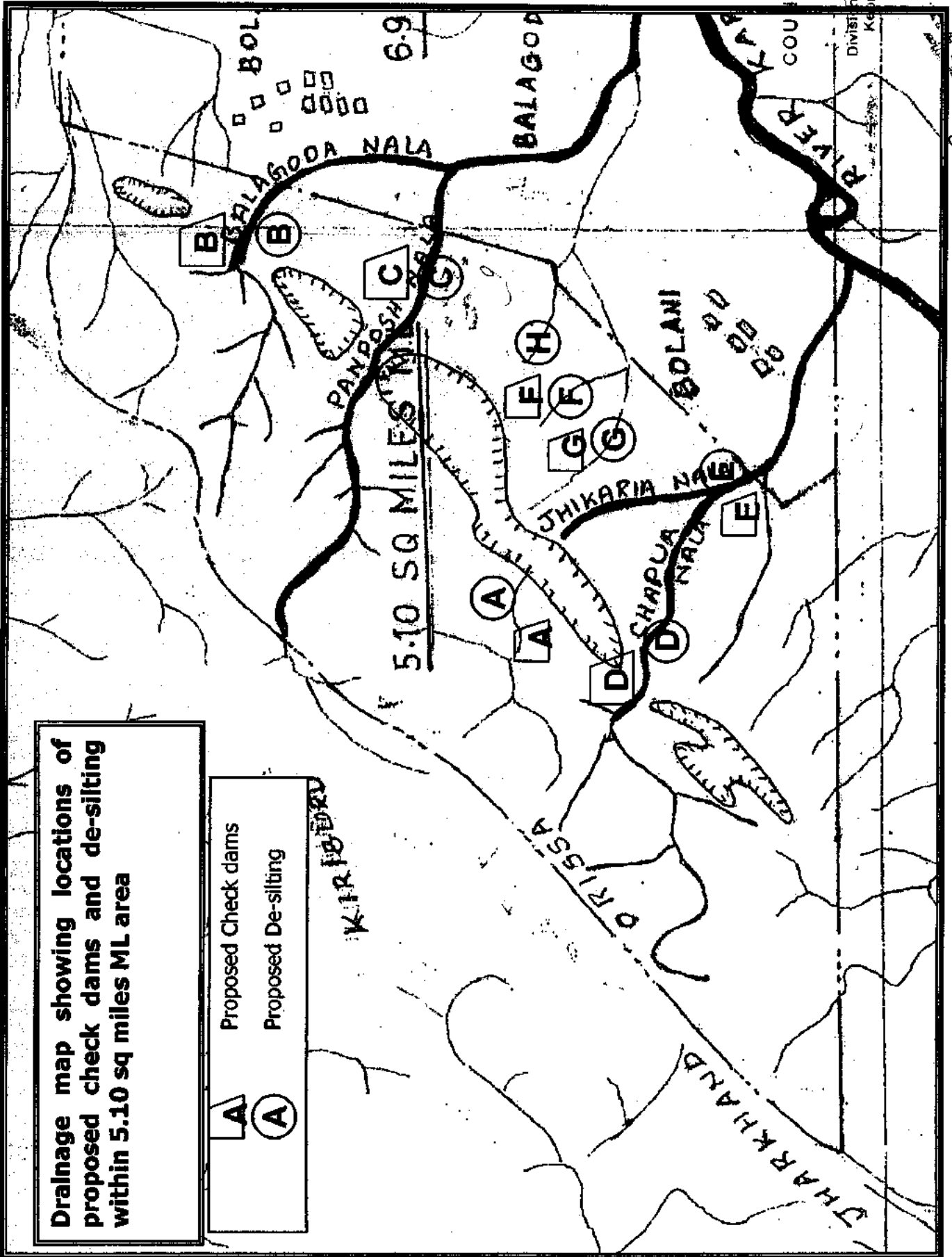

Forest Range Officer
BAREIL RANGE, BAREIL

COUNTERSIGNED


Divisional Forest Officer
Keonjhar Division

Drainage map showing locations of
proposed check dams and de-silting
within 5.10 sq miles ML area

- | | |
|---|---------------------|
|  | Proposed Check dams |
|  | Proposed De-silting |



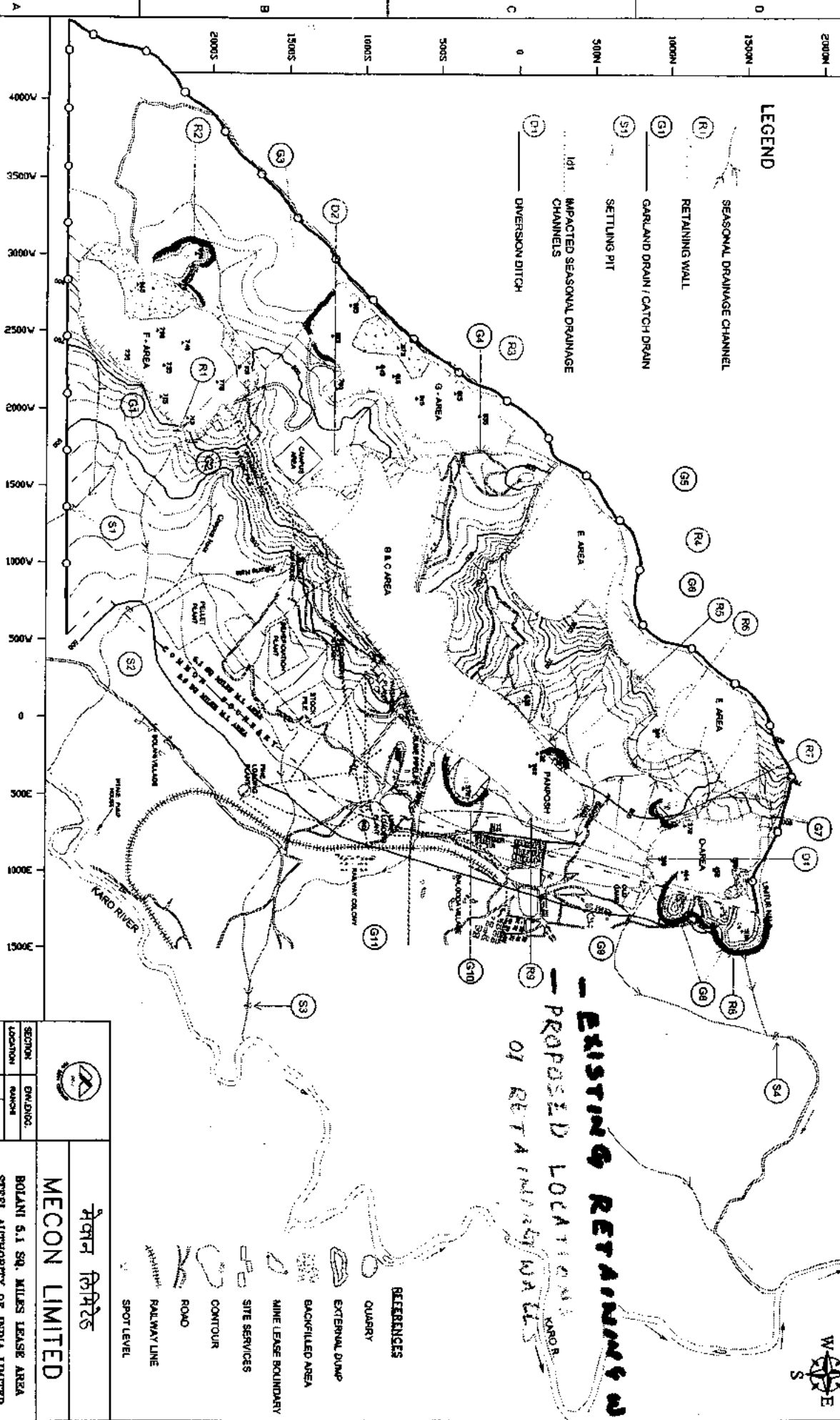
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Divisional Forest Officer
Kanjhar Di...

THARKHAND
RANGE
OFFICE
KANTHAR
20/11/2010

LEGEND

- (R) SEASONAL DRAINAGE CHANNEL
- (R) RETAINING WALL
- (G) GARLAND DRAIN / CATCH DRAIN
- (S) SETTLING PIT
- (I) IMPACTED SEASONAL DRAINAGE CHANNELS
- (D) DIVERSION DITCH



EXISTING RETAINING WALLS
PROPOSED LOCATIONS
OF RETAINING WALLS

REFERENCES

- QUARRY
- EXTERNAL DUMP
- BACKFILLED AREA
- MINE LEASE BOUNDARY
- SITE SERVICES
- ROAD
- RAILWAY LINE
- SPOT LEVEL

मेकन लिमिटेड
MECON LIMITED

BOLANI 5.1 SQ. MILES LEASE AREA
 STEEL AUTHORITY OF INDIA LIMITED

WATER MANAGEMENT IN LEASEHOLD AREA

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 DRG.NO.MEC/G23J/11/52/(1)10.1

SECTION		DIVIDING		SCALE : As shown above	REV
LOCATION		RANGE			
DESIGNED		V6 17.01.10			
DRAWN		PESH 24.01.10			
CHECKED		V6 30.01.10		APPROVED	
VERIFIED				DATE	
DRG.NO.MEC/G23J/11/52/(1)7/12				1	

COUNTERSIGNED

[Handwritten signatures and stamps]

ANNEXURE-I(A)

REVISED FINANCIAL OUTLAY OF SCHEME FOR CONSTRUCTION OF CHECK DAMS, RETENTION WALL/TOE WALLS TO ARREST SLIDING DOWN OF THE EXCAVATED MATERIALS ALONG THE CONTOUR IN COMPLIANCE TO CONDITION NO - 2-IV(C) OF STAGE-I FOREST CLEARANCE GRANT ORDER (WAGE RATE – RS 125 PER MAN DAY)

**ESTIMATE FOR CONSTRUCTION OF DRY BOULDER TOE / RETAINING WALL
(Length = 1m , Width : 1.5 m , Height : 1.5m)**

1	Earth work excavation in over areas.	L	B	D	TOTAL
	Cum 1	1.00	1.50	0.30	0.45
				Total	0.45
2	Collection, loading, unloading and stacking of local boulder (laterite)				
	Cum 1	1.00	1.50	0.300	0.45
	Cum 1	1.00	1.20	1.250	1.50
				Total	1.95

DESCRIPTION OF ITEM	UNIT	QTY.	RATE	AMOUNT (Rs)	REMARKS
Earth work in excavation in foundation trenches or drains (not exceeding 1.5 m in width or 10 sqm on plan) including dressing of sides and ramming of bottoms, lift up to 1.5m, including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m, In All kinds of soil.	CUM	0.45	125.21	56.34	Analysed Rate as per DSR-07
Supplying and stacking local laterite stone boulders at site & dry stone pitching laid in courses & required profile with hammer dressed stones including preparing the bedding surface etc all complete.	CUM	1.95	775.77	1512.75	Analysed Rate as per DSR-07
Cost for construction of 1 M dry stone retaining wall				1569.10	
Total cost accommodating revised wage rate @125/- per day				<u>1569.10x12590</u> = Rs 2179.31	



GENERAL MANAGER
SAIL-BOLANI ORES MINE

ANNEXURE-I(B)

ESTIMATE FOR PER RMT CONSTRUCTION OF GARLAND DRAIN
(Length = 1m , Width : 1.2m , Depth : 0.6m)

1	Cleaning of jungles along garland drain : L	B	0	TOTAL			
	Sq m	1	1.00	10.00	10.00		
				Total	10.00		
2	Earth Work In excavation in foundation trenches or drains	L	B	W/H	TOTAL		
		Cum	1	1.00	1.20	0.6	0.72
				Total			0.72
3	PCC 1:4:8	Cum	1	1.00	1.00	1.20	0.12
				Total			0.12
4	RR Masonary	Cum	1	1.00	0.40	0.50	0.20
				Total			0.20
5	20 mm cement Plaster (1:6)	Cum	1	1.00	1.00		1.00
				Total			1.00
6	25 mm cement concrete flooring (1:2:4)	Cum	1	1.00	0.60		0.60
				Total			0.60

DESCRIPTION OF ITEM	UNIT	QTY.	RATE	AMOUNT (Rs)	REMARKS
Cleaning jungle including uprooting of rank vegetation, grass, brush wood, trees and saplings of girth up to 30 cm measured at a height of 1 m above ground level and removal of rubbish up to a distance of 50 m outside the periphery of the area cleared.	SQM	10.00	3.61	36.10	Analysed Rate
Earth work in excavation in foundation trenches or drains (not exceeding 1.5 m in width or 10 sqm on plan) including dressing of sides and ramming of bottoms, lift up to 1.5m, including getting out the excavated soil and disposal of surplus excavated so	CUM	0.72	125.21	90.15	Analysed Rate as per DSR
Providing and laying in position cement concrete 1:4:8 (1 Cement: 4 coarse sand: 8 graded stone aggregate 40 mm nominal size) of specified grade excluding the cost of centring and shuttering - All work upto plinth level.	CUM	0.12	3484.56	418.15	do
100mm rubble masonry with local available hard stone (laterite) in foundation and plinth at plinth level and superstructure with cement mortar 1:6 (1 cement: 6 coarse sand).	CUM	0.20	1545.55	309.11	do
20 mm cement plaster of mix 1:6 (1 cement: 6 fine sand).	SQM	1.00	138.78	138.78	do
25 mm thick cement concrete flooring 1:2:4 (1 cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size) finished with a floating coat of neat cement including cement slurry, but excluding the cost of nosing of steps	SQM	0.60	287.20	172.32	do
Cost for construction of 1 M Garland drain				1164.61	
Cost after accommodating revised wage Rate				1164.61/90*125	= 1617.50


 GENERAL MANAGER
 SAIL-BOLANI ORES MINE

ANNEXURE-I(C)

ESTIMATE FOR PER RMT CONSTRUCTION OF SETTLING POND
(Length = 1m , Width : 3.0m , Height : 1.5m)

DESCRIPTION OF ITEM	UNIT	QTY.	RATE	AMOUNT(Rs)	REMARKS
Earth work in excavation by mechanical means (Hydraulic excavator) / manual means over areas in (exceeding 30 cm in depth 1.5 m in width as well as 10 sqm on plan) including disposal of excavated earth, lead up to 50 m and lift up to 1.5 m, disposed earth to be levelled and neatly dressed, in all kinds of soil.	CUM	4.50	123.16	554.22	Analysed rate based on D.S.R 07
Collection, loading, unloading and stacking of local boulder (laterite) from collecting area to work site including the cost of transportation of boulder at site, lead up to 10 Km as directed by Engg - in - charge.	CUM	1.01	775.77	785.47	Analysed rate based on D.S.R 07
By stone pitching 22.50 cm thick excluding the cost of supply of hard stone (laterite) and including the cost of preparing surface complete.	SQM	4.50	125.22	563.49	Analysed rate based on D.S.R 07
Cost for construction of 1 Settling Tank				1903.18	
Cost after accommodating revised wage Rate				1903.18/90*125	2643.30


 GENERAL MANAGER
 SAIL-BOLANI ORES MINE

ANNEXURE-II

REVISED FINANCIAL OUTLAY OF SCHEME FOR CONSTRUCTION OF CHECK DAMS, RETENTION WALL/TOE WALLS TO ARREST SLIDING DOWN OF THE EXCAVATED MATERIALS ALONG THE CONTOUR IN COMPLIANCE TO CONDITION NO - 2-IV(C) OF STAGE-I FOREST CLEARANCE GRANT ORDER

(WAGE RATE – RS 125 PER MAN DAY)

TOTAL COST OF THE PROJECT

Sl.No	Description of the work	Funds Required (in Rs)
1	Cost for erection of 5 nos. Dry boulder toe/retaining walls	Rs 24,63,889.00
2	Cost for construction of 5 nos. Garland drains	Rs 18,27,778.00
3	Cost for construction of 5 nos. Settling Tanks	Rs. 52,778.00
4.	Expenditure for planting on the drainage line and on the inner side of the check dams / garland drains / drains etc. (L/S)	Rs 4,16,000.00
5.	Maintenance /de-silting of previously constructed structures(L/S)	Rs 6,94,445.00
6.	Contingency including supervision charges(L/S)	Rs. 70,000.00
7.	TOTAL	Rs 55,24,890.00
	Price escalation @ 10%	Rs 5,52,489.00
	SUB TOTAL	Rs 60,77,379.00
	10% amount to be paid to VSS for motivation	Rs 6,07,737.90
	GRAND TOTAL	Rs 72,92,854.80 = Rs 72,93,000.00

In case of any increase in the man, material and machinery charges , provision for additional funds will be made as and when required .


GENERAL MANAGER
SAIL-BOLANI ORES MINES

Technically Approved

Technically
Approved

Regional Chief Conservator of Forests
Rourkela

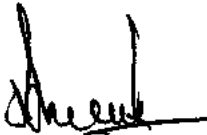
Regional Chief Conservator of Forests
Rourkela Circle, Rourkela

29.08.2012

REQUIREMENT OF FUNDS (After revision of wage rate) :

The total cost of the implementation of proposed programs for construction of check dam & retention toe wall will be **Rs 72,93,000.00** as detailed in **Annexure-II** . For implementation of the above scheme/measures, the above expenditure will be made over the next five years period. Therefore, budget provision of Rs.72.93 Lakhs will be kept by the user agency for implementation of the above scheme/measures a period of next five years. This budget will subject to increase in amount considering the increase in materials and labour charges. The tentative annual expenditure planned for the next five year for the implementation of scheme / measures is given in the following table :

Sl. No.	Description	Amount
1.	1 st year plan of expenditure	Rs 12.00 Lakhs
2.	2 nd year plan of expenditure	Rs 15.00 Lakhs
3.	3 rd year plan of expenditure	Rs 15.93 Lakhs
4.	4 th year plan of expenditure	Rs 15.00 Lakhs
5.	5 th year plan of expenditure	Rs 15.00 Lakhs
6.	Total:-	Rs 72.93 Lakhs


GENERAL MANAGER
5AIL-BOLANI ORES MINE

Technically Approved

Technically
Approved

Regional Chief Conservator of Forests
 Regional Chief Conservator of Forests
 Rourkela

29.08.2017

Annexure-VIII D

PLAN

(D)

for

**STABILIZATION OF OB DUMPS BY GRADING & BENCHING
&
MANAGEMENT & STABILIZATION OF FINE & OB DUMPS**

in compliance

of

Condition no – 2-IV(d) & XIV of Stage-I Forest Clearance grant Order

Vide Letter No.8-17/1997-FC (pt.) Dated.12.11.2010

of Govt. of India, Ministry of Environment & Forests, New Delhi

for

Diversion of 1152.58 Hects Forest land

withIn 5.10'sq Miles ML of

Bolani Iron Ore Mine of M/s SAIL,

in Champua Subdivision of Keonjhar District



1. INTRODUCTION

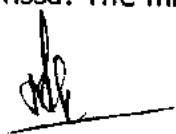
Bolani Iron Ore Mine of M/s Steel Authority of India Ltd. is an ongoing Mining Project over an area of 1321.45Ha (5.10 sq miles) and the current mining lease period was valid upto 10.04.2010. The total ML area involved 1181.66 Ha inside Karo Reserve Forest and 44.12 Ha of revenue/khesra forest in it. The total forest area broken prior to 25.10.1980 is 316.70 Ha. In the 1st RML period, as per the Stage-II clearance of MoEF vide letter no 8-17/97-FC dt.19.02.1998, Bolani Iron Ore Mine was allowed for diversion of total 1050.15 Ha forest land, with mining over 316.70Ha broken up land, 170.50Ha of virgin forest land and 562.95 Ha of forest land to be protected as such, excluding 175.63 Ha of Safety Zone in the 1st RML period. The Second RML application has been filed on 26.03.2009 and the lease is in deemed renewal. For the second renewal of the above said ML area, Bolani Iron Ore Mine has filed diversion proposal for total forest land inside lease i.e. 1152.58 ha. (Broken up forest land 392.80 ha. and Virgin forest land 759.78 ha.), excluding 73.2 Ha as safety zone. Stage-I forest clearance has been granted vide Letter No.8-17/1997-FC (pt.) dated. 12.11.2010 from Govt. of India, Ministry of Environment & Forests, New Delhi for the above said Diversion of 1152.58 ha. of Forest land subject to compliance of the conditions stipulated therein. Working permission was obtained from Govt. of India, Ministry of Environment & Forests, New Delhi vide No. 8-17/1997-FC(pt.) dated 04-04-2011 with validity up to 11-11-2011 and subsequently vide Letter No. 8-17/1997-FC(pt.) dated 09.11.2011 with validity up to 11-02-2012.

While granting Stage-I approval, the Ministry of Environment and Forest, Govt. of India has stipulated the following condition in Condition no-2(IV) (d) **is to Stabilize the overburden dumps by appropriate grading/benching so as to ensure that angles of repose at any given place is less than 28°** & Condition no-2(XIV) as **"The User Agency will prepare a plan for management and stabilization of fine dumps and overburden dumps and will execute it at the project cost"**

In compliance to the above conditions a detailed plan for the said purpose has been duly prepared which is fully explained as below and shall be implemented in a time bound manner.

2. LOCATION

Bolani 5.1 sq. miles mining leasehold area is located in villages of Bolani, Balagoda and Karo Reserve Forest (R.F) in Barbil Tehsil of Champua sub division of Keonjhar district in Orissa. The mine falls under Survey of India topo sheet no. 73 F/8 and is located between



22°05'N - 22°08'N and 85°17'E - 85°20'E. The leasehold area is flanked by the Kiriburu-Meghahatuburu mines of SAIL on western side, the common boundary being defined by the Interstate boundary of Jharkhand and Orissa. On the eastern side the leasehold shares common boundary with other lease (6.9 sq. miles lease) of M/s SAIL.

3. TOPOGRAPHY

The leasehold area consists of high hills in the western side and valley area in the eastern side. The area lies on the slope of an escarpment running in the SW-NE direction. Elevation of the lease area ranges from 920 m AMSL to 500 m AMSL. Inside the lease there are few peaks the highest of which are at 920 m AMSL near the western boundary and 870 m AMSL near the southern boundary of the lease. The western boundary of the lease is marked by a ridge line. The north western half of the study area is covered with forests.

4. SOIL TYPE

Soil type in the study area varies widely from hard rocks to sandy loam. Areas at higher elevations are usually hard rock consisting of Banded Hematite Quartzite (BHQ) and Banded Hematite Jasper. The top soil in the area is scanty. Whatever top soil is available is rocky in nature. The pH of the soil is slightly acidic in nature. Low hills and hill slopes are extensively lateritized and consist of lateritic profile of 10 to 12m. The lateritic area is rich in Iron and very often pisolitic in nature. Bushy vegetation are observed on this soil type. At some places, the lateritic horizons are observed to have a thin soil cover of about 10 to 15 cm on them. The lower elevations are dominantly sandy loam facilitating agriculture and growth of general type of vegetation.

5. CLIMATE

The study area lies in tropical region where climate is characterised by very hot summers and cool winters. Summer is typically from March to June when monthly temperature ranges from a maximum of 42°C during daytime to a minimum of 15°C at night. Winter is from November to February when the maximum temperature during day goes up to 33°C and minimum temperature at night becomes as low as 8°C. The average annual rainfall as recorded at IMD observatory at Keonjhar is 1269.1 mm, 80% of it during the Southwest monsoon.



6. DRAINAGE

At the eastern side of the lease area, there is a valley, drained by Karo river flowing from SW to NE. The lease area is drained by a number of seasonal drainage channels flowing from SW to NE viz. Chapua nala, Jhikaria nala, Panposh nala, Balagoda nala & Limture to join the Karo River. The Karo river (flowing from SW to NE) is the principal drainage channel of the study area. The study area has a dendritic drainage pattern due to hilly terrain and the area forms part of Karo nadi sub-basin which is perennial by nature. The sub water shed where the project falls is drained mainly by Karo river. Karo river lies at a distance of 1.0 km from the ML boundary.

7. EXISTING VEGETATION

The area consists of vegetation of dry deciduous species like Sal, Piasal, Kurum, Jamun, Dhala, Kendu, Asan etc. With canopy density 0.1 over virgin land and 0.01 over broken up land. Ecological studies have been conducted by various consultants like Centre of Science and Environment, Kalyani University, Kalyani, West Bengal and MECON Ranchi. As per the study report, the leasehold of Bolani mines and its surrounding areas have a wide variety of forest cover viz. pure sal forests, semi-evergreen(mixed) forests, evergreen forests, degraded forests, extensive plantations and open grazing areas. Along the river and stream corridors, evergreen riparian forests also exist. In general, various edaphic and climatic factors have contributed to the development of different types of forests. There is no defined protected areas like National Parks, Sanctuaty or Biosphere reserves In this region. The buffer zone (10Km radius) includes part of forest division of Keonjhar district of Orissa and part of the Saranda forest division of Jharkhand. The forests of 5.10 sq miles ML are part of Karo RF. There are a number of forest viz. Karo RF. Vegetation analysis (primary) shows that the forest is Sal dominated (>80%) forests. The dominance of Sal is followed by Kurei (*Holarrhena antidysenterica*) and Bahera (*Terminalia balcerica*). But in mixed forests, Kurei, Bahera, Bher, Kanchan are equally dominant with that of Sal. The frequency of Sal trees in reserve forests ranges from 50 to 100% with Importance Value Index(IVI) ranges from 28.08% to 92.67%. The analysis shows, Species Diversity Indices (SDI) value is high in semi-evergreen forests rather than mixed or deciduous sal forests. Both in core and buffer zone, there are good number of tree species (over 100) followed by herbs and shrubs. About 40 nos. species are listed for their utilities like timber, medicinal and other values. There is no endemic and endangered plant species in this area.



PHASE WISE MINING ACTIVITY

The quantity of Mineable Reserve available on date is 137.72 MT in and around the vicinity of already broken mining blocks . During the expansion phase, this total of 137.72 Mt Ore will be mined out at the stated rates of production (12 MT per annum) from all of these blocks (shown in Map enclosed in annexure-III) to maintain the quality norms of Steel Plant on sustainable basis . At this rate the ore reserves in these areas will last till year 2022-23. In the mean time, the detailed parameters of the deposit in virgin E - Area & earlier worked B & C area will be proved by 2020 by detailed close grid drilling only and no mining will be undertaken in these areas . Mining in these virgin areas will be undertaken only after 2020. Concurrent reclamation and restoration activities will be undertaken in the mined out portion of the quarries which have reached its ore / mineral boundary.

OVERBURDEN AND WASTE MANAGEMENT PRACTICE

Details of existing dumps are as follows :

Dump No.	Location	Area (Ha)	Top RL, m	Bottom RL, m	Dump height, m	Status	Stabilisation status
D 1	F area	3.80	896.20	880.00	16	Completed	Stabilised and afforested.
D 2		3.25	870.00	860.00	10	Completed	Partly afforested
D 3	Panposh area	0.75	565.76	560.00	17	Active	
D 4		0.75	652.50	623.00	29	Completed	Partly afforested
D 5 A	G area		899.57	880.15	19	Completed	
D 5 B		3.25	850.00	840.00	10		
D 5 C			880.00	870.00	10		
D 6	D area	1.37	600.00	584.18	16	Completed	Partly afforested
D 7		0.32	520.16	515.00	10	Active	
D 8		0.76	515.99	500.50	18	Active	
D 9		0.39	515.32	510.00	10	Active	

There are 2 nos of fine dumps : old fines dump & valley plant (DH5) fines dump

The salient features of existing OB/waste dump management practice

1. Till now total 7.5 Mm3 OB and waste have been generated from the mine.
2. There are 9 external OB dumps occupying an area of 14.0 hectares.
3. Out of 9 external OB dumps, 4 dumps of area 8.0 hectares are stabilised / under rehabilitation process by plantation activities
4. 5 nos of dumps of with area 6.0 hectares are active .
5. Retaining walls and garland drains have been provided around the dumps .
6. Back Filling is in progress at F area . About 3.5 hectares area have been backfilled till date.
7. Till date 148 hectares of barren forest land over intermediate barren areas have been planted : Species are Karanj, Neem, Mahaneem , acacia, babul . chhatian Teak etc , Survival rate - 75%

8. Total Reclamation by back filling = 3.5 Ha , Plantation on dumps = 8.0 hectares , Plantation of barren land = 148.0 hectares

OBJECTIVE OF THE PLAN

The objectives of the proposed plan are as follows:

1. Proper Management and scheduling of overburden materials so as to minimize external dumping
2. To provide methodologies and implement the proposed actions in time bound manner to prevent slope failures there by providing stable OB dump slopes and
3. Rehabilitation of the OB dumps by plantation
4. Prevention of overflow of eroded soils from the fines ,OB dump areas leading to siltation in the streams natural streams

FUTURISTIC OB/WASTE MANAGEMENT SCHEDULE

The ratio of rejects (total overburden and intercalated wastes) to ore varies from ore body to ore body and block to block . On an average , an additional area of 20.0 ha area would be required for dumping over burden and top soil . It is envisaged that 100% land use and mineral use for the first five(5) years period beyond 2010 will be for 'F' area, G' area, 'D' area and Panposh . For next fifteen(15) years i.e 2015 - 2030, 'B & C' and 'E' area will be exploited after further exploration . The dumps will be located adjacent to the respective ore bodies. The salient features are as follows :

1. Total 10.729 million cubic meter overburden will be generated during the expansion phase .
2. Waste dumping has been planned in a manner such that backfilling can be maximized with a view to reclaim the degraded land as much as possible and at the same time minimizing external dumping. External dumping has been planned only when backfilling is not feasible.
3. Out of the above , 9.414 million cubic meter waste will be back filled in the quarries and 1.315 million cubic meter will be dumped as external dumps (12 %).
4. During Mining a lot of sub grade minerals (below cut off grade i.e 45 % Fe – 55 % Fe) will be stored in proper place as external dumps for future use by blending with high grade materials from other areas .

The management schedule is given as follows :

Mining area	Reclamation by Backfill		External Dump		Total (Mm ³)
	quantity	Location	quantity	Location	
Till 5 th year					
F area	0.857	Quarry of F area	-	-	0.857
G area	1.150	Quarry of G area	-	-	1.150
D area	0.078	Quarry of D area	0.313	Dump D7, 8 &	0.391
Panposh area	-	-	0.165	Dump 3	0.165
Sub-total	2.085	-	0.478	-	2.563
From 5 th year till End of work					
F area	4.943	Quarry of F area	-	-	4.943
G area	2.230	Quarry of G area			2.230
D area	0.156	Quarry of D area	0.623	Dump D7, 8 &	0.779
Panposh area	-	-	0.214	Dump 3	0.214
Sub-total	7.329	-	0.837	-	8.166
Total	9.414	-	1.315		10.729

Signature

PROPOSED METHODOLOGY

Due to the geological feature of the lease, the external dumps will be higher than the adjoining ground level. The materials from the slopes of these dumps are likely to flow during heavy rains and disturb the topography of its adjoining land, till it is completely stabilized by biological means. In order to curb this situation retaining walls of minimum one & half meter height has been planned all along the peripheral contour of the external dumps to arrest the possibility of material running down on the hill slopes. The case is also similar to those backfilled portions of the pit, which are cut at the edges by the prevailing topography in the neighbourhood. Waste dumping has been planned in a manner such that backfilling can be maximized with a view to reclaim the degraded land as much as possible and at the same time minimizing external dumping.

External dumping has been planned only when backfilling is not feasible. On completion of external dumping/ backfilling, top soil will be spread on the dumped material and water sprinkling on the soil will be carried out. Grasses will be planted on the soil. Subsequently, saplings of selected species of trees will be planted in soil filled pits on the stabilized dumps. To achieve the above objectives it has been proposed to take up both biological and structural works for management and stabilization of OB dumps.

In Bolani Ore Mines, the waste / overburden generated in the expansion period will be accommodated maximum (> 80%) in the backfilling of the voids in the existing quarries and some amount as external dumping in the active dumps .

At present, the external dumps inside the forest lands of the mine occupy an area of 14.0 ha . The height of these dumps range from 10 m to 29 m. Out of these , the dumps consisting of sub-grade materials (45%-57%), will be re-handled in expansion phase to comply the guidelines of Indian Bureau of Mines (IBM), Govt of India and two nos of dumps are already in the stabilisation/ rehabilitation process .

The methods to be adopted for stabilization of OB dumps are as follows :

1. Vegetative methods / Biological Measures :


- a. Undertaking Plantation on the OB dump surface , sowing seeds of stylos grass etc

2. Bio-engineering Measures :

- a. Plantation of vetiveria grass

3. Structural methods :

- a. Terracing of slopes, plugging of gullies
- b. Construction of Retaining walls, Garland drains around fines and OB dumps (discussed under separate scheme)



The plan for stabilisation of existing external dumps have been summarized in the following table :

Dump Location / Dump No	Existing stabilisation status	Proposed stabilisation
F-area / D-1	Dumping complete, stabilized by : (1) Dry Boulder wall provided around dump (2) Plantation of 20,000 trees such as Acacia, Karanj, Mahaneem has been earlier undertaken , the existing tree heights are between 15-20 mts. Plantation of 5,000 completed saplings on slopes in August 2011	a. On the slope in western side , Gully Plugging and planting of grasses such as vetiver etc by digging concentric channels & furrows. b. Repair of Toe-wall on western side c. Plantation of 20,000 saplings proposed in western side d. Sowing stylus seeds on western slope
F-area / D-2 (backfilled are adjacent to Old dump)	Dumping complete, The dump continues to join the old dump D-1 and it is stabilized by Plantation of 10,000 trees such as Acacia, Karanj, Mahaneem undertaken in 2008-09 on 2.5 Ha area	a. Dry boulder Retaining wall around the slope in western side b. Plantation of 15,000 saplings proposed c. Sowing stylus seeds on western slope
Panposh OB dump / D-3 & D-4	(Active but Dumping discontinued) , Partly stabilized Plantation of 8,000 trees such as Acacia, Babul Karanj, Mahaneem undertaken on these dumps in 2005-06 . 180 meter Masonary Boulder wall provided around dump D-4 during year 2005-06 .	a. Retaining wall around the slope in eastern side of D-3 dump b. Plantation of 15000 saplings proposed c. Gully Plugging and planting of grasses such as vetiver etc by digging concentric channels & furrows
G-area Subgrade dump / D-5	Active , This is located in mineralized area. This will be re-handled to quarry void . Construction of 300m Retaining toe wall completed during 2011	a. Retaining wall around the slope in eastern side of D-5 dump b. Gully Plugging undertaken for stability of slopes c. Sowing stylus seeds on the slope
D-area OB dump / D-6	Active , This is located in mineralized area. This will be re-handled to quarry void by 2015-20	a. Retaining wall around the slope in eastern side of D-6 dump b. Gully Plugging for stability of slopes c. Plantation of 10 000 trees
D-area OB dump / D-7 & D-9	Non active	a. Retaining wall around the slope in eastern side of D-7 & D9 dump b. Plantation of 10,000 saplings c. Sowing stylus seeds on western slope
Old Fines dump , Valley plant area(DH5)	a. 200m Retaining wall around the old fines dump exist	b. Retaining wall around the fines dump areas c. Plantation of 10,000 saplings d. Sowing stylus seeds on western slope e. Gully Plugging on slopes

ad

Futuristic Waste dumping has been planned in a manner such that backfilling will be maximized with a view to minimize land utilisation and reclaim the already mined out land as much as possible and at the same time minimizing external dumping.

In F area back-filling is already in progress and in G area, D-area and Panposh backfilling will be started from 2013-14 onwards when the mother rock is encountered in mineral/ore boundary. Some amount of external dumping has been planned in these areas only when back-filling is not feasible.

In the new external and active dumps, appropriate grading and benching terracing will be carried out in dumps to reduce the overall slope to maintain within the angle of repose of material (or 28°). All external dumps and backfilled areas will be biologically reclaimed. Terracing will be carried out in dumps keeping in view the dump progress and area available to minimise the utilisation of virgin land. The active external dump details and terraces to be made have been summarized as follows:

BIOLOGICAL MEASURES : PLANTATION ON OB DUMPS

It is proposed to undertake plantations over the old dumps including in active parts OB dumps. The areas will be stocked by way of raising plantation at the rate 1600 plants per hectare in block plantation method. Taking into consideration the site specific soil condition, indigenous species growing naturally are proposed to be planted in the area. It is also proposed to plant hardy species such as Agave & Vetiver Plants as it can survive in degraded and poor soils along the slope & toe of O.B. dump would be most useful for controlling soil erosion.

SOWING SEEDS : It is suggested to sow grass seed on the slope of terrace & at other barren place for preservation of top soil. The grasses recommended are **stylos** (*Stylosanthes scabra*), Napier(*Pennisetum purpureum*), Para(*Brachiaria mutica*) etc. The shrubby stylos are exceptionally hardy plants ideal for extensive grazing. They establish easily, keep green leaf into autumn, and persist through drought due to their deep tap-roots. It is perennial, woody, erect shrub, suitable for wide range of soils, and tolerates very hard conditions and easy to manage.

SPECIES TO BE PLANTED :.

The list of species to be adopted for the plantation are as follows:

1	Amla	<i>Emblica officinalis</i>
2	Acacia	<i>Acacia Mangium</i>
3	Karanja	<i>Pongamia pinnata</i>
4	Asan	<i>Terminalia tomentosa</i>
5	Sisoo	<i>Dalbergia sisoo</i>
6	Gambhar	<i>Gmelina arborea</i>
7	Neem	<i>Azadirachta indica</i>
8	Harida	<i>Terminalia chebula</i>
9	Bahada	<i>Terminalia bellerica</i>
10	Kasi	<i>Bridelia retusa</i>

Sub

3

SOIL TREATMENT & PLANTING ACTIVITIES : The topsoil encountered during mining operation will be stored for utilization during plantation on OB dump areas . Planting shall be done during July in pre-dug pits of size 30cmX30cmX30cm. A basal dose of N.P.K fertiliser of 15g shall be applied at the time of planting, besides mixing with insecticides to prevent termites & insects. A minimum distance of 2.5 mt X 2.5 mt shall be maintained on every fourth plants in planting either of the species. Care should be taken to complete the planting during July while rains are still on during first or second week of July. The proposed biological measures along with the maintenance works will also be executed with internal resources by the user agency in consultation with local Forest Deptt. It is proposed to provide sufficient fuel/conveyance charges for technical experts for proper execution of these programmes to the executing agency. An cost estimate of plantation over 15 hectares dump area in block plantation mode has been planned during the first five years .

B Bio-Engineering Measures :

Bio-engineering approach is proposed to be adopted with a view to retain loose spoils/fines from being transported to the water course . Iron ore mine spoils are typically devoid of organic matter and the micro-flora count is not very conducive for plant . So inspite of plantation , survival and growth is observed to be very less . To combat these problem , actions are needed to supplement the organic carbon need and at the same time develop a micro eco-system with organisms tolerant to harsh environment .

Plantation of vetiver (Chrysopogon Zizanioides) grass on slopes : The work will be carried out in consultancy with IIT Kharagpur or other specialised agencies in designing , supervising during execution with the involvement of mine personnel . The design envisaged is planting in rows along the contour lines or across the face to form close hedge with row to row distance of 1m. The cost of the studies, cost of procurement of saplings and micronutrients, developing the experiments arranging the expert services, contingency and consultancy overheads for a 1.0 hectares area would be Rs.19.0 Lakhs .

C. Structural Measures

Wash offs and rolling down of excavated materials from the dump slopes give way to slope failures and the dumps become unstable . Hence structural measures like gully plugging by constructing loose boulder structures and construction of Retaining toe Walls, Garland Drains & Settling Pits etc should be adopted for prevention of wash offs and to arrest excavated material from OB dump .

Gully plugging by Loose boulder structures : The steep slope of the dumps due to which gullies are formed by heavy erosion . Considering the slopes & run-off, it has been proposed to take up construction of series Loose Boulder check dams over the dump slopes (1mt. 2mt., 3mt. & 4 mt. span) as follows :



LOCATION OF DUMP	DUMP	LBS SPAN			
		1mt	2mt	3mt	4mt
F-area	Dump D-1	15	8	2	5
G-area	Dump D-5	25	12	8	5
D-area	Dump D-6,7 & 8	22	10	5	5
Parposh	Dump D-3 & 4	32	25	10	10
Valley plant	Fines dump(DH5)	20	15	15	15
	Old fines dump	25	20	15	15
	TOTAL	139	90	55	65
COST TO BE INCURRED		@ Rs. 1615/- per LBS = 2,24,485	@ Rs. 3200/- per LBS = Rs 2,88,000/-	@ Rs. 6714/- per LBS= Rs 3,69,270/-	@Rs.11370/- per LBS = Rs 7,39,050/-
		TOTAL			
		Rs 16,20,805.00			

The details of estimate of different size of Loose Boulder checkdams are given in **ANNEXURE-II**.

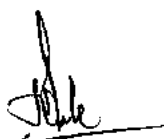
Retaining walls : A plan for erosion control measures from OB dump slope areas to prevent the wash offs at the source itself at a cost of **Rs 43.76 lakhs** has been prepared separately which has been submitted in compliance .

Benching/Terracing across the OB dump slope

The slopes of external dumps shall be planned at an overall angle of less than 28° with individual lifts at less than 37°. As the dumps attain final position, the slopes will be terraced and proper vegetation will be laid which will cause binding of the soil preventing any slope failure. Retaining walls will be built all-around the external dumps which will have weep holes for passage of storm water to join garland drains.

It is proposed to construct 3/2 step bench terraces of the O.B.dump to intercept the flow of materials during torrential rain and provide stability . The slope of individual terrace should be within the permissible range considering the angle of repose of the soil and space available, thereby maintaining the overall angle of repose within 28°.

The terracing will be done through the internal resources by deploying the operating mining equipments and technical sraffs already employed .



Details of proposed OB Dump terracing :

Dump / Quarry	Dump levels (in m AMSL)		No of lifts / Terraces	Height of each lift	Overall slope to be attained	Remarks
	Bottom level	Top level				
Existing Old Dump in F-area	880	896	5 stable slope	(1) For this existing OB dump, grading and benching activity will be done suitably, so that the stable part of slope is not disturbed ($< 28^{\circ}$). (2) Gully plugging and Grass turfing & application of erosion control-coirs will be applied as and where applicable by making small width terraces manually across the slope.		
Existing Old & active sub grade Dumps in G area	880	899	2 lifts / 1 terrace	8-9 m	$< 28^{\circ}$	The Sub-grade dumps will be re-handled during 2015-20 for mineral conservation purpose. Terracing has been done completed in dump (D5)
Active Dumps in D area	520	530	2 lifts / 1 terrace	8-9 m	$< 28^{\circ}$	Terracing work has already started with con-current dumping. Terracing has been done completed in dump (D8)
Dump in Panposh	560	572	2 lifts / 1 terrace	6-7 m	$< 28^{\circ}$	Dumping is stopped at present and in the process of stabilisation. Manual Terracing to be completed by 2014-15.

INSPECTION, MONITORING AND EVALUATION

For successful implementation of the above Mitigative measures, intensive inspection and technical guidance from concerned technical wing is required. Sufficient fuel/ conveyance charges for technical experts shall be provided by the user agency for proper execution of these programmes. Infrastructural facilities like GIS software along with GPS equipments will be provided by the user agency for the above post implementation monitoring. Necessary facilities for carrying out R & D works by expert agencies on new technologies of OB / fines dump management will be made by user agency.



EXECUTING AGENCY


In all the cases, the works shall be executed by the User Agency having specialised departments headed by qualified persons with outsourced man and machinery as and where required. To facilitate this, the user agency shall establish it's own executing and supervision cells along with required infrastructural facilities. In order to maintain the quality of work, in house supervision through competent personnel shall be provided. The entire work shall be carried out through close coordination with the Forest Department.


REQUIREMENT OF FUNDS

The total cost of the implementation of OB dump stabilisation plan is Rs. **91,20,000/-** as detailed in **Annexure-V**. For implementation of the above plan, the above expenditure of Rs 91.20 lakh will be made over the first five years period . Therefore, budget provision of Rs. 91.20 lakhs will be kept by the user agency for implementation of the biological, structural and bio-engineering measures during the period of first five years. This budget will subject to increase in amount considering the increase in materials and labour charges.

The tentative annual expenditure planned for the next five year for the implementation of above measures is given in the following table :

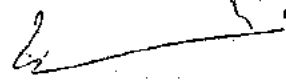
Sl. No.	Description	Amount
1.	1 st year plan of expenditure	Rs 20.00 Lakhs
2.	2 nd year plan of expenditure	Rs 20.00 Lakhs
3.	3 rd year plan of expenditure	Rs 20.00 Lakhs
4.	4 th year plan of expenditure	Rs 20.00 Lakhs
5.	5 th year plan of expenditure	Rs 11.20 Lakhs
6.	Total:-	Rs 91.20 Lakhs



(N P PRAMANIK)
GENERAL MANAGER
SAIL-BOLANI ORES MINES


Forest Range Officer
BAPEN DANCE, BARNA

Technically
Approved!

COUNTERSIGNED


Divisional Forest Officer
Keonjhar Division


Regional Chief Conservator of Forests
Rourkela Circle

EXECUTING AGENCY

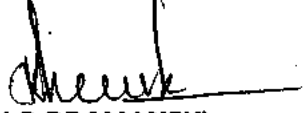
In all the cases, the works shall be executed by the User Agency having specialised departments headed by qualified persons with outsourced man and machinery as and where required. To facilitate this, the user agency shall establish it's own executing and supervision cells along with required infrastructural facilities. In order to maintain the quality of work, in house supervision through competent personnel shall be provided. The entire work shall be carried out through close coordination with the Forest Department.

REQUIREMENT OF FUNDS

The total cost of the implementation of O&B dump stabilisation plan is Rs. **91,20,000/-** as detailed in **Annexure-V**. For implementation of the above plan, the above expenditure of Rs 91.20 lakh will be made over the first five years period . Therefore, budget provision of Rs. 91.20 lakhs will be kept by the user agency for implementation of the biological, structural and bio-engineering measures during the period of first five years. This budget will subject to increase in amount considering the increase in materials and labour charges.

The tentative annual expenditure planned for the next five year for the implementation of mitigative measures is given in the following table :

Sl. No.	Description	Amount
1.	1 st year plan of expenditure	Rs 20.00 Lakhs
2.	2 nd year plan of expenditure	Rs 20.00 Lakhs
3.	3 rd year plan of expenditure	Rs 20.00 Lakhs
4.	4 th year plan of expenditure	Rs 20.00 Lakhs
5.	5 th year plan of expenditure	Rs 11.20 Lakhs
6.	Total:-	Rs 91.20 Lakhs


(N P PRAMANIK)
GENERAL MANAGER
SAIL-BOLANI ORES MINES


Forest Range Officer
BARRIS RANGE, BARRIS

COUNTERSIGNED


Divisional Forest Officer
Keonjhar Division

ANNEXURE-I

**COST ESTIMATE FOR BLOCK PLANTATION OF 1600 SEEDLINGS/ HECT.
AT 2.5 m X 2.5 m SPACING.**

1	Name of the Plantation	Block Plantation
2	No.of Seedlings to be planted	1600 Nos / Hect.
3	Spacing to be adopted	2.5 m x 2.5 m
4	Size of Pits	30cm x 30cm x 30cm.
5	Wage rate	Rs.90.00 / manday
6	Species to be planted	Teak, Bamboo, Sisoo, Gambhar, Neem and other miscellaneous species.
7	The user agency will pay the wage rate as and when enhanced.	

A. NURSERY COST FOR 1600 SEEDLINGS:

Sl No	Name of activity	Period of activity	Mandays	Labour rate @ Rs.90/-	Material Cost	Total
1	2	3	4	5	6	7
1	Cost of seeds including Transport	Mar-April	-		120.00	120.00
2	Preparation of nursery beds (40' x 4') by getting good earth and mixing cow dung manure	April	3	270.00	-	270.00
3	Treatment of seeds (alternate soaking and drying) and dibbling of treated seeds on beds	April-May	3	270.00	-	270.00
4	Cost of watering the beds	May-June	26	2340.00	-	2340.00
5	Weeding of beds	Aug-Sept	4	360.00	-	360.00
6	Contingencies		3	270.00	-	270.00
7	Fencing of Temporary nursery site	Feb-Mar Dec-Jan	1.5	135.00	-	135.00
8	Cost of fencing materials		-	-	85.00	85.00
9	Cost of polythene bags (9" x5": -12S gauge)*		-	-	365.00	365.00
10	Cost of soil and CDM		-	-	600.00	600.00

(* SAIL - BOM has permanent nursery beds for polythene)



11	Cost of Chemical Fertilizer (8 kg. @ Rs.25/-)		-	-	200.00	200.00
12	Cost of insecticide		-	-	50.00	50.00
13	Preparation of soil mixture (Soil, Sand, CDM, 1:1:1)	Mar-April Jan-Feb	2	180.00	-	180.00
14	Filling of Polythene bags and setting into beds	Mar-April Jan-Feb	5	450.00	-	450.00
15	Preparation of stumps.	Mar-April	5	450.00	-	450.00
16	Transportation of stumps to temp. nursery	Mar-April	2	180.00	-	180.00
17	Transplanting the stumps to polythene bags. <i>dibbling of treated seeds</i>	Mar-April	3	270.00	-	270.00
18	Watering the polypots	Mar-June	12	1080.00	-	1080.00
19	Weeding, grading & sorting of polypots.	April-May	4	360.00	-	360.00
20	Application of insecticides/ chemical manure in nursery	April-May	1	90.00	-	90.00
21	Contingencies.				150.00	150.00
Total			74.5	6705.00	1650.00	8265.00

B. ADVANCE WORK (PRE-PLANTING OPERATION):

1	Survey, Demarcation and Pillar Posting	April	2	180.00		180.00
2	Site Preparation	April	8	720.00		720.00
3	Alignment and stacking of pits	May	2	180.00		180.00
4	Digging of pits of 30 Cum	May	40	3600.00		3600.00
5	Contingencies				150.00	150.00
Total			52	4680.00	150.00	4830.00



C. FIRST YEAR PLANTING :

1	Transportation of seedlings with poly-pots	July	5	450.00	-	450.00
2	Planting including casualties replacement, manuring (Basal dose) & insecticide application	July-Aug	16	1440.00	-	1440.00
3	Cost of fertilizer	Jul-Aug			1320.00	1320.00
4	First Weeding(complete weeding)	Aug-Sept	7	630.00	-	630.00
5	Manuring in 2 doses of 15g each in 15 days duration	Sept-Oct	5	450.00	-	450.00
6	Second weeding (complete weeding)	Oct-Nov	7	630.00	-	630.00
7	Soil working (50 cms radius around the plant)	Oct-Nov	7	630.00	-	630.00
8	Fire tracing and inspection path	Jan-Feb	3	270.00	-	270.00
9	Soil conservation measures in the form of staggered rubble stone check dams	Jan-Feb	10	900.00	-	900.00
10	Honey Comb structure for soil conservation for 400 plants in a hectare	Oct-Nov	50	4500.00	1000.00	5500.00
11	600 percolation pits 45cm ³ @25 pits per mandays		24	2160.00	-	2160.00
12	100 contour trenches (2mx0.5mx0.5m) per ha.		45	4050.00	-	4050.00
13	Entry point activities in shape of community articles like mats etc				1000.00	1000.00
14	Watch and Ward	Oct-Mar	7	630.00	-	630.00
15	Contingency				200.00	200.00
Total (1st Year)			186	16740.00	3520.00	20260.00

D. SECOND YEAR – MAINTENANCE :

1	Casualty Replacement with nursery cost	Mar-Jul	12	1080.00		1080.00
2	Application of fertilizer	Aug-Sept	4	360.00		360.00
3	Cost of fertilizer	Aug-Sept			600.00	600.00

ohh

4	Weeding (complete weeding)	Aug-Sept	6	540.00		540.00
5	Soil working (50cm radius around the pit)	Oct-Nov	7	630.00		630.00
6	Fire tracing (2m wide fire line over 400mt. Long)	Mar-Jan June	3	270.00		270.00
7	Entry point activities				500.00	500.00
8	Watch and ward	Whole yr.	15	1350.00		1350.00
9	Contingency				150.00	150.00
Total (2nd Year)			47	4230.00	1050.00	5280.00

E. THIRD YEAR – MAINTENANCE:

1	Weeding & application of Fertilizer	Aug-Sept	7	630.00		630.00
2	Cost of fertilizer	Aug-Sept			600.00	600.00
3	Soil Working (50 Cm radius around the pit)	Oct-Nov	7	630.00		630.00
4	Fire tracing (2m. wide fire line Over 400m long)	Mar-Jun	3	270.00		270.00
5	Entry point activities				195.00	195.00
6	Watch and Ward	Whole yr.	15	1350.00		1350.00
7	Contingency				150.00	150.00
Total (3rd Year)			32	2880.00	945.00	3825.00

F. FOURTH YEAR – MAINTENANCE

1	Weeding & soil working (50cm around each plant)	Oct-Nov	7	630.00		630.00
2	Fire tracing(2mtr wide fire line over 400mtr long)	Mar-Jun	3	270.00	-	270.00
3	Watch & ward	Whole yr.	15 22	1350.00 1980.00		1350.00 1980.00
4	Contingency				150.00	150.00
Total (4th Year)			25	2250.00	150.00	2400.00

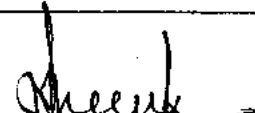


G. FIFTH YEAR – MAINTENANCE

Sl No	Name of activity	Period of activity	Mandays	Labour rate @ Rs.90/-	Material Cost	Total
1	2	3	4	5	6	7
1	Fire tracing(2mtr wide fire line over 400mtr long)	Mar-Jun	3	270.00	-	270.00
2	Watch & ward	Whole yr.	22	1980.00		1980.00
3	Contingency				150.00	150.00
Total (5 th Year)			25	2250.00	150.00	2400.00
GRAND TOTAL PER HA			441.5	39735.00	7725.00	47460.00

ABSTRACT

Nursery.	Rs. 8265.00 / for 15 Ha	Rs 1,23,975.00
Advance Work.	Rs 4830.00 / for 15 Ha	Rs 72,450.00
Plantation 1 st year.	Rs.20260.00 / for 15 Ha	Rs 3,03,900.00
Maintenance 2 nd year.	Rs 5480.00 / for 15 Ha	Rs 82,200.00
Maintenance 3 rd year.	Rs. 3825.00 / for 15 Ha	Rs 57,375.00
Maintenance 4 th year.	Rs. 2400.00 / for 15 Ha	Rs 36,000.00
Maintenance 5 th year.	Rs. 2400.00 / for 15 Ha	Rs 36,000.00
Total cost for plantation over 15 hectares OB dump area	Rs. 47,460.00 x 15 Ha = Rs. 7,11,900.00 (Rupees Seven Lakhs eleven thousand nine hundred only)	


(N P PRAMANIK)
 GENERAL MANAGER
 SAIL-BOLANI ORES MINES

1. Detail Estimate of Loose Boulder Structure (S.C.M.)**Span-1 mt. Ht. = 0.6 mt. Slope-U/S:- 1:1.5 D/S slope: 1:2**

1. Leveling the unshape surface of the selected site & layout the structure foundation L.S. 1 MD. **Rs. 90.00**

2. Excavation of foundation in hard soil within initial lead of 50 mtr. including rough dressing and breaking of clods to maximum size 5 cm. to 7 cm. laying in layer not exceeding 0.3 in depth to strengthening both side U/S approx. bund of loose boulder structure.

Base with apron- $1 \times 3.60 \times 1.60 \times 0.30 =$

1.728

Wing wall - $4 \times 0.50 \times 0.30 \times 0.30 =$ 0.180

1.908 cum

Rs. 76.00**@ Rs. 3948.00 per 100 cum.**

3. Rough stone dry packing up to GL

Base with apron - $1 \times 3.60 \times 1.60 \times 0.30 =$

1.728

Wing wall - $4 \times 0.50 \times 0.30 \times 0.30 =$ 0.180

1.908 cum

Above GL

Super structure- $1 \times 1.00 \times \frac{2.60 + 0.50}{2} \times 0.60 =$

0.930

Wing wall - $4 \times 0.50 \times 0.30 \times 0.30 =$

0.180

Side wall-

i. $2 \times \frac{0.3 + 0.9}{2} \times 0.3 =$

0.324

ii. $2 \times 0.3 + \frac{0.9 \times 1.2}{2} \times 0.3 =$

0.432

iii. $2 \times 0.5 \times 0.9 \times 0.3 =$

0.270

iv. $2 \times 1.0 \times 0.3 \times 0.3 =$ 0.1802.316 cum

4.224

Rs. 1,449.00

cum

@ Rs. 343.00 per

cum

G. Total Rs. 1,615.00**(Rupees one thousand six hundred fifteen only)**

(N P PRAMANIK)

GENERAL MANAGER

SAIL-BOLANI ORES MINES

Detail Estimate of Loose Boulder Structure (S.C.M.)**Span-2 mt. Ht. = 0.6 mt. Slope-U/S:- 1:1.5 D/S slope: 1:2**

1. Leveling the unshape surface of the selected site & layout the structure foundation L.S. 1 MD. Rs. 90.00

2. Excavation of foundation in hard soil within initial lead of 50 mtr. including rough dressing and breaking of clods to maximum size 5 cm. to 7 cm. laying in layer not exceeding 0.3 in depth to strengthening both side U/S approx. bund of loose boulder structure.

Base with apron- $1 \times 3.70 \times 3.00 \times 0.30 =$ 3.33
 Wing wall - $4 \times 0.50 \times 0.50 \times 0.30 =$ 0.30 3.63 cum Rs. 144.00
@ Rs. 3948.00 per 100 cum.

3. Rough stone dry packing up to GL

Base with apron - $1 \times 3.70 \times 3.00 \times 0.30 =$ 3.33

Wing wall - $4 \times 0.50 \times 0.50 \times 0.30 =$ 0.30

Above GL

Super structure- $1 \times 2.00 \times \frac{2.70 + 0.60}{2} \times 0.60 =$ 1.98

Wing wall - $4 \times 0.50 \times 0.50 \times 0.50 =$ 0.50

Side wall-

i. $2 \times \frac{0.50 + 1.10}{2} \times 0.9 \times 0.5 =$ 0.72

ii. $2 \times \frac{0.5 + 1.10}{2} \times 1.2 \times 0.5 =$ 0.96

iii. $2 \times 0.6 \times 0.6 \times 0.5 =$

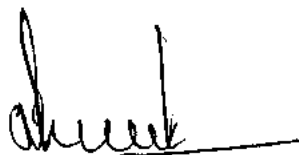
iv. $2 \times 1.0 \times 0.5 \times 0.5 =$ 0.36

0.50

8.65 cum @ **Rs. 2,966.00**
 Rs. 343.00 per cum

G. Total Rs. 3,200.00

(Rupees three thousand two hundred only)



(N P PRAMANIK)
 GENERAL MANAGER
 SAIL-BOLANI ORES MINES

ANNEXURE-II(C)

Detail Estimate of Loose Boulder Structure (S.C.M.)

Span-3 mt. Ht. = 1.0mt. Slope-U/S:- 1:1.5 D/S slope: 1:2.0

1. Leveling the unshape surface of the selected site & layout the structure foundation L.S. 1 MD. **Rs. 90.00**

2. Excavation of foundation in hard soil within initial lead of 50 mtr. including rough dressing and breaking of clods to maximum size 5 cm. to 7 cm. laying in layer not exceeding 0.3 in depth to strengthening both side U/S approx. bund of loose boulder structure.

Base with apron- $1 \times 5.10 \times 4.00 \times 0.30 =$ 6.12
Wing wall - $4 \times 0.50 \times 0.50 \times 0.30 =$ 0.30 6.42 cum **Rs. 254.00**
@ Rs. 3948.00 per 100 cum.

3. Rough stone dry packing up to GL

Base with apron - $1 \times 5.10 \times 4.00 \times 0.30 =$ 6.12
Wing wall - $4 \times 0.50 \times 0.50 \times 0.30 =$ 0.30
Above GL
Super structure- $1 \times \frac{4.10 + 0.60}{2} \times 1.00 \times 3.0 =$ 7.05

Wing wall - $4 \times 0.50 \times 0.50 \times 0.50 =$ 0.50

Side wall-

i. $2 \times \frac{0.50 + 1.50}{2} \times 1.5 \times 0.5 =$ 1.50

ii. $2 \times \frac{0.5 + 1.50}{2} \times 2.0 \times 0.5 =$ 2.0

iii. $2 \times 0.6 \times 1.0 \times 0.5 =$ 0.60

iv. $2 \times 1.0 \times 0.5 \times 0.5 =$ 0.50

18.57 cum @ **Rs. 6,370.00**

Rs. 343.00 per cum

G. Total Rs. 6,714.00

(Rupees six thousand seven hundred fourteen only)



(N P PRAMANIK)
GENERAL MANAGER
SAIL-BOLANI ORES MINES

Detail Estimate of Loose Boulder Structure (S.C.M.)**Span-4 mt. Ht. = 1.3mt. Slope-U/S:- 1:1.5 D/S slope: 1:2.0**

1. Leveling the unshape surface of the selected site & layout the structure foundation L.S. 1 MD. **Rs. 90.00**

2. Excavation of foundation in hard soil within initial lead of 50 mtr. including rough dressing and breaking of clods to maximum size 5 cm. to 7 cm. laying in layer not exceeding 0.3 in depth to strengthening both side U/S approx. bund of loose boulder structure.

Base with apron- $1 \times 6.15 \times 5.00 \times 0.30 =$ 9.225
 Wing wall - $4 \times 0.50 \times 0.50 \times 0.30 =$ 0.30 9.525 cum **Rs. 376.00**
@ Rs. 3948.00 per 100 cum.

3. Rough stone dry packing up to GL

Base with apron - $1 \times 6.15 \times 5.00 \times 0.30 =$ 9.225

Wing wall - $4 \times 0.50 \times 0.50 \times 0.30 =$ 0.30

Above GL

Super structure- $1 \times \frac{5.15 + 0.60}{2} \times 1.30 \times 4.0 =$ 14.95

Wing wall - $4 \times 0.50 \times 0.50 \times 0.50 =$ 0.50

Side wall-

i. $2 \times \frac{0.50 + 1.80}{2} \times 1.95 \times 0.5 =$ 2.24

ii. $2 \times \frac{0.5 + 1.80}{2} \times 2.6 \times 0.5 =$ 2.99

iii. $2 \times 0.6 \times 1.8 \times 0.5 =$

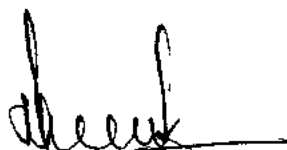
iv. $2 \times 1.0 \times 0.5 \times 0.5 =$

1.08
0.50

31.785 cum @ **Rs. 10904.00**
 Rs. 343.00 per cum

G. Total Rs. 11370.00

(Rupees eleven thousand three hundred seventy only)



(N P PRAMANIK)
 GENERAL MANAGER
 SAIL-BOLANI ORES MINES

ANNEXURE-III

Estimate for vetiveria plantation on the OB dump slopes for 5,000 sq meter

1. Cost of Planting vetiveria including procurement of seeds , micronutrients and development of seedlings including institutional overheads as per Budgetary offer of IIT Kharagpur -
Rs 9.5 Lakhs

Sq m Cost = Rs 190 /-

Hence Cost of Planting vetiveria including procurement of seeds , micronutrients and development of seedlings including institutional overheads over an area of 2 Ha

- Rs 38.0 Lakhs

(* Copy of the budgetary offer of IIT is enclosed in Annexure -VI)



(N P PRAMANIK)
GENERAL MANAGER
SAIL-BOLANI ORES MINES

COST NORM FOR AGAVE PLANTATION


(FOR 5 ROWS & 40 mts)

Wage Rate: Rs. 90.00

FIRST YEAR OPERATION				
Sl.No	Name of the Work	Man Day	Material Rs.	Total Cost in Rs
1	Site clearance ,alignment and stacking	2	-	180
2	Cost of lining materials including transportation.	-	200	200
3	Digging of pits and application of line.	6	-	540
4	Cost of 200 pc. Including transportation.	-	1000	1000
5	Carriage and planting	2	-	180
6	Soil working and application of fertilisers(twice)	8	-	720
7	Cost of fertiliser	-	200	200
8	Contingency	-	200	200
	Total	18	1600	3220
2nd YEAR OPERATION				
9	Casualty replacement (20%) including cost of suckers & pitting.	2	200	380
10	Weeding and application of fertilisers	6	-	540
11	Cost of fertilisers and insecticides	-	150	150
12	Total	8	350	1070
3rd YEAR OPERATION				
13	Weeding, soil working and application of fertilisers.	6	-	540
14	Cost of fertilisers and insecticides	-	150	-
15	Plant protection measures including fertiliser cost.	-	150	-
	Total	6	300	840
	Grand Total			5310

Cost for Agave fencing with five rows 01 Kms= $\frac{5310}{40} \times 1000 = \text{Rs.1, 28,250/-}$


Cost for Agave fencing with five rows 2.0 Kms around toe all along the periphery of the dumps
= Rs.1, 28,250/- x 2= **Rs 2,56,500/-**


(N P PRAMANIK)
GENERAL MANAGER
SAIL-BOLANI ORES MINES

TOTAL COST OF THE PROJECT

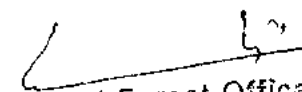
Sl.No	Description of the work	Funds Required (in Rs)
1	Biological Measures Afforestation over the OB dumps	Rs. 7,11,900.00
	Sowing stylos seeds on dump slopes(L/S)	Rs. 1,50,000.00
	Plantation of agave at the toe of dumps	Rs. 2,56,500.00
2	Bio-engineering measures	
	Plantation of vetiver grass on dump slope	Rs. 38,00,000.00
3	Structural Measures	
	Plugging of gullies on slopes by loose boulder structures	Rs. 16,20,805.00
4.	Maintenance of previously constructed structures(L/S)	Rs. 2,00,000.00
5.	R & D works on application of bio-engineering measures	Rs. 15,00,000.00
6.	Contingency including supervision charges(L/S)	Rs. 50,000.00
	TOTAL	Rs. 82,89,205.00
	Price escalation @ 10%	Rs. 8,28,920.50
	Grand Total	Rs. 91,18,125.50 =Rs. 91.20 lakhs

In case of any increase in the man, material and machinery charges, provision for additional funds will be made as and when required.

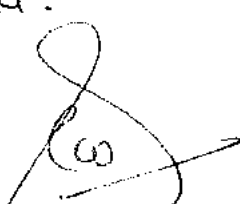

(N P PRAMANIK)
GENERAL MANAGER
SAIL-BOLANI ORES MINES


Forest Range Officer
BARKUL RANGE, BARDA

COUNTERSIGNED


Divisional Forest Officer
Keonjhar Division

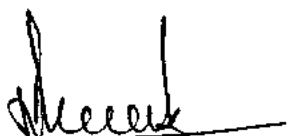
Technically
Approved.


Regional Chief Conservator of Forests
Rourkela Circle

TOTAL COST OF THE PROJECT

Sl.No	Description of the work	Funds Required (in Rs)
1	Biological Measures Afforestation over the OB dumps	Rs. 7,11,900.00
	Sowing stylos seeds on dump slopes(L/S)	Rs. 1,50,000.00
	Plantation of agave at the toe of dumps	Rs 2,56,500.00
2	Bio-engineering measures	
	Plantation of vetiver grass on dump slope	Rs 38,00,000.00
3	Structural Measures	
	Plugging of gullies on slopes by loose boulder structures	Rs. 16,20,805.00
4.	Maintenance of previously constructed structures(L/S)	Rs 2,00,000.00
5.	R & D works on application of bio-engineering measures	Rs 15,00,000.00
6.	Contingency including supervision charges(L/S)	Rs. 50,000.00
	TOTAL	Rs 82,89,205.00
	Price escalation @ 10%	Rs 8,28,920.50
	Grand Total	Rs 91,18,125.50 =Rs 91.20 lakhs

In case of any increase in the man, material and machinery charges, provision for additional funds will be made as and when required.


(N P PRAMANIK)
 GENERAL MANAGER
 SAIL-BOLANI ORES MINES

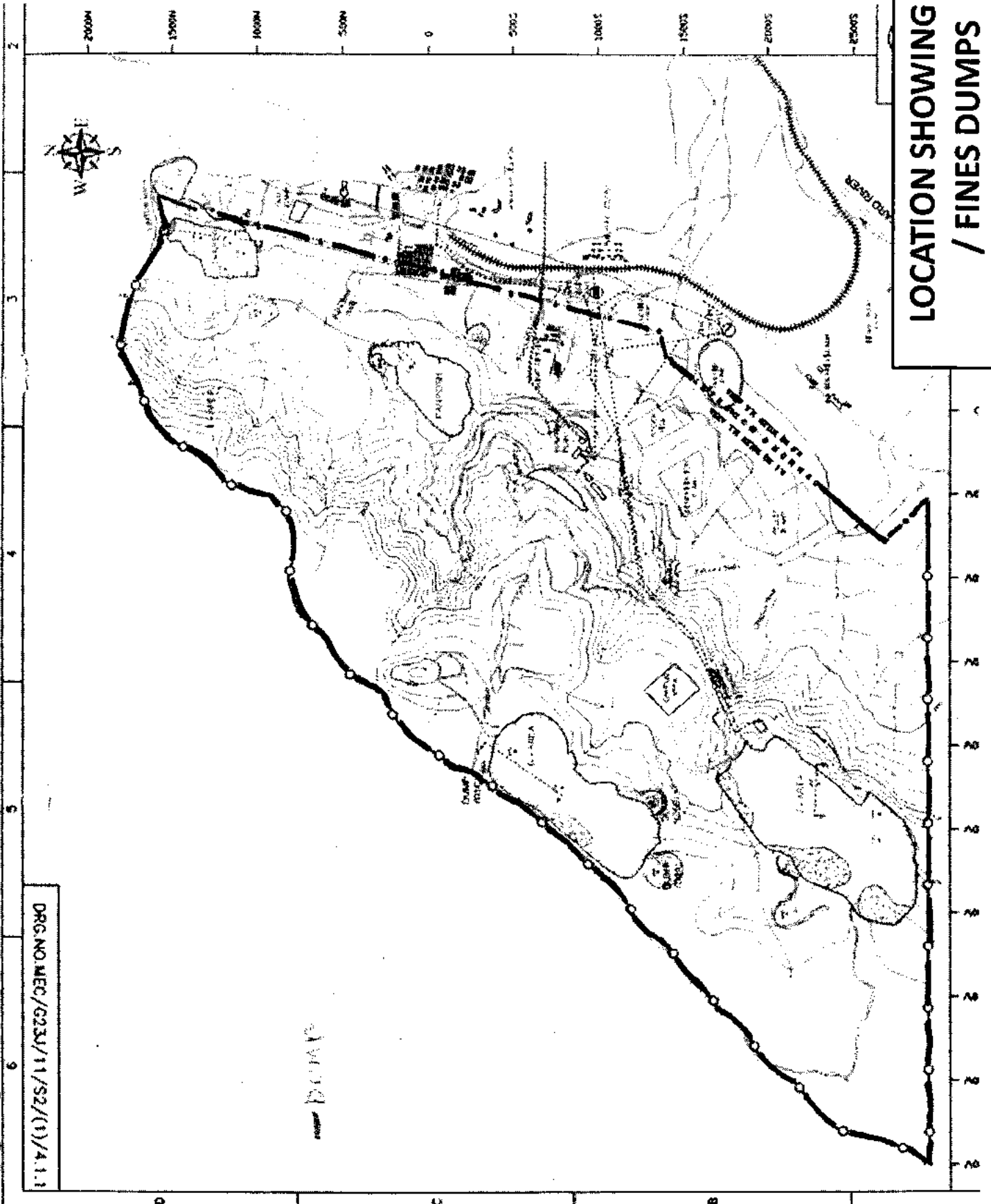


Forest Range Officer
BARIL RANGE, BARIL

COUNTERSIGNED


Divisional Forest Officer
Keonjhar Division

LOCATION SHOWING OB / FINES DUMPS



DRG NO MEC/G23J/11/S2/(1)/4.1.1

COUNTERSIGNED

[Signature]
Divisional Forest Officer
Kannur Division

[Signature]
General Manager
Kannur Division
Kannur

[Signature]
General Manager
Kannur Division
Kannur

Annexure -II

REVISED FINANCIAL OUTLAY OF PLAN FOR STABILIZATION OF OB DUMPS BY GRADING & BENCHING & MANAGEMENT & STABILIZATION OF FINE & OB DUMPS IN COMPLIANCE OF CONDITION NO-2-IV(D) & XIV (REVISED WAGE RATE - RS 125/-)

COST ESTIMATE FOR BLOCK PLANTATION OF 1600 SEEDLINGS/ HECT.AT 2.5 m X 2.5 m SPACING.

1	Name of the Plantation	Block Plantation
2	No. of Seedlings to be planted	1600 Nos / Hect.
3	Spacing to be adopted	2.5 m x 2.5 m
4	Size of Pits	30cm x 30cm x 30cm.
5	Wage rate	Rs.125.00 / manday
6	Species to be planted	Bamboo, Sisoo, Neem and other miscellaneous drought hardy species.
7	The user agency will pay the wage rate as and when enhanced.	

Sl. No.	Item of work	Mandays	Labour cost @ Rs.125	Material Cost (In Rs.)	Total Cost (In Rs.)
1	2	3	4	5	6
	0th Year (Advance work / Pre-planting)				
1	Survey, Demarcation & Pillar posting	2	250	0	250
2	Site preparation	12	1500	0	1500
3	Alignment & stacking of pits	2	250	0	250
4	Digging of pits (30 cm cube)	40	5000	0	5000
5	Nursery cost (one year old seeding) part	80	5000	5000	10000
6	Contingencies & overheads	3	0	0	375
	Total =	139	12000	5000	17375
	1st year / Planting year/ Year of Creation				
7	Nursery cost (one year old seeding) balance	25	2625	500	3125
8	Carriage, planting. CR manuring, insecticide application	30	3750	0	3750
9	cost of insecticide & Fertilizer	24	0	3000	3000
10	1st Weeding (Complete weeding)	10	1250	0	1250
11	Manuring	5	625	0	625
12	2nd Weeding (Complete weeding)	6	750	0	750
13	Soil working (50cms, Radius around plants)	8	1000	0	1000
14	Fire Line Tracing & inspection path	3	375	0	375
15	Soil conservation measures in the form of staggered trenches of 2m.lx 50 cm D& drainage line treatment, percolation pits etc.	10	1250	0	1250
16	Watch & ward and brush wood/ live fencing at 15% length of periphery to prevent cattle entry	15	1875	0	1875
17	Contingencies & overheads	4	500	0	500
	Total =	140	13500	3500	17500

	<u>2nd Year Maintenance</u>				
18	Casualty replacement with nursery cost	12	1500	0	1500
19	Weeding (Complete weeding)	8	1000	0	1000
20	Application of Fertilizer	4	500	0	500
21	Cost of fertilizer	12	0	1500	1500
22	Soil working (50cms, Radius around plants)	7	875	0	875
23	Fire Line Tracing (2m. Wide fire line over 400m long)	3	375	0	375
24	Watch and ward and fence maintenance	18	2250	0	2250
25	Contingencies & overheads	3	375	0	375
	Total =	67	6500	1500	8375
	<u>3rd Year Maintenance</u>				
26	Weeding & Pruning & application of fertilizer	8	1000	0	1000
27	Cost of Fertilizer	12	1500	0	1500
28	Soil working (50 cms, Radius around plants)	8	1000	0	1000
29	Fire line tracing (2mt. wide fireline over 400 mt. long)	3	375	0	375
30	Watch & ward and fence maintenance	18	2250	0	2250
31	Contingencies & overheads	3	375	0	375
	Total =	52	5000	1500	6500
	<u>4th Year Maintenance</u>				
32	Weeding & Pruning	8	1000	0	1000
33	Watch & Ward and fence maintenance	18	2250	0	2250
34	Fire line tracing (2mt. wide fireline over 400 mt. long)	3	375	0	375
35	Contingencies & overheads	3	375	0	375
	Total =	32	4000	0	4000
	<u>5th Year Maintenance</u>				
36	Weeding & Pruning	8	1000	0	1000
37	Watch & Ward and fence maintenance	18	2250	0	2250
38	Fire line tracing (2mt. wide fireline over 400 mt. long)	3	375	0	375
39	Contingencies & overheads	3	375	0	375
	Total =	32	4000	0	4000
	<u>6th Year Maintenance</u>				
40	Weeding & Pruning	8	1000	0	1000
41	Watch & Ward and fence maintenance	18	2250	0	2250
42	Fire line tracing (2mt. wide fireline over 400 mt. long)	3	375	0	375
43	Contingencies & overheads	3	375	0	375
	Total =	32	4000	0	4000
	Grand Total =	494	11500	47500	61750



ABSTRACT FOR @ 1600/- SEEDLINGS PER HA.

Year	Labour	Material	Contingencies	Total
0 th Year	12000.00	5000.00	375.00	17375.00
1 st . Year	13500.00	3500.00	500.00	17500.00
2 nd . Year	6500.00	1500.00	375.00	8375.00
3 rd . Year	4625.00	0	1875.00	6500.00
4 th Year	3625.00	0	375.00	4000.00
5 th Year	3625.00	0	375.00	4000.00
6 th Year	3625.00	0	375.00	4000.00
Total	47,500.00	10,000.00	4,250.00	61,750.00
	380	80	34	494
Additional incentive(3%) for Fr/Fg/ Proposed for more than 80% survival and verygood growth during 4th year of maintenance as per recommendations of DFO and RCCF				1853.00
Additional EPA expenses if implemented through VSS at the rate of Rs 1000/- in 0th year , Rs 2000 in 1st Year, Rs.1500 in 2nd Year, Rs .500/- in 3rd year Rs 500/-in 4th Year Rs.500 In 5th Year and Rs 500 in 6th year				6500.00
Total Norm per Hectare in Non JFM mode with incentives				70,103.00
Total cost for plantation over 15 Hectares OB dump area	Rs. 70,103.00 /- x 15 Ha = Rs. 10,51,545.00 i.a Ten Lakhs fifty one thousand five hundred forty five only.			


GENERAL MANAGER
SAIL-BOLANI ORES MINES

I. Detail Estimate of Loose Boulder Structure (S.C.M.)

Span-1 mt. Ht. = 0.6 mt. Slope-U/S:- 1:1.5 D/S slope: 1:2

1. Leveling the unshaped surface of the selected site & layout the structure foundation L.S. 1 M0. Rs. 125.00

2. Excavation of foundation in hard soil within initial lead of 50 mtr. including rough dressing and breaking of clods to maximum size 5 cm. to 7 cm. laying in layer not exceeding 0.3 in depth to strengthening both side U/S approx. bund of loose boulder structure.

Base with apron- $1 \times 3.60 \times 1.60 \times 0.30 =$ Wing wall - $4 \times 0.50 \times 0.30 \times 0.30 =$

1.728

@ Rs. 5556.00 per 100 cum.

0.180

1.908 cum

Rs. 106.00

3. Rough stone dry packing up to GL

Base with apron - $1 \times 3.60 \times 1.60 \times 0.30 =$

1.728

Wing wall - $4 \times 0.50 \times 0.30 \times 0.30 =$ 0.180

1.908 cum

Above GL

Super structure- $1 \times 1.00 \times \frac{2.60 + 0.50}{2} \times 0.60 =$

0.930

0.180

Wing wall - $4 \times 0.50 \times 0.30 \times 0.30 =$

0.324

Side wall-

0.432

i. $2 \times \frac{0.3 + 0.9}{2} \times 0.3 =$

0.270

0.180

2.316 cum

4.224 cum

ii. $2 \times 0.3 + \frac{0.9 \times 1.2}{2} \times 0.3 =$

0.324

iii. $2 \times 0.5 \times 0.9 \times 0.3 =$

0.270

iv. $2 \times 1.0 \times 0.3 \times 0.3 =$

0.360

@Rs. 476.56 per cum.

Rs. 2,013.00**G. Total Rs. 2,244.00**

(Rupees Two thousand two hundred forty four) only



GENERAL MANAGER
SAIL-BOLANI ORES MINES

ANNEXURE III (B)

ii. Detail Estimate of Loose Boulder Structure (S.C.M.)


Span-2 mt. Ht. = 0.6 mt. Slope-U/S:- 1:1.5 D/S slope: 1:2

- | | | | |
|--|-------------|----------|------------|
| 1. Leveling the unshaped surface of the selected site & layout the structure foundation L.S. 1 MD. | | | Rs. 125.00 |
| 2. Excavation of foundation in hard soil within initial lead of 50 mtr. including rough dressing and breaking of clods to maximum size 5 cm. to 7 cm. laying in layer not exceeding 0.3 in depth to strengthening both side U/S approx. bund of loose boulder structure. | | | |
| Base with apron- $1 \times 3.70 \times 3.00 \times 0.30 =$ | | | |
| Wing wall - $4 \times 0.50 \times 0.50 \times 0.30 =$ | 3.33 | | |
| @ Rs. 5510.00 per 100 cum. | <u>0.30</u> | 3.63 cum | Rs. 200.00 |
| 3. Rough stone dry packing up to GL | | | |
| Base with apron - $1 \times 3.70 \times 3.00 \times 0.30 =$ | 3.33 | | |
| Wing wall - $4 \times 0.50 \times 0.50 \times 0.30 =$ | 0.30 | | |
| Above GL | | | |
| Super structure- $1 \times 2.00 \times \frac{2.70 + 0.60}{2} \times 0.60 =$ | 1.98 | | |
| | 0.50 | | |
| Wing wall - $4 \times 0.50 \times 0.50 \times 0.50 =$ | 0.72 | | |
| Side wall- | 0.96 | | |
| i. $2 \times \frac{0.50 + 1.10}{2} \times 0.9 \times 0.5 =$ | 0.36 | | |
| | <u>0.50</u> | | |
| ii. $2 \times \frac{0.5 + 1.10}{2} \times 1.2 \times 0.5 =$ | | 8.65 cum | |
| iii. $2 \times 0.6 \times 0.6 \times 0.5 =$ | | | |
| iv. $2 \times 1.0 \times 0.5 \times 0.5 =$ | | | |
| @ Rs. 476.18 per cum | | | |

Rs. 4,119.00

G. Total Rs. 4444.00

(Rupees Four thousand four hundred forty four only)


 GENERAL MANAGER
 SAIL-BOLANI ORES MINES

ANNEXURE- III(C)

III. Detail Estimate of Loose Boulder Structure (S.C.M.)

Span-3 mt. Ht. = 1.0mt. Slope-U/S:- 1:1.5 D/S slope: 1:2.0

1. Levelling the unshaped surface of the selected site & layout the structure foundation L.S. 1 MD. Rs.125.00

2. Excavation of foundation in hard soil within initial lead of 50 mtr. including rough dressing and breaking of clods to maximum size 5 cm. to 7 cm. laying in layer not exceeding 0.3 in depth to strengthening both side U/S approx. bund of loose boulder structure.

Base with apron- $1 \times 5.10 \times 4.00 \times 0.30 =$	6.12		
Wing wall - $4 \times 0.50 \times 0.50 \times 0.30 =$	0.30	6.42 cum	Rs. 353.00

@ Rs. 5498.00 per 100 cum.

3. Rough stone dry packing up to GL

Base with apron - $1 \times 5.10 \times 4.00 \times 0.30 =$	6.12
---	------

Wing wall - $4 \times 0.50 \times 0.50 \times 0.30 =$	0.30
---	------

Above GL

Super structure- $1 \times \frac{4.10 + 0.60}{2} \times 1.00 \times 3.0 =$	7.05
	0.50

Wing wall - $4 \times 0.50 \times 0.50 \times 0.50 =$	1.50
---	------

Side wall-	2.00
------------	------

i. $2 \times \frac{0.50 + 1.50}{2} \times 1.5 \times 0.5 =$	0.60
---	------

	0.50	18.57 cum
--	------	-----------

ii. $2 \times \frac{0.5 + 1.50}{2} \times 2.0 \times 0.5 =$	
	2

iii. $2 \times 0.6 \times 1.0 \times 0.5 =$	
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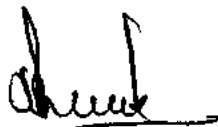
iv. $2 \times 1.0 \times 0.5 \times 0.5 =$	
--	--

@ Rs. 476.00 per cum

Rs. 8847.00

G. Total Rs. 9,325.00

(Rupees Nine thousand three hundred twenty five only)



GENERAL MANAGER
SAIL-BOLANI ORES MINES

ANNEXURE-III(D)

IV. Detail Estimate of Loose Boulder Structure (S.C.M.)

Span-4 mt. Ht. = 1.3mt. Slope-U/S:- 1:1.5 D/S slope: 1:2.0

1. Leveling the unshaped surface of the selected site & layout the structure foundation L.S. 1 MD. Rs. 125.00

2. Excavation of foundation in hard soil within initial lead of 50 mtr. including rough dressing and breaking of clods to maximum size 5 cm. to 7 cm. laying in layer not exceeding 0.3 in depth to strengthening both side U/S approx. bund of loose boulder structure.

Base with apron- $1 \times 6.15 \times 5.00 \times 0.30 =$ Wing wall - $4 \times 0.50 \times 0.50 \times 0.30 =$

9.225

@ Rs. \$480.00 per 100 cum.

0.30

9.525 cum

Rs. 522.00

3. Rough stone dry packing up to GL

Base with apron - $1 \times 6.15 \times 5.00 \times 0.30 =$

9.225

Wing wall - $4 \times 0.50 \times 0.50 \times 0.30 =$

0.30

Above GL

Super structure- $1 \times \frac{5.15 + 0.60}{2} \times 1.30 \times 4.0 =$

14.95

2

0.50

Wing wall - $4 \times 0.50 \times 0.50 \times 0.50 =$

2.24

Side wall-

2.99

i. $2 \times \frac{0.50 + 1.80}{2} \times 1.95 \times 0.5 =$

1.08

2

0.50

31.785 cum

ii. $2 \times \frac{0.5 + 1.80}{2} \times 2.6 \times 0.5 =$

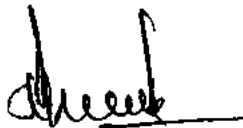
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iii. $2 \times 0.6 \times 1.8 \times 0.5 =$ iv. $2 \times 1.0 \times 0.5 \times 0.5 =$

@ Rs. 476.45 per cum

Rs. 15144.00Rs. 15,791.00

(Rupees Fifteen thousand seven hundred ninety one only)



GENERAL MANAGER
SAIL-BOLANI ORES MINES

ANNEXURE-III

Estimate for vetiveria plantation on the OB dump slopes for 2 Ha

1. Cost of Planting vetiveria including procurement of seeds , micronutrients and development of seedlings including institutional overheads as per Budgetary offer of IIT Kharagpur for 5,000 sq meter -

Rs 9.5 Lakhs

Hence Cost of Planting vetiveria including procurement of seeds , micronutrients and development of seedlings including institutional overheads over an area of 2 Ha

- Rs 38.0 Lakhs

(* Copy of the budgetary offer of IIT is enclosed in Annexure -VI)
As per revised wage rate : $(38,00,000/90) * 125 = \text{Rs } 52,77,778.00$



GENERAL MANAGER
SAIL-BOLANI ORES MINES

ANNEXURE-IV

COST NORM FOR AGAVE PLANTATION
(FOR 5 ROWS & 40 mts) Wage Rate: Rs.125.00, Seven years maintenance

Sl.No	Name of the Work	Man Day	Material Rs.	Total Cost in Rs
0th Year Operation				
1	Site clearance ,alignment and stacking	2	-	250
2	Cost of lining materials including transportation.	-	278	278
3	Digging of pits and application of line.	6	-	750
4	Cost of 200 Ac. Including transportation.	-	1389	1389
5	Carriage and planting	2	-	250
6	Soil working and application of fertilisers(twice)	8	-	1000
7	Cost of fertiliser	-	278	278
8	Contingency	-	278	278
	Total	18	2223.00	4473.00
1st YEAR OPERATION				
1	Casualty replacement (20%) including cost of suckers & pitting.	2	278	528
2	Weeding and application of fertilisers	6	-	750
3	Cost of fertilisers and insecticides	-	208.00	208
	Total	8	350.00	1486
2nd YEAR OPERATION				
13	Weeding, soil working and application of fertilisers.	6	-	750
14	Cost of fertilisers and insecticides	-	208	208
15	Plant protection measures Including fertiliser cost.	-	208	208
	Total	6	416	1166
3rd YEAR OPERATION				
1	Weeding, soil working and application of fertilisers.	7	-	875
2	Cost of fertilisers and insecticides	-	243	243
3	Plant protection measures including fertiliser cost.	-	243	243
	Total	7	486	1361
4th YEAR OPERATION				
1	Weeding, soil working and application of fertilisers.	7	-	875
2	Cost of fertilisers and insecticides	-	243	243
3	Plant protection measures including fertiliser cost.	-	243	243
	Total	7	486	1361
5th YEAR OPERATION				
1	Weeding, soil working and application of fertilisers.	8	-	1000
2	Cost of fertilisers and insecticides	-	278	278
3	Plant protection measures Including fertiliser cost.	-	278	278
	Total	8	556	1556
6th YEAR OPERATION				
1	Weeding, soil working and application of fertilisers.	8	-	1000
2	Cost of fertilisers and insecticides	-	278	278
3	Plant protection measures including fertiliser cost.	-	278	278
	Total	8	556	1556
	GRAND TOTAL	62	5209.00	12959.00

Cost for Agave fencing with five rows 01 Kms= $\frac{12959}{40} \times 1000 = \text{Rs.} 3,23,975/-$


GENERAL MANAGER
SAIL-BOLANI ORES MINES

ANNEXURE -V


REVISED FINANCIAL OUTLAY FOR PLAN FOR STABILIZATION OF OB DUMPS BY GRADING & BENCHING & MANAGEMENT & STABILIZATION OF FINE & OB DUMPS IN COMPLIANCE OF CONDITION NO-2-IV(D) & XIV OF STAGE-I FOREST CLEARANCE GRANT ORDER . (WAGE RATE - RS 125/- PER MAN DAY)

TOTAL COST OF THE PROJECT

Sl.No	Description of the work	Funds Required (in Rs)
1	Biological Measures : Afforestation over the OB dumps, 15 Ha @ Rs 70103/- per ha in block plantation mode	Rs. 10,51,545.00
	Sowing stylos etc seeds on dump slopes(L/S)	Rs. 2,08,333.00
	Plantation of agave at the toe of dumps	Rs 6,47,950.00
2	Bio-engineering measures	
	Plantation of vetiver grass on dump slope	Rs 52,77,778.00
3	Structural Measures	
	Plugging of gullies on slopes by loose boulder structures	Rs. 16,33,020.00
4.	Maintenance of previously constructed structures(L/S)	Rs 2,77,778.00
5.	R & D works on application of bio-engineering measures	Rs 15,00,000.00
6.	Contingency including supervision charges(L/S)	Rs. 70,000.00
7.	TOTAL	Rs 1,06,66,404.00
	Price escalation @ 10%	Rs 10,66,640.40
	SubTotal	Rs 117,33,044.40
	10% amount to be paid to VSS for motivation	Rs 11,73,304.44
	Grand Total	Rs 1,29,06,348.84 = Rs 129.06 Lakhs

In case of any increase in the man, material and machinery charges, provision for additional funds will be made as and when required .


GENERAL MANAGER
 SAIL-BOLANI ORES MINES

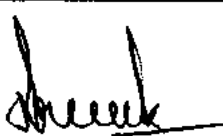
Technically Approved

 Technically Approved
 Regional Chief Conservator of Forests
 Rourkela Office, Rourkela


29.08.2012

REQUIREMENT OF FUNDS (After revision of wage rate)

The total cost of the implementation of OB dump stabilisation plan is **Rs. 129,06,000/-** as detailed in **Annexure-V**. For implementation of the above plan, the above expenditure of Rs 129.06 Lakh will be made over the first 7 years period. Therefore, annual budget provision will be kept by the user agency for implementation of the biological, structural and bio-engineering measures during the period of first seven years. This budget will subject to increase in amount considering the increase in materials and labour charges. The tentative annual expenditure planned for the next seven year for the implementation of mitigative measures is given in the following table :

Sl. No.	Description	Amount
1.	1 st year plan of expenditure	Rs 20.00 Lakhs
2.	2 nd year plan of expenditure	Rs 20.00 Lakhs
3.	3 rd year plan of expenditure	Rs 20.00 Lakhs
4.	4 th year plan of expenditure	Rs 20.00 Lakhs
5.	5 th year plan of expenditure	Rs 20.00 Lakhs
6.	6 th year plan of expenditure	Rs 10.00 Lakhs
7.	7 th year plan of expenditure	Rs 09.06 Lakhs
	Total:-	Rs 129.06 Lakhs


GENERAL MANAGER
 SAIL-BOLANI ORES MINES

Technically Approved
 Approved

 Regional Chief Conservator of Forests
 Rourkela Circle, Rourkela

21.08.2012

Annexure-VIII E

PLAN
For
CONSERVATION & MANAGEMENT OF TOP SOIL
in compliance
to

**Condition no – 2-iv(e) & (xvi) of
Stage-I Forest Clearance grant Order**

**Vide Letter No.8-17/1997-FC (pt.) Dated.12.11.2010
of Govt. of India, Ministry of Environment & Forests, New Delhi**

for
Diversion of 1152.58 Hects Forest land

**within 5.10 sq Miles ML of
Bolani Iron Ore Mine of M/s SAIL,
in Champua Subdivision of Keonjhar District**



INTRODUCTION

The ministry of Environment & Forest, Govt. of India have granted Stage-I approval vide letter No F.No.8-17/19976-FC(Pt.) dated 12th November,2010 to 5.1 Sq. Miles mining lease of Bolani Ore Mines of Steel Authority of India Ltd. (SAIL) subject to implementation of some conditions for environmental safeguards. One of the conditions i.e. condition No. 2 (xvi) is to prepare plan for conservation of top soil . In compliance to this condition, a detailed top soil management plan has been formulated which will be implemented in the future.

TOPOGRAPHY & SOIL QUALITY OF THE AREA

The 5.10 sq miles Mining leasehold area consists of high hills in the western side and valley area in the eastern side. The area lies on the slope of an escarpment running in the SW-NE direction. Elevation of the lease area ranges from 920 m AMSL to 500 m AMSL. Inside the lease there are few peaks the highest of which are at 920 m AMSL near the western boundary and 870 m AMSL near the southern boundary of the lease. The western boundary of the lease is marked by a ridge line. The north western half of the study area is covered with forests.

The soils of the lease hold area have characteristic reddish tinge and predominant soil type of the region may be classified as red earth & red loam . The dominant colours found in field conditions are dusky red, reddish brown, dark reddish brown, red, dark red etc. The texture of the soil varies from sandy loamy in the regions like afforested waste dump, back filled waste dump, barren land and sandy clay loamy in the areas like agricultural field, old tailing pond and tailing pond discharged area. This type of soil coupled with gravel, boulder etc. particularly in the waste dumps and mined out areas, allows, free drainage of water, down in the profile causing intense leaching.

The water retention capacity of soil varies from location to location. in side the lease hold area. The water retention capacity of soil in agricultural field, valley and tailing pond areas are high and that in the barren land is comparatively quite low. Most of the soil found to be slightly acidic in nature and this may be due to weathering and bacterial action on available sulphur. The available N P K analysis of the soil indicates that the soil in the Bolani Basti Agricultural land and that in the Reserve Forest area are quiet good as compared to the active waste dump and tailing pond areas .

The N P K values in the soil samples of barren and back filled waste dump areas are comparatively much less. Similar situation exists with respect to the organic matters and carbon content of the soil in these regions . The micro-nutrient like Iron, Copper, Zinc & Manganese are sufficiently available in the soil samples of agricultural land, forest and valley including tailing ponds. However,

metals like Pb, Cd, Cr, Cu & Ni present in the soil are found to be below the toxicity level. Therefore, the danger of heavy metals to the vegetation in this area seems to be negligible .

The top soil inside the S.10 sq miles ML area is scanty . Whatever top soil is available that is to be excavated during the development of the mine pits is rocky in nature . Precautionary measures will be taken so that this valuable resource is not wasted . These excavated top-soil will be utilized for concurrent plantation works in the mine as per this plan. Some of the top soil will be stored temporarily until It can be used for plantation works / dump reclamation. Minimum storage time shall be attempted to avoid nutrient loss. A combination of check dams, diversion ditches and garland drain etc. shall be constructed around the Top Soil Stack yard to minimize soil loss .

PLAN FOR TOP SOIL MANAGEMENT

This Topsoil Management Plan provides description of the soil stripping and stockpiling procedures to minimize top soil degradation and maximize availability of suitable soils for future rehabilitation within the S.1 Sq. Miles Mining lease of Bolani Ore Mines. Topsoil is to be stripped in areas proposed to be disturbed including the proposed mining on virgin forest lands, outside mines areas and infrastructure areas (including roads and dams). A comprehensive top soil management plan has been prepared keeping in the view of conservation, regeneration and afforestation in and around the top soil to be stored.

OBJECTIVES

The objectives of Top soil management are to:

1. Provide sufficient stable topsoil material for rehabilitation work of dumps, back filled areas and degraded lands;
2. Identify soil resources and stripping guidelines & optimise the recovery of topsoil resource ;
3. Identify surface areas requiring stripping (to minimise over clearing);
4. Manage topsoil reserves so as to not degrade the resource;
5. Identify stockpile locations and dimensions;

(A) MANAGEMENT PLAN FOR TOP SOIL GENERATED FROM MINING

The top soil inside the S.10 sq miles ML area is scanty. Whatever top soil is available that is to be excavated during the development of the mine pits is rocky in nature. Precautionary measures will be taken so that this valuable resource is not wasted. This excavated top-soil will be utilized for concurrent plantation works in the mine as per this plan. Some of the top soil will be stored temporarily until it can be used for plantation works / dump reclamation. Minimum storage time shall be attempted to avoid nutrient loss. A combination of check dams, diversion ditches and garland drain etc. shall be constructed around the Top Soil Stack yard to minimize soil loss.



This Topsoil Management Plan provides description of the soil stripping and stockpiling procedures to minimise top soil degradation and maximise availability of suitable soils for future rehabilitation within the 5.10 sq miles ML area (1321.45 hectares) of Bolani Ores Mines. Topsoil is to be stripped in areas proposed to be disturbed including the proposed mining on virgin forest lands, outside mines emplacement areas and infrastructure areas (Including roads and dams).

During the current diversion period, a total of 420.4 hectares virgin areas is going to be disturbed for mining and allied activities.

FUTURISTIC TOP SOIL GENERATION FROM MINING ACTIVITIES

Fresh / virgin areas to be broken	Area (Ha) to be Mined During renewal period	Average Top soil thickness in cm	Top soil to be generated in million m³	Quantity to be generated and utilised during first 10 years in million m³	To be generated and utilised after first 10 years till end of work in million m³
F - area	34.50	5.00	0.017	0.017	-
G- area	74.50	8.00	0.060	0.060	-
D-area	5.00	5.00	0.003	0.003	-
Panposh	10.40	5.00	0.005	0.005	-
E Area	220.00	10.00	0.220	-	0.220
Infrastructure areas	76.00	8.00	0.061	0.061	-
Total			0.365	0.146	0.220

Soil studies have shown that the average thickness of topsoil in the virgin areas will be around 5 cm - 10 cm. The quantity of topsoil to be stripped from the site during life of mine is estimated at approximately 0.37 million cubic meter. Approximately 0.15 million cubic meter of topsoil will be used during first 10 years to rehabilitate the existing OB dumps, backfilled and other barren/degraded areas, resulting in approximately 0.22 million cubic meter of balance topsoil to be stockpiled in the on-site topsoil stockpile area .

A map showing the proposed phase wise Topsoil Stripping Plan is enclosed in **Annexure -VI**. The plan illustrates major areas of soil stripping during the mine life. Prior to stripping, vegetation will be removed or reduced by jungle/bush clearing. A proposed procedure for soil handling is presented below which includes soil handling measures which optimise the retention of soil characteristics (in terms of nutrients and micro-organisms) favourable to plant growth:



METHODOLOGY

In accordance with the above objective of providing sufficient stable soil material for rehabilitation and to optimise soil recovery, the following strategies have been adopted:

1. Topsoil stockpiles are to be located outside quarry areas ;
2. Stripping off the topsoil by dozers rather than scrapers to minimise structural degradation;
3. Construction of stockpiles with a "rough" surface condition to reduce erosion hazard,
4. Improve drainage and promote revegetation;
5. Revegetation of stockpiles with appropriate fertiliser/FYM etc to minimise weed manifestation, maintain soil organic matter levels, soil structure and microbial activity and maximise the vegetative cover of the stockpile.; and
6. To utilise stripped top soil as soon as possible for rehabilitation in phase wise in accordance with the rehabilitation pattern as per Mining Plan.

FUTURISTIC TOP SOIL UTILISATION PLAN

Disturbed area from which top soil collected	Topsoil Spreading on Back filled area		Top soil spreading on OB Dump		Total Mm3
	Quantity Mm3	Location	Quantity Mm3	Location	
Till 10th year					
F area	0.017	quarry of F area	-	-	0.017
G area	0.060	Quarry of G area	-	-	0.060
D area	-	-	0.003	Dump D7, 8 & 9	0.003
Panposh area	-	-	0.005	Dump 3	0.005
Sub-total	0.077	-	0.008	-	0.085
From 10th year till End of work					
E area	-	-	0.220	Dump of E area	0.220
Infrastructure areas	-	-	0.061	Dumps of B&C area	0.061
Sub-total	-	-	0.281	-	0.281
Total	0.077	-	0.289	-	0.366



MANAGEMENT PLAN OF EXCAVATED TOPSOIL

To minimize the detrimental effects of long-term storage of topsoil in stockpiles, the following procedures will be implemented prior to any soil stripping activities, the following will be ensured:

1. Appropriate delineation of areas to be stripped/mined;. An area of 2.0 hectares will be demarcated for storage of top soil in G-area . The perimeter of this top soil stock pile will be 566 meter .
2. Appropriate delineation of the above suitable Topsoil stockpile areas.
3. The topsoil stripping and stockpiling will be completed using conventional earth-moving equipment such as bulldozers, graders and dumpers. In areas where the topsoil is relatively thin, the topsoil will be removed in such a way to minimize mixing of topsoil and subsoils .
4. Stockpiles will have sediment control measures such as toe/retaining wall. The stockpile will be surrounded by boulder wall or similar erosion control devices to prevent soil erosion until permanent erosion control measures are installed.
5. Following stockpiling, samples of the topsoil will be collected for analysis and test for pH, nitrogen, and organic content to establish an initial nutrient composition of the topsoil.
6. Permanent measures Include establishment of vegetation and broadcasting seeds of local shrubs / grasses to mitigate soil erosion and dust emissions.
7. Physical covering of soil stockpiles with geo-textile fabric to prevent it being blown off
8. Prior to use of the topsoil for reclamation, samples of the topsoil will again be collected for analysis, including pH, nitrogen, and organic content and compare these results to the initial condition. If required, soil amendment will be performed before re-spreading the topsoil to mitigate any deficiencies in the topsoil so that the topsoil is productive and a topsoil thickness and fertility commensurate with pre-construction activities is achieved. Fertilizer application rates will be established upon evaluation of the soil nutrient content. If needed, additional similar quality topsoil will be purchased to meet reclamation needs.
9. Re-spreading of topsoil will be undertaken in those areas requiring reclamation, to approximate pre-plantation thickness of approximately 2 -3 cm by manual means, or as required.

(B) PLAN FOR CONSERVATION OF TOP SOIL FROM BARREN LANDS

The forest land of the region is prone to soil erosion as the entire landscape is affected due to mining activity in the vicinity. Soil erosion problem varies from area to area within the lease, depending on the topography, soil types, vegetation, and management interactions of the catchment. Hence, it is very important to control erosion of top soil from the area, enhance in-situ moisture conservation for enrichment of water table for more availability of water so that the top soil is conserved for supporting the growth of forests



TOP SOIL CONSERVATION PLAN

Year	Location	Area in Ha
2011-2015	In the patches marked as A1 , A2, A3 , B , H as shown in map	65.0 Ha
2016-2020	In the patches marked as C, D, E & K as shown in map	90.0 Ha
2021-2030	In the patches marked as F, G, I , J & L as shown in map	200.0 Ha

METHODS

Site specific strategies will be adopted to protect and conserve top soil within the lease area . All the approaches may be grouped under two methods, such as vegetative method & engineering method

(a) Vegetative methods:

1. Massive afforestation within lease hold area (as per scheme for phase wise planation program submitted)
2. Direct seed sowing in contour trenches on hill slopes.
3. Planting grass like vetiver along gully/stream/nallah banks to stabilize the banks.
4. Planting of Agave will also be undertaken in stabilizing the gullies.

(b) Engineering Method:

1. Dry Stone Contour Bunds/stone walls along the contours to intercept the run off to control run off velocity from the highlands. It also helps to retain moisture in the field. It is proposed to undertake 2500 meter of dry stone walling along the contours during the first five year at a cost of **Rs 12.95 lakhs** . The dry stone bundhs would be done as per the following dimensions-(0.9mt. + 0.45mt)/2. X 1.5 in a staggered manner . The cost estimate is enclosed in **Annexure - I**.
2. Loose boulder Check Dams (**LBCD**) : Check dams of will be constructed across long gullies formed by erosive activity of runoff water in monsoon, with locally available boulders. A series of such obstructions will be useful for soil and moisture conservation measures.



Considering the gradient of the site & run-off, soil conservation measure is indispensable and need to be appropriately designed by construction of **Loose Boulder Structures (LBS)** such as, check dams over the area (1mt. 2mt., 3mt. & 4 mt. span) as follows :

	SPAN			
	1mt	2mt	3mt	4mt
Nos. of LBS	150	80	40	50
COST TO BE INCURRED	@ Rs. 1615/- per LB5 = 2,42,250/-	@ Rs. 3200/- per LB5 = Rs 2,56,000/-	@ Rs. 6714/- per LBS= Rs 2,68,560/-	@ Rs. 11370/- per LB5 = Rs 5,68,500/-
TOTAL				Rs 13,35,310.00

The same has been discussed in the scheme for mitigative measures already submitted.

3. To check soil erosion and the rain water draining out of the area, it has been proposed to take up special soil conservation measures by digging staggered trenches along the contour over the area @ 250 nos per hectare over 50 hectares area in upslope steep areas . The size of the trenches will be 2 Mtr x 0.5 Mtr x 0.5 mtr at a spacing 5 mtr. Digging of staggered trenches will be done during Sept of 1st year. Thus an amount of Rs 11,42,375/- is required for 65.0 Ha considering Rs 17,575/- per ha for carrying out such special soil & Moisture conservation measures. The same has also been discussed and included in scheme for mitigative measures already submitted .
4. Prior to undertaking the 5MC measures, samples of the soil will be collected for studies of physical and chemical characteristics such as pH, nitrogen, and organic content and compare these results to the results in post implementation stage .

INSPECTION, MONITORING AND EVALUATION

For successful implementation of the above management and conservation measures, Intensive inspection and technical guidance from concerned technical wing is required . Sufficient fuel/ conveyance charges for technical experts shall be provided by the user agency for proper execution of these programmes. Infrastructural facilities like GIS software along with GPS equipments , Research & Development works , will be provided by the user agency for the above post implementation monitoring .

EXECUTING AGENCY

In all the cases, the works shall be executed by the User Agency having specialised departments headed by qualified persons with outsourced man and machinery as and




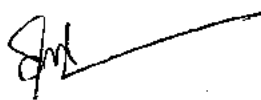
where required . To facilitate this, the user agency shall establish it's own executing and supervision cells along with required infrastructural facilities. In order to maintain the quality of work, in house supervision through competent personnel shall be provided. The entire work shall be carried out through close coordination with the Forest Department.

REQUIREMENT OF FUNDS

The total cost of the implementation of ~~mitigative~~ ^{Top Soil Conservation} measures will be **Rs. 36.53 lakhs** as detailed in **Annexure-VI** . For implementation of the above top soil conservation and management measures, the above expenditure of Rs 36.53 lakh will be made over the next five years period . This budget will subject to increase in amount considering the increase in materials and labour charges. The tentative annual expenditure planned for the next five year for the implementation of above measures is given in the following table :


Sl. No.	Description	Amount
1.	1 st year plan of expenditure	Rs 7.5 lakhs
2.	2 nd year plan of expenditure	Rs 7.5 lakhs
3.	3 rd year plan of expenditure	Rs 7.5 lakhs
4.	4 th year plan of expenditure	Rs 7.5 lakhs
5.	5 th year plan of expenditure	Rs 6.53 lakhs
6.	Total:-	Rs. 36.53 lakhs


(N P PRAMANIK)
 GENERAL MANAGER
 SAIL-BOLANI ORES MINES

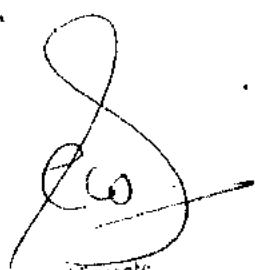


**FOREST
 RANGE, BARUA**

COUNTERSIGNED


 Divisional Forest Officer
 Keonjhar Division

*Technically
 Approved.*


 Regional Chief Conservator of Forests
 Rourkela Circle

where required . To facilitate this, the user agency shall establish it's own executing and supervision cells along with required infrastructural facilities. In order to maintain the quality of work, in house supervision through competent personnel shall be provided. The entire work shall be carried out through close coordination with the Forest Department.

REQUIREMENT OF FUNDS

The total cost of the implementation of *above* measures will be **Rs. 36.53 lakhs** as detailed in **Annexure-VI** . For implementation of the above top soil conservation and management measures, the above expenditure of Rs 36.53 lakh will be made over the next five years period . This budget will subject to increase in amount considering the increase in materials and labour charges. The tentative annual expenditure planned for the next five year for the implementation of above measures is given in the following table :

Sl. No.	Description	Amount
1.	1 st year plan of expenditure	Rs 7.5 lakhs
2.	2 nd year plan of expenditure	Rs 7.5 lakhs
3.	3 rd year plan of expenditure	Rs 7.5 lakhs
4.	4 th year plan of expenditure	Rs 7.5 lakhs
5.	5 th year plan of expenditure	Rs 6.53 lakhs
6.	Total:-	Rs. 36.53 lakhs


(N P PRAMANIK)
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SAIL-BOLANI ORES MINES


Forest Range Officer
BABBIL RANGE, BARUDA


COUNTERSIGNED


Divisional Forest Officer
Keonjhar Division

ANNEXURE - I**ESTIMATE FOR CONTOUR BUND / STONE WALL PER RMT.**

Sl No.	Particulars	Amount in Rs./Cum
1	Stone/local boulder other than granite picked up broken & per cum. Stacked 0.03 cum.	130.00
2	Royalty	70.56
3	Transportation up to 5 Km. lead	120.00
	Total	320.56
4	Mason-0.52 @116.00	60.32
5	Semiskilled labour- 0.52 @ 103.00	53.56
6	Unskilled labour-0.52 @90.00	46.10
7	Unskilled female labour - 0.35 @ 90.00	31.05
	Sub- total	512.74
8	Sundries & T.P. etc.	5.16
	Grand Total	517.90 or 518.00

Cost of construction of 2500 meter contour bundh would be **Rs 518.00 x 2500 = Rs 12,95,000.00**

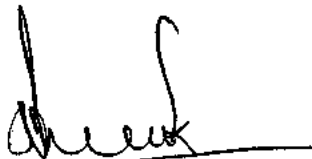

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ANNEXURE-II(A)

ESTIMATE FOR CONSTRUCTION OF DRY BOULDER TOE / RETAINING WALL (Length = 1m , Width : 1.5 m , Height : 1.5m)

1	Earth work excavation in over areas.	L	B	D	TOTAL
	Cum 1	1.00	1.50	0.30	0.45
				Total	0.45
2	Collection, loading, unloading and stacking of local boulder (laterite)				
	Cum 1	1.00	1.50	0.300	0.45
	Cum 1	1.00	1.20	1.250	1.50
			Total		1.95

DESCRIPTION OF ITEM	UNIT	QTY.	RATE	AMOUNT (Rs)	REMARKS
Earth work in excavation in foundation trenches or drains (not exceeding 1.5 m in width or 10 sqm on plan) including dressing of sides and ramming of bottoms, lift up to 1.5m, including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m, In All kinds of soil.	CUM	0.45	125.21	56.34	Analysed Rate as per DSR-07
Supplying and stacking local latente stone boulders at site & dry stone pitching laid in courses & required profile with hammer dressed stones including preparing the bedding surface etc all complete.	CUM	1.95	775.77	1512.75	Analysed Rate as per DSR-07
Cost for construction of 1 M dry stone retaining wall				1569.10	



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ANNEXURE-II(B)

ESTIMATE FOR PER RMT CONSTRUCTION OF GARLAND DRAIN (Length = 1m , Width : 1.2m , Depth : 0.6m)

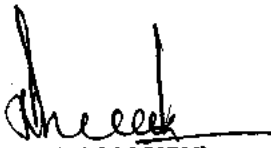
1	Cleaning of jungles along garland drain :	L	B	D	TOTAL
	Sq m 1	1.00	10.00	10.00	10.00
			Total		10.00
2	Earth Work in excavation in foundation trenches or drains	L	B	W/H	TOTAL
	Cum 1	1.00	1.20	0.6	0.72
		Total			0.72
3	PCC 1:4:8	Cum 1	1.00	1.00	1.20
		Total			0.12
4	RR Masonary	Cum 1	1.00	0.40	0.50
		Total			0.20
5	20 mm cement Plaster (1:6)	Cum 1	1.00	1.00	1.00
		Total			1.00
6	25 mm cement concrete flooring (1:2:4)	Cum 1	1.00	0.60	0.60
		Total			0.60

DESCRIPTION OF ITEM	UNIT	QTY.	RATE	AMOUNT (Rs)	REMARKS
Cleaning jungle including uprooting of rank vegetation, grass, brush wood, trees and saplings of girth up to 30 cm measured at a height of 1 m above ground level and removal of rubbish up to a distance of 50 m outside the periphery of the area cleared.	SQM	10.00	3.61	36.10	Analysed Rate
Earth work in excavation in foundation trenches or drains (not exceeding 1.5 m in width or 10 sqm on plan) including dressing of sides and ramming of bottoms, lift up to 1.5m, including getting out the excavated soil and disposal of surplus excavated so	CUM	0.72	125.21	90.15	Analysed Rate as per D5R
Providing and laying in position cement concrete 1:4:8 (1 Cement: 4 coarse sand: 8 graded stone aggregate 40 mm nominal size) of specified grade excluding the cost of centring and shuttering - All work upto plinth level.	CUM	0.12	3484.56	418.15	do
Random rubble masonry with local available hard stone (laterite) in foundation and plinth at plinth level and superstructure with cement mortar 1:6 (1 cement: 6 coarse sand).	CUM	0.20	1545.55	309.11	do
20 mm cement plaster of mix 1:6 (1 cement: 6 fine sand).	SQM	1.00	138.78	138.78	do
25 mm thick cement concrete flooring 1:2:4 (1 cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size) finished with a floating coat of neat cement including cement slurry, but excluding the cost of nosing of steps	SQM	0.60	287.20	172.32	do
Cost for construction of 1 M Garland drain				1164.61	


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ANNEXURE-II(C)**ESTIMATE FOR PER RMT CONSTRUCTION OF SETTLING POND
(Length = 1m , Width : 3.0m , Height : 1.5m)**

DESCRIPTION OF ITEM	UNIT	QTY.	RATE	AMOUNT(Rs)	REMARKS
Earth work in excavation by mechanical means (Hydraulic excavator) / manual means over areas in (exceeding 30 cm in depth 1.5 m in width as well as 10 sqm on plan) including disposal of excavated earth, lead up to 50 m and lift up to 1.5 m, disposed earth to be levelled and neatly dressed, in all kinds of soil.	CUM	4.50	123.16	554.22	Analysed rate based on D.S.R 07
Collection, loading, unloading and stacking of local boulder (laterite) from collecting area to work site including the cost of transportation of boulder at site, lead up to 10 Km as directed by Engg - in - charge.	CUM	1.01	775.77	785.47	Analysed rate based on D.S.R 07
Dry stone pitching 22.50 cm thick excluding the cost of supply of hard stone (laterite) and including the cost of preparing surface complete.	SQM	4.50	125.22	563.49	Analysed rate based on D.S.R 07
Cost for construction of 1 Settling Tank				1903.18	


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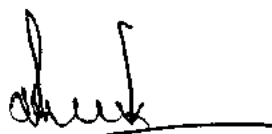
Annexure-III

COST NORM FOR AGAVE PLANTATION (FOR 5 ROWS & 40 mts)
Wage Rate: Rs. 90.00

FIRST YEAR OPERATION				
Sl.No	Name of the Work	Man Day	Material Rs.	Total Cost in Rs
1	Site clearance ,alignment and stacking	2	-	180
2	Cost of lining materials Including transportation.	-	200	200
3	Digging of pits and application of line.	6	-	540
4	Cost of 200 Pc. Including transportation.	-	1000	1000
5	Carriage and planting	2	-	180
6	Soil working and application of fertilisers(twice)	8	-	720
7	Cost of fertiliser	-	200	200
8	Contingency	-	200	200
	Total	18	1600	3220
2 nd YEAR OPERATION				
9	Casualty replacement (20%) including cost of suckers & pitting.	2	200	380
10	Weeding and application of fertilisers	6	-	540
11	Cost of fertilisers and insecticides	-	150	150
12	Total	8	350	1070
3 rd YEAR OPERATION				
13	Weeding, soli working and application of fertilisers.	6	-	540
14	Cost of fertilisers and Insecticides	-	150	-
15	Plant protection measures including fertiliser cost.	-	150	-
	Total	6	300	840
	Grand Total			5310

Cost norms for Agave plantation with five rows along 01 Km nallah bank

$$= \frac{5310}{40} \times 1000 = \text{Rs. } 1,28,250/-$$



For and on
 General Manager
 S.S. SIVAPPA, AGRI. OFF.
 SAIL, RMD, BOP

Span-1 mt. Ht. = 0.6 mt. Slope-U/S:- 1:1.5 D/S slope: 1:2

- CUM

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ANNEXURE-IV(B)

Detail Estimate of Loose Boulder Structure (S.C.M.)

Span-2 mt. Ht. = 0.6 mt. Slope-U/S:- 1:1.5 D/S slope: 1:2

1. Leveling the unshape surface of the selected site & layout the structure foundation L.S. 1 MD. **Rs. 90.00**

2. Excavation of foundation in hard soil within initial lead of 50 mtr. including rough dressing and breaking of clods to maximum size 5 cm. to 7 cm. laying in layer not exceeding 0.3 in depth to strengthening both side U/5 approx. bund of loose boulder structure.

Base with apron- $1 \times 3.70 \times 3.00 \times 0.30 =$

3.33

Wing wall - $4 \times 0.50 \times 0.50 \times 0.30 =$

0.30

3.63 cum

Rs. 144.00

@ Rs. 3948.00 per 100 cum.

3. Rough stone dry packing up to GL

Base with apron - $1 \times 3.70 \times 3.00 \times 0.30 =$

3.33

Wing wall - $4 \times 0.50 \times 0.50 \times 0.30 =$

0.30

Above GL

Super structure- $1 \times 2.00 \times \frac{2.70 + 0.60}{2} \times 0.60 =$

1.98

Wing wall - $4 \times 0.50 \times 0.50 \times 0.50 =$

0.50

Side wall-

i. $2 \times \frac{0.50 + 1.10}{2} \times 0.9 \times 0.5 =$

0.72

ii. $2 \times \frac{0.5 + 1.10}{2} \times 1.2 \times 0.5 =$

0.96

iii. $2 \times 0.6 \times 0.6 \times 0.5 =$

0.36

iv. $2 \times 1.0 \times 0.5 \times 0.5 =$


0.50

8.65 cum @ **Rs. 2,966.00**

Rs. 343.00 per cum

G. Total Rs. 3,200.00

(Rupees three thousand two hundred only)


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ANNEXURE-IV(C)

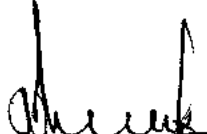
Detail Estimate of Loose Boulder Structure (S.C.M.)

Span-3 mt. Ht. = 1.0mt. Slope-U/S:- 1:1.5 D/S slope: 1:2.0

1. Leveling the unshape surface of the selected site & layout the structure foundation L.S. 1 MD. **Rs. 90.00**
2. Excavation of foundation in hard soil within initial lead of 50 mtr. including rough dressing and breaking of clods to maximum size 5 cm. to 7 cm. laying in layer not exceeding 0.3 in depth to strengthening both side U/S approx. bund of loose boulder structure.
- Base with apron- $1 \times 5.10 \times 4.00 \times 0.30 =$ 6.12
Wing wall - $4 \times 0.50 \times 0.50 \times 0.30 =$ 0.30 6.42 cum **Rs. 254.00**
@ Rs. 3948.00 per 100 cum.
3. Rough stone dry packing up to GL
- Base with apron - $1 \times 5.10 \times 4.00 \times 0.30 =$ 6.12
Wing wall - $4 \times 0.50 \times 0.50 \times 0.30 =$ 0.30
Above GL
- Super structure- $1 \times \frac{4.10 + 0.60}{2} \times 1.00 \times 3.0 =$ 7.05
- Wing wall - $4 \times 0.50 \times 0.50 \times 0.50 =$ 0.50
Side wall-
- i. $2 \times \frac{0.50 + 1.50}{2} \times 1.5 \times 0.5 =$ 1.50
- ii. $2 \times \frac{0.5 + 1.50}{2} \times 2.0 \times 0.5 =$ 2.0
- iii. $2 \times 0.6 \times 1.0 \times 0.5 =$ 0.60
- iv. $2 \times 1.0 \times 0.5 \times 0.5 =$ 0.50
- 18.57 cum @ **Rs. 6,370.00**
Rs. 343.00 per cum

G. Total Rs. 6,714.00

(Rupees six thousand seven hundred fourteen only)


(N P PRAMANIK)
GENERAL MANAGER
SAIL-BOLANI ORES MINES

ANNEXURE-IV(D)

Detail Estimate of Loose Boulder Structure (S.C.M.)

Span-4 mt. Ht. = 1.3mt. Slope-U/S:- 1:1.5 D/S slope: 1:2.0

1. Leveling the unshape surface of the selected site & layout the structure foundation L.5. 1 MD. **Rs. 90.00**

2. Excavation of foundation in hard soil within initial lead of 50 mtr. including rough dressing and breaking of clods to maximum size 5 cm. to 7 cm. laying in layer not exceeding 0.3 in depth to strengthening both side U/S approx. bund of loose boulder structure.

Base with apron- $1 \times 6.15 \times 5.00 \times 0.30 =$ 9.225
Wing wall - $4 \times 0.50 \times 0.50 \times 0.30 =$ 0.30 9.525 cum **Rs. 376.00**
@ Rs. 3948.00 per 100 cum.

3. Rough stone dry packing up to GL

Base with apron - $1 \times 6.15 \times 5.00 \times 0.30 =$ 9.225
Wing wall - $4 \times 0.50 \times 0.50 \times 0.30 =$ 0.30

Above GL

Super structure- $1 \times \frac{5.15 + 0.60}{2} \times 1.30 \times 4.0 =$ 14.95

Wing wall - $4 \times 0.50 \times 0.50 \times 0.50 =$ 0.50

Side wall-

i. $2 \times \frac{0.50 + 1.80}{2} \times 1.95 \times 0.5 =$ 2.24

ii. $2 \times \frac{0.5 + 1.80}{2} \times 2.6 \times 0.5 =$ 2.99


iii. $2 \times 0.6 \times 1.8 \times 0.5 =$

iv. $2 \times 1.0 \times 0.5 \times 0.5 =$ 1.08
0.50

31.785 cum @ **Rs. 10904.00**
Rs. 343.00 per cum

G. Total Rs. 11370.00

(Rupees eleven thousand three hundred seventy only)


(N P PRAMANIK)
GENERAL MANAGER
SAIL-BOLANI ORES MINES

ANNEXURE – V

Estimate for digging one no of staggered trench of size 2Mtr x 0.54 Mtr x 0.5 Mtr along with Agave Plant on the dugout soil

1. Earth work in excavation of staggered trench in hard soil including Rough dressing and leveling the beds and heaping the dugout soil at the downhill side of the trench and leveling the same too.

Size of the trench = $2.0 \text{ Mtr} \times 0.5 \text{ Mtr} \times 0.5 \text{ Mtr} = 0.5 \text{ Cum}$
@177.70 per 2.83 Cum

Rs 31.30

2. Cost of Agava Planting on the dugout soil and it's maintenance including weeding, soil working, manuring, cost of fertilizer etc. for three years

03 nos Agave plants per trench
@ Rs 13.00 per plant on LS

Rs 39.00

TOTAL :-
(Rupees eventy and paise thirty)only

Rs 70.30

Cost of 250 nos of staggered trenches covering one Ha
= 250×70.30
= Rs 17,575.00

Cost of digging staggered trenches over an area of 65.0 ha will be Rs 17,575/-
x 65.0 Ha = Rs 11,42,375.00



(N P PRAMANIK)
GENERAL MANAGER
SAIL-BOLANI ORES MINES

ANNEXURE – VI

TOTAL COST OF TOP SOIL CONSERVATION & MANAGEMENT

Sl.No	Description of the work	Funds Required (in Rs)
1	Cost for erection of 566 m dry toe wall around top soil stock pile along with garland drain	Rs 15,47,279.90
2	Cost for erection of 2500 m contour bundh around the contours of hill slopes	Rs 12,95,000.00
5.	Planting agave along nallah banks	Rs.1, 28,250.00
6.	Site survey, Site preparations , soil analysis etc. (L/S)	Rs.03,00,000.00
7.	Contingency including supervision charges(L/S)	Rs. 50,000.00
	TOTAL	Rs 33,20,529.90
	Price escalation @ 10%	Rs 3,32,052.99
	Grand Total	Rs 36,52,582.89 = Rs 36.53 Lakhs

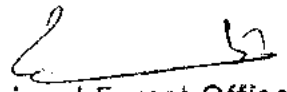
In case of any increase in the man, material and machinery charges , provision for additional funds will be made as and when required .



(N P PRAMANIK)
GENERAL MANAGER
SAIL-BOLANI ORES MINES


Forest Range Officer
BARRIE RANGE, BARBIL

Technically
Approved.

COUNTERSIGNED


Divisional Forest Officer
Keonjhar Division



Regional Chief Conservator of Forests
Rourkela Circle

ANNEXURE – VI

TOTAL COST OF TOP SOIL CONSERVATION & MANAGEMENT

SLNo	Description of the work	Funds Required (in Rs)
1	Cost for erection of 566 m dry toe wall around top soil stock pile along with garland drain	Rs 15,47,279.90
2	Cost for erection of 2500 m contour bundh around the contours of hill slopes	Rs 12,95,000.00
5.	Planting agave along nallah banks	Rs.1, 28,250.00
6.	Site survey, Site preparations , soil analysis etc. (L/5)	Rs.03,00,000.00
7.	Contingency including supervision charges(L/S)	Rs. 50,000.00
	TOTAL	Rs 33,20,529.90
	Price escalation @ 10%	Rs 3,32,052.99
	Grand Total	Rs 36,52,582.89 = Rs 36.53 Lakhs

In case of any increase in the man, material and machinery charges , provision for additional funds will be made as and when required .


(N P PRAMANIK)
GENERAL MANAGER
SAIL-BOLANI ORES MINES


Forest Range Officer
BARBIL RANGE, BARBIL

COUNTERSIGNED


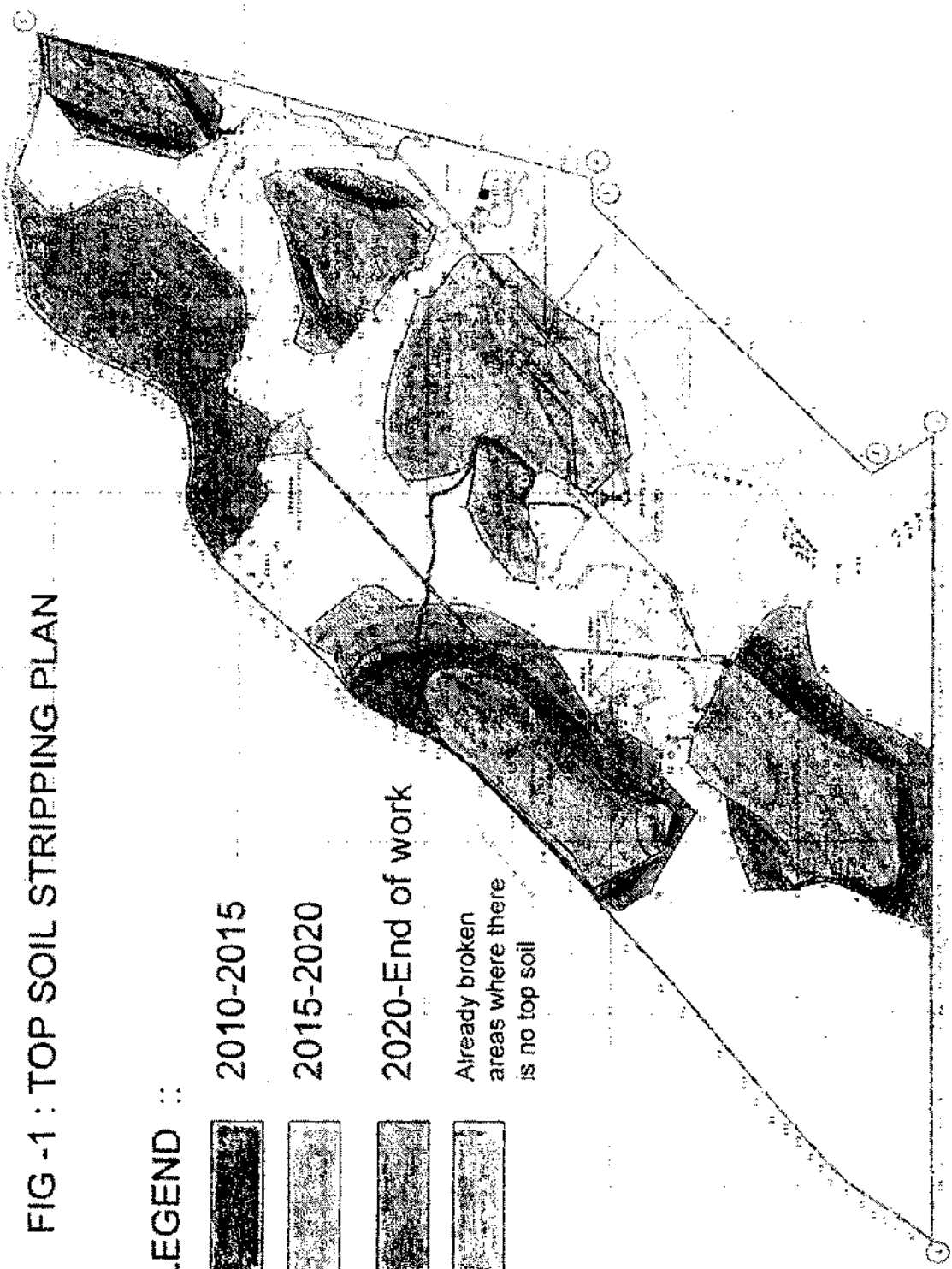
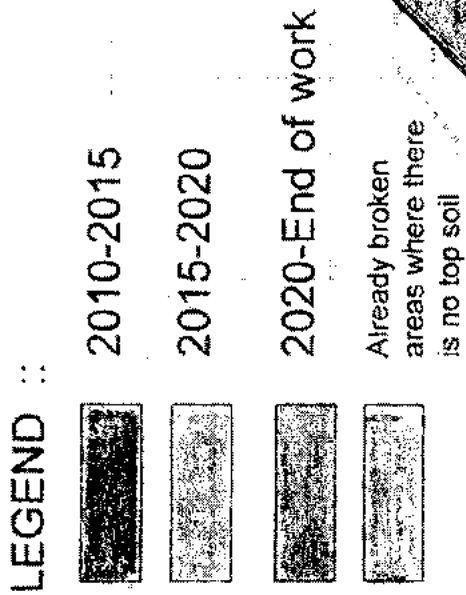

Divisional Forest Officer
Keonjhar Division

FIG -1 : TOP SOIL STRIPPING PLAN



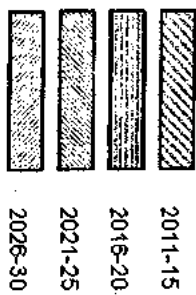
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 Project Manager
 PROJECT MANAGER, BANGALORE

[Handwritten signature]
 19/12/11
 General Manager
 SAIL ROAD, BANGALORE

MAP SHOWING EXISTING & PROPOSED MINING AREAS AND YEAR-WISE AFFORESTATION PLAN INSIDE ML & GAP PLANTATIONS ALONGWITH SMC WORKS WITHIN 100M FROM OUTER PERIMETER OF ML

YEARWISE AFFORESTATION PROGRAM FOR DEGRADATED HARDY PLANT SPECIES



1 GAP PLANTING & SMC WITHIN 100 M FROM OUTER PERIMETER OF ML

A SOIL CONSERVATION MEASURES WITHIN ML

NALLAH

JHARKHAND

JHARKHAND

JHARKHAND

2012-13

2013-14

OTHER LESSEES

2011-2015

2016-2020

2015-16

2017-16

2016-17

2021-2026

2026-2030

2011-12

2014-15

8.90 SQ MILES MINING LEASE OF M/S SAIL, BOLANI

COUNTY

Division of Forest
Keshpur Division

Joint Range Officer
BANDHA JALDAI

Geological Survey of India
Bhopal, India

ANNEXURE - I

REVISED FINANCIAL OUTLAY FOR **PLAN FOR CONSERVATION & MANAGEMENT OF TOP SOIL** IN COMPLIANCE TO CONDITION NO - 2-IV(E) & (XVI) OF STAGE-I FOREST CLEARANCE GRANT ORDER (Wage Rate : Rs 125/- per manday)

DETAILS OF ESTIMATE FOR STONE WALL FENCING PER RMT.

Sl No.	Particulars	Amount in Rs./Cum
1	Stone other than granite picked up broken & per cum. Stacked 0.03 cum.	180.50
2	Royalty	98.00
3	Transportation up to 5 Km. lead	166.70
	Sub Total	445.20
4	Mason-0.52 @165.00	85.8
5	Semiskilled labour- 0.52 @ 145.00	75.40
6	Unskilled labour-0.52 @125.00	65.00
7	Unskilled female labour – 0.35 @ 125.00	43.75
	Sub- total	269.95
8	Sundries & T.P. etc.	7.16
	Grand Total	722.30

Cost of stone wall fencing for 2500 rmt will be = Rs 722.30 x 2500 = Rs 18,05,750/-




GENERAL MANAGER
SAIL, BOLANI ORES MINES

ANNEXURE-II(A)

ESTIMATE FOR CONSTRUCTION OF DRY BOULDER TOE / RETAINING WALL
(Length = 1m , Width : 1.5 m , Height : 1.5m)

1	Earth work excavation in over areas.	L	B	D	TOTAL
	Cum 1	1.00	1.50	0.30	0.45
	Total				0.45
2	Collection, loading, unloading and stacking of local boulder (laterite)				
	Cum 1	1.00	1.50	0.300	0.45
	Cum 1	1.00	1.20	1.250	1.50
	Total				1.95

DESCRIPTION OF ITEM	UNIT	QTY.	RATE	AMOUNT (Rs)	REMARKS
Earth work in excavation in foundation trenches or drains (not exceeding 1.5 m in width or 10 sqm on plan) including dressing of sides and ramming of bottoms, lift up to 1.5m, including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m, In All kinds of soil.	CUM	0.45	125.21	56.34	Analysed Rate as per DSR-07
Supplying and slacking local laterite stone boulders at site & dry stone pitching laid in courses & required profile with hammer dressed stones including preparing the bedding surface etc all complete.	CUM	1.95	775.77	1512.75	Analysed Rate as per DSR-07
Cost for construction of 1 M dry stone retaining wall				1569.10	
Total cost accommodating revised wage rate @125/- per day				<u>1569.10x125</u> 90 = Rs 2179.31	


 GENERAL MANAGER
 SAIL-BOLANI ORES MINE5

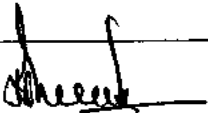
1	Cleaning of jungles along garland drain : L	B	D	TOTAL			
	Sq m	1	1.00 10.00	10.00			
			Total	10.00			
2	Earth Work in excavation in foundation trenches or drains	L	B	W/H	TOTAL		
	Cum	1	1.00	1.20	0.6	0.72	
			Total			0.72	
3	PCC 1:4:8	Cum	1	1.00	1.00	1.20	0.12
			Total				0.12
4	RR Masonary	Cum	1	1.00	0.40	0.50	0.20
			Total				0.20
5	20 mm cement Plaster (1:6)	Cum	1	1.00	1.00		1.00
			Total				1.00

ANNEXURE-II(B)

ESTIMATE FDR PER RMT CONSTRUCTION OF GARLAND DRAIN
(Length = 1m , Width : 1.2m , Depth : 0.6m)

1	Cleaning of jungles along garland drain : L B D						TOTAL
	Sq m	1	1.00	10.00	10.00		10.00
				Total			10.00
2	Earth Work in excavation in foundation trenches or drains						
		L	B	W/H	TDAL		
	Cum	1	1.00	1.20	0.6	0.72	
			Total			0.72	
3	PCC 1:4:8						
	Cum	1	1.00	1.00	1.20	0.12	
			Total			0.12	
4	RR Masonary						
	Cum	1	1.00	0.40	0.50	0.20	
			Total			0.20	
5	20 mm cement Plaster (1:6)						
	Cum	1	1.00	1.00		1.00	
			Total			1.00	
6	25 mm cement concrete flooring (1:2:4)						
	Cum	1	1.00	0.60		0.60	
			Total			0.60	

DESCRIPTION OF ITEM	UNIT	QTY.	RATE	AMOUNT (Rs)	REMARKS
Cleaning jungle including uprooting of rank vegetation, grass, brush wood, trees and saplings of girth up to 30 cm measured at a height of 1 m above ground level and removal of rubbish up to a distance of 50 m outside the periphery of the area cleared.	SQM	10.00	3.61	36.10	Analysed Rate
Earth work in excavation in foundation trenches or drains (not exceeding 1.5 m in width or 10 sqm on plan) including dressing of sides and ramming of bottoms, lift up to 1.5m, including getting out the excavated soil and disposal of surplus excavated so	CUM	0.72	125.21	90.15	Analysed Rate as per DSR
Providing and laying in position cement concrete 1:4:8 (1 Cement: 4 coarse sand: 8 graded stone aggregate 40 mm nominal size) of specified grade excluding the cost of centring and shuttering - All work upto plinth level.	CUM	0.12	3484.56	418.15	do
Random rubble masonry with local available hard stone (laterite) in foundation and plinth at plinth level and superstructure with cement mortar 1:6 (1 cement: 6 coarse sand).	CUM	0.20	1545.55	309.11	do
20 mm cement plaster of mix 1:6 (1 cement: 6 fine sand).	SQM	1.00	138.78	138.78	do
25 mm thick cement concrete flooring 1:2:4 (1 cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size) finished with a floating coat of neat cement including cement slurry, but excluding the cost of nosing of steps	SQM	0.60	287.20	172.32	do
Cost for construction of 1 M Garland drain				1164.61	
Cost after accommodating revised wage Rate				1164.61/90*125	= 1617.50



 GENERAL MANAGER
 SAIL-BOLANI ORES MINES

ANNEXURE-II(C)

ESTIMATE FOR PER RMT CONSTRUCTION OF SETTLING POND

(Length = 1m , Width : 3.0m , Height : 1.5m)

DESCRIPTION OF ITEM	UNIT	QTY.	RATE	AMOUNT(Rs)	REMARKS
Earth work in excavation by mechanical means (Hydraulic excavator) / manual means over areas in (exceeding 30 cm in depth 1.5 m in width as well as 10 sqm on plan) including disposal of excavated earth, lead up to 50 m and lift up to 1.5 m, disposed earth to be levelled and neatly dressed, in all kinds of soil.	CUM	4.50	123.16	554.22	Analysed rate based on D.S.R 07
Collection, loading, unloading and stacking of local boulder (laterite) from collecting area to work site including the cost of transportation of boulder at site, lead up to 10 Km as directed by Engg - in - charge.	CUM	1.01	775.77	785.47	Analysed rate based on D.S.R 07
Dry stone pitching 22.50 cm thick excluding the cost of supply of hard stone (laterite) and including the cost of preparing surface complete.	SQM	4.50	125.22	583.49	Analysed rate based on D.S.R 07
Cost for construction of 1 Settling Tank				1903.18	
Cost after accommodating revised wage Rate				1903.18/90*125	2643.30


GENERAL MANAGER
 SAIL-BOLANI ORES MINES

ANNEXURE-III**COST NORM FOR AGAVE PLANTATION**

(FOR 5 ROWS & 40 mts) Wage Rate: Rs.125.00, Seven years maintenance

Sl.No	Name of the Work	Man Day	Material Rs.	Total Cost In Rs
0th Year Operation				
1	Site clearance, alignment and stacking	2	-	250
2	Cost of lining materials including transportation.	-	278	278
3	Digging of pits and application of line.	6	-	750
4	Cost of 200 Ac. Including transportation.	-	1389	1389
5	Carriage and planting	2	-	250
6	Soil working and application of fertilisers(twice)	8	-	1000
7	Cost of fertiliser	-	278	278
8	Contingency	-	278	278
	Total	18	2223.00	4473.00
1st YEAR OPERATION				
1	Casualty replacement (20%) including cost of suckers & pitting.	2	278	528
2	Weeding and application of fertilisers	6	-	750
3	Cost of fertilisers and insecticides	-	208.00	208
	Total	8	350.00	1486
2nd YEAR OPERATION				
13	Weeding, soil working and application of fertilisers.	6	-	750
14	Cost of fertilisers and insecticides	-	208	208
15	Plant protection measures including fertiliser cost.	-	208	208
	Total	6	416	1166
3rd YEAR OPERATION				
1	Weeding, soil working and application of fertilisers.	7	-	875
2	Cost of fertilisers and insecticides	-	243	243
3	Plant protection measures including fertiliser cost.	-	243	243
	Total	7	486	1361
4th YEAR OPERATION				
1	Weeding, soil working and application of fertilisers.	7	-	875
2	Cost of fertilisers and insecticides	-	243	243
3	Plant protection measures including fertiliser cost.	-	243	243
	Total	7	486	1361
5th YEAR OPERATION				
1	Weeding, soil working and application of fertilisers.	8	-	1000
2	Cost of fertilisers and insecticides	-	278	278
3	Plant protection measures including fertiliser cost.	-	278	278
	Total	8	556	1556
6th YEAR OPERATION				
1	Weeding, soil working and application of fertilisers.	8	-	1000
2	Cost of fertilisers and insecticides	-	278	278
3	Plant protection measures including fertiliser cost.	-	278	278
	Total	8	556	1556
	GRAND TOTAL	62	5209.00	12959.00

Cost for Agave fencing with five rows 01 Kms= $\frac{12959}{40} \times 1000 = \text{Rs.3, 23,975/-}$


GENERAL MANAGER
 SAIL-BOLANI ORES MINES

ANNEXURE- IV (A)**I. Detail Estimate of Loose Boulder Structure (S.C.M.)**

Span-1 mt. Ht. = 0.6 mt. Slope-U/S:- 1:1.5 D/S slope: 1:2

1. Leveling the unshaped surface of the selected site & layout the structure foundation L.S. 1 MD. Rs. 125.00

2. Excavation of foundation in hard soil within initial lead of 50 mtr. including rough dressing and breaking of clods to maximum size 5 cm. to 7 cm. laying in layer not exceeding 0.3 in depth to strengthening both side U/S approx. bund of loose boulder structure.

Base with apron- $1 \times 3.60 \times 1.60 \times 0.30 =$ Wing wall - $4 \times 0.50 \times 0.30 \times 0.30 =$

1.728

@ Rs. 5556.00 per 100 cum.

0.180

1.908 cum

Rs. 106.00

3. Rough stone dry packing up to GL

Base with apron - $1 \times 3.60 \times 1.60 \times 0.30 =$

1.728

Wing wall - $4 \times 0.50 \times 0.30 \times 0.30 =$ 0.180

1.908 cum

Above GL

Super structure- $1 \times 1.00 \times \frac{2.60 + 0.50}{2} \times 0.60 =$

0.930

Wing wall - $4 \times 0.50 \times 0.30 \times 0.30 =$

0.180

Side wall-

i. $2 \times \frac{0.3+0.9}{2} \times 0.3 =$

0.324

ii. $2 \times 0.3 + \frac{0.9 \times 1.2}{2} \times 0.3 =$

0.432

iii. $2 \times 0.5 \times 0.9 \times 0.3 =$

0.270

iv. $2 \times 1.0 \times 0.3 \times 0.3 =$

0.180

2.316 cum

@Rs. 476.56 per cum.

4.224 cum

Rs. 2,013.00

G. Total Rs. 2,244.00

(Rupees Two thousand two hundred forty four) only



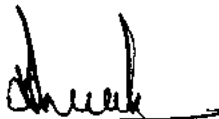
GENERAL MANAGER
SAIL-BOLANI ORES MINES

ANNEXURE IV (B)**II. Detail Estimate of Loose Boulder Structure (5.C.M.)**

Span-2 mt. Ht. = 0.6 mt. Slope-U/S:- 1:1.5 D/S slope: 1:2

1. Leveling the unshaped surface of the selected site & layout the structure foundation L.S. 1 MD.			Rs. 125.00
2. Excavation of foundation in hard soil within initial lead of 50 mtr. including rough dressing and breaking of clods to maximum size 5 cm. to 7 cm. laying in layer not exceeding 0.3 in depth to strengthening both side U/S approx. bund of loose boulder structure.			
Base with apron- $1 \times 3.70 \times 3.00 \times 0.30 =$	3.33		
Wing wall - $4 \times 0.50 \times 0.50 \times 0.30 =$	0.30	3.63 cum	Rs. 200.00
@ Rs. 5510.00 per 100 cum.			
3. Rough stone dry packing up to GL			
Base with apron - $1 \times 3.70 \times 3.00 \times 0.30 =$	3.33		
Wing wall - $4 \times 0.50 \times 0.50 \times 0.30 =$	0.30		
Above GL			
Super structure- $1 \times 2.00 \times \frac{2.70 + 0.60}{2} \times 0.60 =$	1.98		
Wing wall - $4 \times 0.50 \times 0.50 \times 0.50 =$	0.50		
Side wall-			
i. $2 \times \frac{0.50 + 1.10}{2} \times 0.9 \times 0.5 =$	0.72		
ii. $2 \times \frac{0.5 + 1.10}{2} \times 1.2 \times 0.5 =$	0.96		
iii. $2 \times 0.6 \times 0.6 \times 0.5 =$	0.36		
iv. $2 \times 1.0 \times 0.5 \times 0.5 =$	0.50		
@ Rs. 476.18 per cum		8.65 cum	Rs. 4,119.00
			G. Total Rs. 4444.00

(Rupees Four thousand four hundred forty four only)


GENERAL MANAGER
SAIL-BOLANI ORES MINES

ANNEXURE- IV(C)**III. Detail Estimate of Loose Boulder Structure (S.C.M.)****Span-3 mt. Ht. = 1.0mt. Slope-U/5:- 1:1.5 D/5 slope: 1:2.0**

1. Leveling the unshaped surface of the selected site & layout the structure foundation L.S. 1 MD. **Rs.125.00**

2. Excavation of foundation in hard soil within initial lead of 50 mtr. including rough dressing and breaking of clods to maximum size 5 cm. to 7 cm. laying in layer not exceeding 0.3 in depth to strengthening both side U/S approx. bund of loose boulder structure.

Base with apron- $1 \times 5.10 \times 4.00 \times 0.30 =$ 6.12
 Wing wall - $4 \times 0.50 \times 0.50 \times 0.30 =$ 0.30 6.42 cum **Rs. 353.00**

@ Rs. 5498.00 per 100 cum.

3. Rough stone dry packing up to GL

Base with apron - $1 \times 5.10 \times 4.00 \times 0.30 =$ 6.12

Wing wall - $4 \times 0.50 \times 0.50 \times 0.30 =$ 0.30

Above GL

Super structure- $1 \times \frac{4.10 + 0.60}{2} \times 1.00 \times 3.0 =$ 7.05

Wing wall - $4 \times 0.50 \times 0.50 \times 0.50 =$ 0.50

Side wall-

i. $2 \times \frac{0.50 + 1.50}{2} \times 1.5 \times 0.5 =$ 1.50

ii. $2 \times \frac{0.5 + 1.50}{2} \times 2.0 \times 0.5 =$ 2.00

iii. $2 \times 0.6 \times 1.0 \times 0.5 =$ 0.60

iv. $2 \times 1.0 \times 0.5 \times 0.5 =$ 0.50

@ Rs. 476.00 per cum

18.57 cum

Rs. 8847.00

G. Total Rs. 9,325.00

(Rupees Nine thousand three hundred twenty five only)



**GENERAL MANAGER
SAIL-BOLANI ORES MINES**

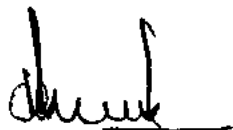
ANNEXURE-III(D)

IV. Detail Estimate of Loose Boulder Structure (S.C.M.)

Span-4 mt. Ht. = 1.3mt. Slope-U/S:- 1:1.5 D/S slope: 1:2.0

1. Leveling the unshaped surface of the selected site & layout the structure foundation L.S. 1 MD.			Rs. 125.00
2. Excavation of foundation in hard soil within Initial lead of 50 mtr. including rough dressing and breaking of clods to maximum size 5 cm. to 7 cm. laying in layer not exceeding 0.3 in depth to strengthening both side U/S approx. bund of loose boulder structure.			
Base with apron- $1 \times 6.15 \times 5.00 \times 0.30 =$			
Wing wall - $4 \times 0.50 \times 0.50 \times 0.30 =$	9.225		
@ Rs. 5480.00 per 100 cum.	0.30	9.525 cum	Rs. 522.00
3. Rough stone dry packing up to GL			
Base with apron - $1 \times 6.15 \times 5.00 \times 0.30 =$	9.225		
Wing wall - $4 \times 0.50 \times 0.50 \times 0.30 =$	0.30		
Above GL			
Super structure- $1 \times \frac{5.15 + 0.60}{2} \times 1.30 \times 4.0 =$	14.95		
Wing wall - $4 \times 0.50 \times 0.50 \times 0.50 =$	0.50		
Side wall-			
i. $2 \times \frac{0.50 + 1.80}{2} \times 1.95 \times 0.5 =$	2.24		
ii. $2 \times \frac{0.5 + 1.80}{2} \times 2.6 \times 0.5 =$	2.99		
iii. $2 \times 0.6 \times 1.8 \times 0.5 =$	1.08		
iv. $2 \times 1.0 \times 0.5 \times 0.5 =$	0.50		
@ Rs. 476.45 per cum		31.785 cum	<u>Rs. 15144.00</u>
			<u>Rs. 15,791.00</u>

(Rupees Fifteen thousand seven hundred ninety one only)


GENERAL MANAGER
SAIL-BOLANI ORES MINES

ANNEXURE – VI**PROVISION OF FUND FOR CONSERVATION & MANAGEMENT OF TOP SOIL**

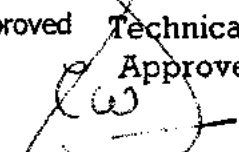
REVISED FINANCIAL OUTLAY FOR **PLAN FOR CONSERVATION & MANAGEMENT OF TOP SOIL** IN COMPLIANCE TO CONDITION NO - 2-IV(E) & (XVI) OF STAGE-I FOREST CLEARANCE GRANT ORDER (Wage Rate : Rs 125/- per manday)

TOTAL COST OF TOP SOIL CONSERVATION & MANAGEMENT

Sl.No	Description of the work	Funds Required (in Rs)
1	Cost for erection of 566 m dry toe wall around top soil stock pile along with garland drain	Rs 21,48,994.50
2	Cost for erection of 2500 m contour bundh around the contours of hill slopes	Rs 18,05,750.00
5.	Planting agave along nallah banks	Rs.3,23,975.00
6.	Site survey, Site preparations , soil analysis etc. (L/5)	Rs.03,00,000.00
7.	Contingency including supervision charges(L/5)	Rs. 70,000.00
8.	TOTAL	Rs 46,48,719.50
	Price escalation @ 10%	Rs 4,64,871.95
	SUB TOTAL	Rs 51,13,591.45
	10 % as motivation to VSS	Rs 5,11,359.14
	GRAND TOTAL	Rs 56,24,950.59 = Rs 56,24,951.00

In case of any increase in the man, material and machinery charges, additional funds will be provided , as and when required .


GENERAL MANAGER
 SAIL-BOLANI ORES MINES

Technically Approved Technically Approved

 Regional Chief Conservator of Forests
 Rourkela

29.08.2012

PROVISION OF FUNDS (After Revision of wage rate to Rs 125/-)


The total cost of the implementation Top soil Conservation and Management measures will be **Rs. 56.25 lakhs** as detailed in **Annexure-VI**. Fund will be provided for the implementation of the scheme for Top soil Conservation under a separate budget head. In case of any increase in the man, material and machinery charges, additional funds will also be provided under this head, as and when required, in consultation with Forest Department.

The management program of top soil (A, 5I no-1) will be implemented after generation of top soil from mining due to breaking of fresh areas after Stage-II clearance. The implementation of the Top soil conservation measures from barren lands inside ML area (B), will be done from the first year at the cost of user agency. The above expenditure of Rs 45.83 lakh will be made over the next five years period. The tentative annual expenditure planned for the next five year for the implementation of above measures is given in the following table :

Sl. No.	Description	Amount
1.	1 st year plan of expenditure	Rs 5.0 lakhs
2.	2 nd year plan of expenditure	Rs 5.0 lakhs
3.	3 rd year plan of expenditure	Rs 5.0 lakhs
4.	4 th year plan of expenditure	Rs 10.0 lakhs
5.	5 th year plan of expenditure	Rs 10.0 lakhs
6.	6 th year plan of expenditure	Rs 11.0 lakhs
7.	7 th year plan of expenditure	Rs 10.25 lakhs
	Total:-	Rs. 56.25 lakhs


GENERAL MANAGER
 SAIL-BOLANI ORES MINES

Technically Approved


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 Approved

Regional Chief Conservator of Forests
 Rourkela Rourkela Circle, Rourkela

29.08.2012

Annexure-IX(A)

(F)

SCHEME**FOR**

**FENCING, PROTECTION AND REGENERATION
OF THE SAFETY ZONE AREA
(7.5 METER STRIP ALL ALONG THE OUTER BOUNDARY OF THE
5.10 SQ MILES ML OF M/S SAIL - BOLANI IRON ORE MINES)
(1321.45 Hectares ML)**

**in compliance
of
Condition no - 2(X) of Stage-I Forest Clearance grant Order
Vide Letter No.8-17/1997-FC(pt.) Dated.12.11.2010
of Govt. of India, Ministry of Environment & Forests, New Delhi**

**for
Diversion of 1152.58 Hects Forest land
within 5.10 sq Miles ML of
Bolani Iron Ore Mine of M/s SAIL,
in Champua Subdivision of Keonjhar District**



सेल SAIL

SCHEME FOR FENCING, PROTECTION AND REGENERATION OF THE SAFETY ZONE AREA (7.5 METER STRIP ALL ALONG THE OUTER BOUNDARY OF THE 5.10 SQ MILES ML OF M/S SAIL - BOLANI IRON ORE MINES , OF M/S STEEL AUTHORITY OF INDIA LTD. IN KEONJHAR DISTRICT, ORISSA.

1. INTRODUCTION

Bolani Iron Ore Mine of M/s Steel Authority of India Ltd. is an ongoing Iron Ore Mining Project over an area of 1321.45Ha (5.10 sq miles ML) . The tenure of this 5.10 sq. miles ML. was for 30 years from 11.4.1960 till 10.4.90. Application for 1st renewal was submitted on 07.04.89 and the 1st RML was granted for a period of 20 years with effect from 10-04-1990 till 09-04-2010 vide letter no III(A)SM-1/97-10731/SM.Bhubaneswar dated 25-11-1999. The forest clearance is co-terminus with the lease . The total ML area involved 1181.66Ha inside Karo Reserve Forest and 44.12Ha of revenue/khesra forest in it. The total forest area broken prior to 25.10.1980 is 316.70 Ha. As per the Stage-II clearance of MoEF vide letter no 8-17/97-FC dt.19.02.1998, the user agency was allowed for diversion of total 1050.15 Ha forest land, with mining over 316.70Ha broken up land , 170.50Ha of virgin forest land and 562.95 Ha of forest land to be protected as such , excluding 175.63 Ha of Safety Zone in the 1st RML period . In the 1st RML period, the user agency has done compensatory afforestation over 429.9833Ha of non forest land and 610.2734Ha. degraded forest within Nayagarh R F .

The Second RML application has been filed on 26.03.2009 and the lease is in deemed renewal . Mining plan for 5.10 sq miles ML for the second renewal (10-04-2010 to 09-04-2030) has been approved by IBM Nagpur. Environmental clearance has been granted by MOEF , Govt of India for production of 5.65 MTPA per annum vide letter no No.J-11015/470/2006-IA.II (M) Dt 04-12-2007 . The consent to operate for production of 5.65 MTPA Iron Ore has been granted by OSPCB and is valid up to 31-03 -2012 . For the second renewal of the above said ML area , Bolani Iron Ore Mine has filed diversion proposal for total forest land inside 1321.45 hectares mining lease i.e 1152.58 ha. (Broken up forest land 392.80 ha. and Virgin forest land 759.78 ha.) excluding 73.2Ha as safety zone. Compensatory afforestation over over 205.0 ha Degraded forest land (twice in extent of differential area of 102.43 Ha of virgin forest land being diverted), has been given within Ateí Reserve Forest of Patna Range of Keonjhar Division.

Stage-I forest clearance has been obtained vide Letter No.B-17/1997-FC(pt.) dated. 12.11.2010 from Govt. of India, Ministry of Environment & Forests, New Delhi for

the above said Diversion of 1152.58 ha. of Forest land subject to compliance of the conditions stipulated therein. Working permission was obtained from Govt. of India, Ministry of Environment & Forests, New Delhi vide No. 8-17/1997-FC(pt.) dated 04-04-2011 with validity up to 11-11-2011 and subsequently vide Letter No. 8-17/1997-FC(pt.) dated 09.11.2011 with validity up to 11-02-2012.

While granting Stage-I approval , the Ministry of Environment and Forest, Govt. of India has stipulated the following condition in **Condition no-x** : "*Fencing, protection and regeneration of the safety zone area (7.5 meter strip all along the outer boundary of the area identified to undertake mining) shall be done by the User Agency at the project cost,*".

As per condition stipulated during previous approval for 1st. Renewal of 5.10 sq miles ML, Bolani Ores Mines had deposited Rs 16,55,014.00 (Rupees sixteen lakhs fifty five thousands fourteen only) with State Forest Department towards Protection, fencing and regeneration of safety zone area over 175.63 Ha and Rs 19,75,838/- towards afforestation over one and half times of the safety zone area of 263.45 Ha in degraded forest land in Karo RF and Barabank RF. As stipulated in Condition - X of Stage-I clearance , it is proposed to undertake the fencing , protection & regeneration of safety zone i.e. 7.5 meter strip all along outer boundary of the area identified for Mining . Hence a scheme has been prepared for undertaking the above jobs which will be implemented in a time bound manner .

2. LOCATION OF ML AREA

Bolani Ores Mines is located 10 Km west of Barbil in Champua sub-division of Keonjhar district of Orissa, adjoining the Boundary of Singhbhum district of Jharkhand. It is spotted in the Survey of India topo- sheet no 73 F/8. The total mining leasehold area of Bolani is 12 sq. Miles and is divided in to two ML areas namely : 5.1 sq. miles ML (Lease - I) and 6.90 sq. miles ML(Lease - II) . The location grid is given as follows :

LEASE AREA	LATITUDE		LONGITUDE	
5.10 sq miles ML (Lease- I)	22° 5'00"N	22° 7'00"N	85° 17'00" E	85° 20'00" E
6.90 sq miles ML (Lease- II)	22° 5'00"N	22° 6'50"N	85° 20'00"E	85° 23'00" E

The leasehold area is flanked by the Kiriburu-Meghahatuburu mines of SAIL on western side, the common boundary being defined by the Interstate boundary of Jharkhand and Orissa. On the eastern side the leasehold shares common boundary with other lease (6.9 sq. miles lease) of M/s SAIL. Though the main iron ore mining area is confined within 5.1 sq. miles Mining Lease area, the ancillary facilities viz., tailing disposal system & tailing dam, OB dumps, iron ore stock piles, loading plant, railway siding, water intake point (Pump house for Ore washing), residential colony, approach road from Barbil etc. are located within SAIL-Bolani's another adjoining mining lease i.e 6.90 sq. miles ML area.

SELECTION OF SITE FOR SAFETY ZONE (7.5 m STRIP)

The forest land within 7.5 meter strip all along the outer boundary of the area identified to undertake mining in the mining lease of Bolani (5.10 sq miles ML), is having crown density <0.4 and is degraded in nature. It comes under Karo Reserve Forest of Barbil range of Keonjhar Forest division. In compliance to the condition, this degraded forest land within 7.5 meter from outer perimeter of Mining Lease has been identified and enclosed in the table as follows :

LOCATION	Fencing on both sides (length in meter)	Type of fencing proposed	Area Sq m/(Ha)
Along Southern boundary of 5.10 sq miles ML (From ML pillar no 3 to ML pillar no 4 passing adjacent to F-area quarry-both side of 7.5 m strip	3675 m x 2 =7350 meter	Barbed wire	27562.5 (2.76 Ha)
Along Western & Northern boundary of 5.10 sq miles ML (From ML pillar no 4 to ML pillar no 5 passing adjacent to existing G-area quarry, proposed E-area quarry and existing G-area quarry -both side of 7.5 m strip	8090 m x 2 =16180 meter	Barbed wire	60675 (6.07 Ha)
Along Eastern boundary of 5.10 sq miles ML (From ML pillar no 5 to ML to pillar no 3 passing adjacent to existing D-area quarry, and Township alongwith common ML boundary with other lease.	5285 m x 2 = 10570 meter	Barbed wire	39637.5 (3.97 ha)
TOTAL	34100 m		12.8 Ha

The total length of the 5.10 sq miles ML is around 17,050 meters and area of the 7.5 m strip is 12.8 hectares. Hence an area of 12.8 ha has been identified within 7.5m distance, having density of vegetation less than 0.4, to be suitable for the purpose of regeneration by undertaking afforestation and suitable soil and moisture conservation activities. This

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area will be maintained in form of green belt / plantation strip whose width varies depending on the site. The location map is enclosed herewith. The above areas are found to be degraded due to uncontrolled erosion and lack of vegetation (density less than < 0.4). Plantation of 15,000 saplings have been undertaken inside the safety zone area during the year 2011. The present scheme aims at preparation of site specific afforestation scheme over above 12.8 Ha. degraded forest land in R D F Plantation mode with adequate soil and Moisture conservations.

TOPOGRAPHY & DRAINAGE


The above degraded forest lands are steep in south western side and moderately undulating in eastern side. As such, the 5.10 sq miles lease area of Bolani combines the features of hill and valley topography between the southern lease boundary and the Balagoda nala in north with ore bearing zones occurring on the hill top and hill slopes. The hill range rises nearly 390 m from the valley. From the iron ease boundary to the Karo River ground is gently undulating with general elevation about 470 m AMSL. The general gradient of the hill range is from north west-west to south east -east. At the foot hills from the terrain is gently sloping. On the north eastern portion of the lease boundary the ground is undulating with general elevation varying from 480m to 500m AMSL. The streams are ephemeral in nature.

CLIMATE & RAINFALL

The area lies in tropical region where climate is characterised by very hot summers and cool winters. Rainy season is normally from June to middle of October with maximum precipitation on average during the month of August.

SOIL QUALITY

The soils of the lease hold area have characteristic reddish tinge and predominant soil type of the region may be classified as red earth & red loam. The dominant colours found in field conditions are dusky red, reddish brown, dark reddish brown, red, dark red etc. The texture of the soil varies from sandy loamy in the regions like afforested waste dump, back filled waste dump, barren land and sandy clay loamy in the areas like agricultural field, old tailing pond and tailing pond discharged area. This type of soil coupled with gravel, boulder etc. allows, free drainage of water, down in the profile causing intense leaching. Most of the soil found to be slightly acidic in nature and this may be due to weathering and bacterial action on available sulphur.



BRIEF DESCRIPTION OF EXISTING VEGETATION

The area consists of vegetation of dry deciduous species like Sal, Piasal, Kurum, Jamun, Dhala, Kendu, Asan etc. with canopy density 0.1 in the southern and western portion and 0.01 in the north western side inside the adjacent lease. The area in north western side has a forest cover of pure sal forests, semi-evergreen(mixed) forests, degraded forest. The forests within 7.5 m from outer perimeter of 5.10 sq miles ML are part of Karo RF. The forest of study area is Sal dominated followed by Kurchi (*Holarrhena antidysenterica*) and Bahera (*Terminalia balcerica*).

LOCAL GEOLOGY

Bolani iron ore deposit lies on the western limb of the famous Bonai range. Typical metamorphosed iron bearing sedimentary rocks of upper Precambrian constitute the deposit. The lithology is : Lower Shale, BHQ, Tuff-Phyllite, Laterite and Iron Ore.

OBJECTIVE OF THE SCHEME

The main objective of the present scheme is to fulfil the condition X stipulated in the grant order of stage-I, vide letter no B-17/1997-FC(pt.) dated 04-04-2011 of MoEF,GOI and accordingly undertake fencing and protection of the safety zone area for regeneration of the degraded forest lands within 7.5m from outer perimeter 5.10 sq miles ML area of Bolani Iron Ore Mines to restock these degraded forest crop by taking up tending operation of the existing forest crop and supplementing with RDF plantation at the rate of 300 plants per hectare in blank, in consultation with State Forest Department. However at places where the natural regeneration of promising species of forest crops are available, they shall be nourished to also form the future crop of the area. It also aims at enforcing protection measures of the plantations which is proposed to be done by involving people around under the Joint Forest Management mode. The scheme further seeks to incorporate suitable soil conservation measures with the afforestation works, so as to conserve soil and water for enrichment of the eco-system. The scheme will be implemented in phased manner during the 2nd renewal period.

Hence, the main objective of the present regeneration scheme is as follows :-

- 1) To undertake barbed wire fencing around both sides of the safety zone
- 2) To undertake afforestation inside safety zone by RDF plantation mode
- 3) To protect the area against encroachment, illicit felling, fire incidences, grazing and all other forms of biotic interference and allow unhindered growth of the saplings.

Proposed technique

To achieve the above objectives, it has been proposed to take up RDF gap plantation @ 200 plants/ha. at the spacing of 2.5 mt X 2.5 mt. in identified gaps of selected degraded open forest patches. The following items of works prescribed in the scheme will be taken up, the detailed expenditure statement of which is enclosed in Annexure-I.

WORKS TO BE TAKEN UP : To achieve the above objectives, the following items of work are mainly prescribed to be taken up :

- o **SURVEY AND DEMARCATION OF BOUNDARY:** The identified safety zones have been surveyed and demarcated in the field clearly and demarcated by posting 4 ft height R.C.C. pillars (ML pillar in the outer perimeter and safety zone pillar in the inner perimeter) at every corner/turning of boundary line as per the specified norms.

FENCING : Barbed wire fencing shall be taken up around all the boundaries of safety zone. Entry gates at suitable point shall be provided to facilitate the departmental staffs to take up and maintain the plantation from time to time. The details of the measurements of the perimeter of the degraded forest lands selected along with the type of fencing to be taken up is given below for reference :

LOCATION	Barbed Fencing in mtrs
ML Pillar- 5 to 4	16190 m
ML Pillar- 3 to 4	7350 m
ML Pillar- 3 to 5	10510 m
TOTAL FENCING JOBS	34100 m

The job of barbed wire fencing along the outer periphery is already in progress. The cost of barbed wire fencing is enclosed in Annexure-II.

REGENERATION CLEANING AND TENDING OPERATIONS

The operation aims at tending the existing crop silviculture to desirable species for ensuring better growth of the plants. It includes removal of weeds, diseased, malformed, dead, drying and defective tree growth and disposal of the same by distributing it

among the local villagers or by control burning them at a selected site so as not to damage the new recruits. Apart from it weed eradication and climber cutting is also an integral part as they interfere with the growth of trees and also their regeneration by shrouding them from the sun rays and also through root competition. Hence Site clearance by removing climbers and uprooting Eupatorium and other weeds is also being proposed to be done in the area.

The detailed operation to be carried out is as follows-

- i) Cutting back of herbs and shrubs interfering with the growth of the desirable species.
- ii) Cutting back of individual inferior poles interfering with growth of well formed pole crops.
- iii) Cutting back of malformed and diseased species.
- iv) Cutting of climbers up to hand reach distance.
- v) Cutting of high stumps flush to the ground.
- vi) Singling of coppice shoots coming out from stools retaining the most promising one.
- vii) Pruning of the branches of the pole crops up to hand reach distance.

During the 1st year, climber cutting, and cutting of high stumps, weeds and malformed and diseased species will be done. In the next two years, cutting back of ill grown individuals and singling of coppice in case of desired species will be done in the maintenance activities.

3. PLANTING & POST-PLANTING :

The area will be stocked by way of raising plantation @ 200 plants per hectare in RDF gap plantation method. Taking into consideration the site specific soil condition, existing species growing their naturally and the requirement of the local people the following species are proposed to be planted in the area :

Choice of species : As far as possible, care shall be taken to select indigenous species which are associates of local species . In areas in the periphery in the north more prone to grazing incidences, species like *Chakunda (Samania saman)* may be given.



The list of species to be adopted for the plantation is as follows:

1	Amla	<i>Emblica officinalis</i>
2	Bamboo	<i>Dendrocalamus strictus</i>
3	Karanja	<i>Pongamia pinnata</i>
4	Asan	<i>Terminalia tomentosa</i>
5	Sisoo	<i>Dalbergia sisoo</i>
6	Gambhar	<i>Gmelina arborea</i>
7	Neem	<i>Azadirachta indica</i>
8	Harida	<i>Terminalia chebula</i>
9	Bahada	<i>Terminalia bellerica</i>
10	Kasi	<i>Bridelia retusa</i>

Raising of nursery

Seedlings required for the plantation shall be raised in the nursery of Bolani ores mines. The Nursery has a capacity of raising 120000 saplings . Nursery works will be undertaken in consultation with state forest department nursery on payment basis . All the infrastructures shall be provided by Bolani Ores mines . Work will be started one year before the year of plantation so that second year seedlings will be available for plantation. 20% extra seedlings shall be raised to compensate and mitigate the eventuality of seedling casualty in the nursery. Standard nursery practices shall be followed for raising of seedlings in polythene bags.

Alignment and stacking

Alignment, stacking and pitting will be taken up in the month of March-April, Pits of size 30cmX 30cmX 30cm will be dug maintaining a spacing of 2.5 mt @ 200 plants per hectare.

Planting

The seedlings will be planted in dug out pits of 30 cm³ maintaing a spacing of 2.5 mt between the pits @ 200 seedlings per hectare. Plantation should be taken up after first regular shower of monsoon and should ideally be completed by end of August. NPK/DAP fertilizer @ 30 gms per plant should be given as basal dose. Anti- termite and insecticide like methyl parathion @ 5 gms. per plant should be applied per pit. Care will be taken to avoid direct contact of the root tip of the plant with that of the insecticide to prevent damage to the plant. Casualty replacement when required during the planting year and in the second year should be undertaken for which the seedlings shall be raised.

Weeding, Soil working and manuring

For establishment and better growth of the planted seedlings, weeding, soil working and manuring are necessary. It is prescribed to carry out two weeding, soil working and manuring during the first year and second year of plantation and one weeding and soil working during the third year. Weeding and manuring for the first and second year shall be carried out during August- September and the second one during October- November along with soil working during which 30 gms. Of NPK/DAP shall be added to the soil per plant. First weeding shall be area weeding and the second weeding should be strip weeding. The weeding of third year will be area weeding which shall be carried out during August.

Application of Insecticides

The plantation site after planting with good seedlings may in future course of time get infested with diseases owing to influx of insects and pests into the area which usually cause heavy damage to the soft, tender and avidly growing parts of the plant that heavily affects the rate of growth and sometimes causes wide spread casualty of the seedlings. To avoid such incidences foliar spray and ground application of insecticides in at regular intervals usually on a sunny day before fore noon shall be done.

Fireline tracing and maintenance

Fire causes irreparable damage to the plantation and the forest growth during fire season and to prevent such fire out breaks in the area, the plantation area shall be divided into suitable blocks by tracing firelines. Boundaries of the plantation patches and these block lines will be scrapped of forest growth to a width of 3.0 mt. during Feb-March and the cut back materials and the dry leaves stacked along these firelines shall be controlled burnt under direct supervision of the forest staff. This operation is highly essential and the scheme proposes to carry this operation for the first three years

The detailed cost estimate of various operations to be taken up in RDF plantation has been furnished in **Annexure-I** .

SOIL CONSERVATION MEASURES :

The sites selected for restocking and rejuvenation by afforestation are degraded forest lands and the slope of the identified area varies from steep to moderate with undulating topography and gullies are formed due to heavy erosion. Therefore, soil conservation measure is indispensable and is to be appropriately designed. Taking into the consideration of the degradation of the area due to soil erosion it has been proposed to



take up Soil Conservation Measures by construction of **Loose Boulder Checkdam (LBCD)** such as contour bunds, checkdams over the area (1mt., 2mt., 3mt. & 4 mt. span) as follows :

	Nos. of LBCD			
	1mt	2mt	3mt	4mt
TOTAL	25	20	20	10
	@ Rs. 1615/- per LBCD = 40,375/-	@ Rs. 3200/- per LBCD = 64,000/-	@ Rs. 6714/- per LBCD = 1,34,280/-	@Rs. 11370/- per LBCD = 1,13,700

The details of estimate of different size of Loose Boulder Structure is given in **ANNEXURE- III(A),(B),(C) & (D)**.

Special conservation measures

To check soil erosion and the rain water draining out of the area, it has been proposed to take up special conservation measures by digging staggered trenches along the contour over the area @ 250 nos per hectare. The size of the trenches will be 2 Mtr x 0.5 Mtr x 0.5mtr . Digging of staggered trenches will be done during Sept of 1st year. Agave planting will also be taken up on the dugout soil of the trench for it's stabilization and to restrict the dugout soil from re-filling into the trench. Thus an amount of Rs 2,24,960/- is required for 12.8 Ha considering Rs 17,575/- per ha for carrying out such special soil & Moisture conservation measures .The cost norm for the same is enclosed in **Annexure – IV**.

WATCH AND WARD

To protect the area against grazing, fire accident and other biotic interference it is proposed to engage the 5 nos of watchers for five years after the year of plantation.

MOTIVATION OF PEOPLE AND PARTICIPATION.

In order to involve the adjoining people in the protection of plantation, meetings are to be conducted in the adjoining villages and to motivate the people in this direction, they will be provided with incentives in shape of different community articles and other different community amenities of fixed and movable type in shape of entry point activities. Health camps shall also be organized in the villages.

EXECUTING AGENCY

In all the cases, the works shall be executed by the User Agency and the entire work shall be carried out through close coordination with the Forest Department. The work will

be executed with outsourced man and machinery as and where required . To facilitate this, the user agency shall establish and strengthen specialised executing and supervision departments headed by qualified persons with all required infrastructural facilities . Nursery, plantation manuals , journal and other relevant documents shall be maintained. To facilitate this, the user agency shall bear all the cost of infrastructure required.

INSPECTION, MONITORING AND EVALUATION

For successful implementation of the above proposed programme, intensive inspection and technical guidance from concerned technical wing is required. Sufficient fuel/ conveyance charges for the executing agency and technical experts shall be provided by the user agency for proper monitoring and inspection of the implementation of the scheme.

REQUIREMENT OF FUNDS

The total cost of the implementation of proposed scheme will be **Rs 2,24,50,000.00** as detailed in **Annexure-V** . For implementation of the above scheme, the above expenditure will be made over the next five years period . Therefore, budget provision of Rs. 225.5 lakhs will be kept by the user agency for implementation of the above fencing, protection and regeneration measures a period of next five years. This budget will subject to increase in amount considering the increase in materials and labour charges. The tentative annual expenditure planned for the next five year for the implementation of the scheme is given in the following table :

Sl. No.	Description	Amount
1.	1 st year plan of expenditure*	Rs 80.00 Lakhs
2.	2 nd year plan of expenditure	Rs 100.00 Lakhs
3.	3 rd year plan of expenditure	Rs 15.00 Lakhs
4.	4 th year plan of expenditure	Rs 15.00 Lakhs
5.	5 th year plan of expenditure	Rs 15.50 Lakhs
6.	Total:-	Rs 225.50 Lakhs

(*The job of barbed wire fencing along the outer periphery at a cost of Rs 70.00 lakhs is already in progress and will be completed soon by Dec-2011. Plantation of 15,000 saplings has been undertaken during various parts of safety zone during Aug 2011.)

(N P PRAMANIK)
GENERAL MANAGER
SAIL-BOLANI ORES MINE
Technically
Approved

Barbed Wire Officer
BARBIL RANGE, BARBIL

COUNTERSIGNED

Divisional Forest Officer
Keonjhar Division

Regional Chief Conservator of Forests

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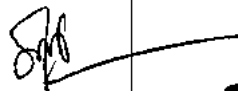
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(N P PRAMANIK)
GENERAL MANAGER
SAIL-BOLANI ORES MINE


Range Officer
BARRIL RANGE, BALUDA

COUNTERSIGNED


Divisional Forest Officer
Keonjhar Division

ANNEXURE – I**COST ESTIMATE FOR RDF PLANTATION OF 200 SEEDLINGS/HECT.**

1.	Type of the Plantation.	RDF Plantation.
2.	No. of seedlings to be planted.	200 Nos. per hectare
3.	Spacing to be adopted.	2.5m x 2.5m
4.	Size of pits.	30cm x 30cm x 30cm
5.	Wage rate.	Rs.90.00 per manday.
6.	Species to be planted.	<i>Sissoo, Neem, Harida, Bahada etc.</i>
7.	The user agency will pay the wage rate as and when enhanced.	

0th year (Advance work) Pre-planting operation.

Sl. No.	Item of work	Mandays	Labour rate @ Rs.90.00	Material cost.	Total.
1	2	3	4	5	6
1	Survey, demarcation & pillar posting.	2	180.00	-	180.00
2	Site Preparation	2	180.00	-	180.00
3.	Cutting of high stumps	3	270.00	-	270.00
4.	Alignment and stacking pits	1	90.00	-	90.00
5.	Pitting (30 cm cube)	8	720.00	-	720.00
6.	Cost of raising 200 seedling (Part)	14	720.00	540.00	1260.00
	Total	30	2160.00	540.00	2700.00

1stYear Planting Operation

7.	Cost of raising 200 seedlings(balance)	6	540.00	-	540.00
8.	Carriage of seedlings to site planting including casualty replacement	6	540.00	-	540.00
9.	1 st weeding	2	180.00	-	180.00
10.	2 nd weeding.	2	180.00	-	180.00
11.	Soil working	2	180.00	-	180.00
12.	Manuring(1Sg in 2 doses)/insecticide application	1	90.00	-	90.00
13.	Fire line tracing and inspection path	2	180.00	-	180.00
14.	Cost of insecticides for plantation	3	-	270.00	270.00
15.	Cost of chemical fertilizer for plantation 12Kg @ 35/-	6	-	540.00	540.00
16.	Silvicultural operation involving clearance of weeds & cutting of climbers, singling of shoots on each stool etc.	15	1350.00	-	1350.00
17.	Soil conservation.	12	1080.00	-	1080.00


18	Watch and ward	5	450.00	-	450.00
19	Contingencies	3	-	-	270.00
	Total	65	4770.00	810.00	5850.00
2nd Year Maintenance					
21	Casualty replacement with nursery cost	2	180.00	-	180.00
22.	Weeding.	2	180.00	-	180.00
23.	Soil working and Manuring.	2	180.00	-	180.00
24.	Fire line tracing .	1	90.00	-	90.00
25.	Cost of Fertilizer.	4	-	360	360.00
26.	Soil conservation.	6	540.00	-	540.00
27.	Watch & ward.	8	720.00	-	720.00
28.	Contingency.	2	-	-	180.00
	Total	27	1890.00	360.00	2430.00
3rd Year maintenance					
30	Weeding & pruning.	2	180.00	-	180.00
31	Soil working.	2	180.00	-	180.00
32.	Fire line tracing.	1	90.00	-	90.00
33	Soil Conservation	6	540.00	-	540.00
34	Watch & Ward.	6	540.00	-	540.00
35	Contingency.	2	-	-	180.00
	Total	19	1530.00	-	1710.00
4th Year maintenance					
36	Weeding and pruning	2	180.00	-	180.00
37	Watch and ward	6	540.00	-	540.00
38	Fire line tracing (2mtr wide fire line over 400 mtr long)	1	90.00	-	90.00
39.	Contingencies	1	-	-	90.00
	Total	10	810.00	-	900.00
	Grand Total	151	11160.00	1710.00	13590.00

ole

ABSTRACT.

Year	Labour (Rs)	Material(Rs)	Contingencies(Rs)	Total (Rs)
0 th Year	2160.00	540.00	0	2700.00
1 st . Year	4770.00	810.00	270.00	5850.00
2 nd . Year	1890.00	360.00	180.00	2430.00
3 rd . Year	1530.00	0	180.00	1710.00
4 th . Year	810.00	0	90.00	900.00
Total	11160.00	1710.00	720.00	13590.00
Person days Equivalent	124	19	8	151
Additional incentive (10%) for V5S/Fr/FG proposed for more than 80% survival and very good growth having 3mtr clear bole during 4 th year maintenance as per recommendation of DFO and RCCF.				1360.00
Additional EPA expenses to VS5 at rate Rs. 1000/- in 0 th Year, Rs. 2000/- in 1 st Year, Rs. 1500/- in 2 nd Year, Rs.500/- in 3 rd Year.				5000.00
Total norm per hectare in non JFM mode with incentives				19950.00

Cost for 12.8 Ha. Plantation in non-JFM mode X Rs. 19,950.00 = **Rs. 2,39,400.00**


(N P PRAMANIK)
GENERAL MANAGER
SAIL-BOLANI ORES MINE

ANNEXURE – II

ESTIMATE FOR BARBED WIRE FENCING

Estimate for 1 Kilometer

1. No. of pillars required 500 nos

Cost of 1 pillars : Rs 350.00

Transpotation Charges : Rs 150.00

Cost of base fixing : Rs 150.00

Cost of fixing barbed wire @ 25.00 : Rs 25.00

Total cost for fixing 1 pillars : Rs 675.00

Cost for 500 pillars : Rs 3,37,500.00

Cost of barbed wire (1 Qtls) @ Rs 8000.00:

Cost barbed wire (5+2) strand)

7500 mtrs. Or 15 Qtls : Rs 1,20,000.00

Total cost for 1 km. : Rs 4,57,500.00

2. Total cost for fencing 34.10km : Rs 1,56,00,750.00


Maintenance 5% of Rs 7,80,037.50 per annum

For 4 yr : Rs 31,20,150.00

Provision of trespassing gates 12 Nos Rs. 60,000.00

Total Barbed wire fencing for 34.10 kms

Rs 1,87,80,900.00


(N P PRAMANIK)
GENERAL MANAGER
SAIL-BOLANI ORES MINE

ANNEXURE-III(A)

1. Detail Estimate of Loose Boulder Structure (S.C.M.)

Span-1 mt. Ht. = 0.6 mt. Slope-U/S:- 1:1.5 D/S slope: 1:2

1. Leveling the unshape surface of the selected site & layout the structure foundation L.S. 1 MD. **Rs. 90.00**

2. Excavation of foundation in hard soil within initial lead of 50 mtr. including rough dressing and breaking of clods to maximum size 5 cm. to 7 cm. laying in layer not exceeding 0.3 In depth to strengthening both side U/S approx. bund of loose boulder structure.

Base with apron- $1 \times 3.60 \times 1.60 \times 0.30 =$

1.728

Wing wall - $4 \times 0.50 \times 0.30 \times 0.30 =$

0.180

1.908 cum

Rs. 76.00

@ Rs. 3948.00 per 100 cum.

3. Rough stone dry packing up to GL

Base with apron - $1 \times 3.60 \times 1.60 \times 0.30 =$

1.728

Wing wall - $4 \times 0.50 \times 0.30 \times 0.30 =$

0.180

1.908 cum

Above GL

Super structure- $1 \times 1.00 \times \frac{2.60 + 0.50}{2} \times 0.60 =$

0.930

Wing wall - $4 \times 0.50 \times 0.30 \times 0.30 =$

0.180

Side wall-

i. $2 \times \frac{0.3+0.9}{2} \times 0.3 =$

0.324

ii. $2 \times 0.3 + \frac{0.9 \times 1.2}{2} \times 0.3 =$

0.432

iii. $2 \times 0.5 \times 0.9 \times 0.3 =$

0.270

iv. $2 \times 1.0 \times 0.3 \times 0.3 =$

0.180

2.316 cum

4.224

Rs. 1,449.00

cum

@ Rs. 343.00 per

cum

G. Total Rs. 1,615.00

(Rupees one thousand six hundred fifteen only)



(N P PRAMANIK)

GENERAL MANAGER

SAIL-BOLANI ORES MINES

ANNEXURE-III(B)

Detail Estimate of Loose Boulder Structure (S.C.M.)

Span-2 mt. Ht. = 0.6 mt. Slope-U/S:- 1:1.5 D/S slope: 1:2

1. Leveling the unshape surface of the selected site & layout the structure foundation L.S. 1 MD. **Rs. 90.00**

2. Excavation of foundation in hard soil within initial lead of 50 mtr. including rough dressing and breaking of clods to maximum size 5 cm. to 7 cm. laying in layer not exceeding 0.3 in depth to strengthening both side U/S approx. bund of loose boulder structure.

Base with apron- $1 \times 3.70 \times 3.00 \times 0.30 =$

3.33

Wing wall - $4 \times 0.50 \times 0.50 \times 0.30 =$

0.30

3.63 cum

Rs. 144.00

@ Rs. 3948.00 per 100 cum.

3. Rough stone dry packing up to GL

Base with apron - $1 \times 3.70 \times 3.00 \times 0.30 =$

3.33

Wing wall - $4 \times 0.50 \times 0.50 \times 0.30 =$

0.30

Above GL

Super structure- $1 \times 2.00 \times \frac{2.70 + 0.60}{2} \times 0.60 =$

1.98

Wing wall - $4 \times 0.50 \times 0.50 \times 0.50 =$

0.50

Side wall-

i. $2 \times \frac{0.50 + 1.10}{2} \times 0.9 \times 0.5 =$

0.72

ii. $2 \times \frac{0.5 + 1.10}{2} \times 1.2 \times 0.5 =$

0.96

iii. $2 \times 0.6 \times 0.6 \times 0.5 =$

0.36

iv. $2 \times 1.0 \times 0.5 \times 0.5 =$

0.50

8.65 cum @

Rs. 2,966.00

Rs. 343.00 per cum

G. Total Rs. 3,200.00

(Rupees three thousand two hundred only)


(N P PRAMANIK)

**GENERAL MANAGER
SAIL-BOLANI ORES MINES**

ANNEXURE-III(C)

Detail Estimate of Loose Boulder Structure (S.C.M.)

Span-3 mt. Ht. = 1.0mt. Slope-U/S:- 1:1.5 D/S slope: 1:2.0

1. Leveling the unshape surface of the selected site & layout the structure foundation L.5. 1 MD. **Rs. 90.00**

2. Excavation of foundation in hard soil within initial lead of 50 mtr. including rough dressing and breaking of clods to maximum size 5 cm. to 7 cm. laying in layer not exceeding 0.3 in depth to strengthening both side U/S approx. bund of loose boulder structure.

Base with apron- $1 \times 5.10 \times 4.00 \times 0.30 =$

6.12

Wing wall - $4 \times 0.50 \times 0.50 \times 0.30 =$

0.30

6.42 cum

Rs. 254.00

@ Rs. 3948.00 per 100 cum.

3. Rough stone dry packing up to GL

Base with apron - $1 \times 5.10 \times 4.00 \times 0.30 =$

6.12

Wing wall - $4 \times 0.50 \times 0.50 \times 0.30 =$

0.30

Above GL

Super structure- $1 \times \frac{4.10 + 0.60}{2} \times 1.00 \times 3.0 =$

7.05

Wing wall - $4 \times 0.50 \times 0.50 \times 0.50 =$

0.50

Side wall-

i. $2 \times \frac{0.50 + 1.50}{2} \times 1.5 \times 0.5 =$

1.50

ii. $2 \times \frac{0.5 + 1.50}{2} \times 2.0 \times 0.5 =$

2.0

iii. $2 \times 0.6 \times 1.0 \times 0.5 =$

0.60

iv. $2 \times 1.0 \times 0.5 \times 0.5 =$

0.50

18.57 cum @ **Rs. 6,370.00**

Rs. 343.00 per cum

G. Total Rs. 6,714.00

(Rupees six thousand seven hundred fourteen only)


(N P PRAMANIK)

GENERAL MANAGER

SAIL-BOLANI ORES MINES

ANNEXURE-III(D)

Detail Estimate of Loose Boulder Structure (S.C.M.)

Span-4 mt. Ht. = 1.3mt. Slope-U/S:- 1:1.5 D/S slope: 1:2.0

1. Leveling the unshape surface of the selected site & layout the structure foundation L.S. 1 MD. **Rs. 90.00**

2. Excavation of foundation in hard soil within initial lead of 50 mtr. Including rough dressing and breaking of clods to maximum size 5 cm. to 7 cm. laying in layer not exceeding 0.3 in depth to strengthening both side U/S approx. bund of loose boulder structure.

Base with apron- $1 \times 6.15 \times 5.00 \times 0.30 = 9.225$
Wing wall - $4 \times 0.50 \times 0.50 \times 0.30 = 0.30$ 9.525 cum **Rs. 376.00**
@ Rs. 3948.00 per 100 cum.

3. Rough stone dry packing up to GL

Base with apron - $1 \times 6.15 \times 5.00 \times 0.30 = 9.225$
Wing wall - $4 \times 0.50 \times 0.50 \times 0.30 = 0.30$

Above GL

Super structure- $1 \times \frac{5.15 + 0.60}{2} \times 1.30 \times 4.0 = 14.95$

Wing wall - $4 \times 0.50 \times 0.50 \times 0.50 = 0.50$
Side wall-

i. $2 \times \frac{0.50 + 1.80}{2} \times 1.95 \times 0.5 = 2.24$

ii. $2 \times \frac{0.5 + 1.80}{2} \times 2.6 \times 0.5 = 2.99$


iii. $2 \times 0.6 \times 1.8 \times 0.5 = 1.08$

iv. $2 \times 1.0 \times 0.5 \times 0.5 = 0.50$

31.785 cum @ **Rs. 10904.00**
Rs. 343.00 per cum

G. Total Rs. 11370.00

(Rupees eleven thousand three hundred seventy only)


(N P PRAMANIK)
GENERAL MANAGER
SAIL-BOLANI ORES MINES

ANNEXURE – IV

Estimate for digging one no of staggered trench of size 2Mtr x 0.5 Mtr x 0.5 Mtr along with Agave Plant on the dugout soil

1. Earth work in excavation of staggered trench in hard soil including Rough dressing and leveling the beds and heaping the dugout soil at the downhill side of the trench and leveling the same too.

Size of the trench = $2.0 \text{ Mtr} \times 0.5 \text{ Mtr} \times 0.5 \text{ Mtr} = 0.5 \text{ Cum}$
@177.70 per 2.83 Cum

Rs 31.30

2. Cost of Agava Planting on the dugout soil and it's maintenance including weeding, soil working, manuring, cost of fertilizer etc. for three years

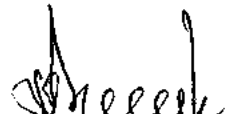
03 nos Agave plants per trench
@ Rs 13.00 per plant on LS

Rs 39.00

TOTAL :- Rs 70.30
(Rupees eventy and paise thirty)only

Cost of 250 nos of staggered trenches covering one Ha
= 250×70.30 = Rs 17,575.00


Cost of digging staggered trenches over an area of 12.8 ha will be Rs 17,575/- x 38.11ha
= Rs 2,24,960.00


(N P PRAMANIK)
GENERAL MANAGER
SAIL-BOLANI ORES MINES

ANNEXURE - V**TOTAL COST OF FENCING, PROTECTION & REGENERATION OF SAFETY ZONE (7.5M)
AROUND THE MINING LEASE OF BOLANI (S.10 SQ MILES ML-1321.45 HA)IRON ORE
MINES**

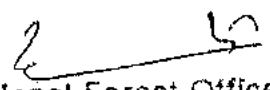
1.	Cost of Barbed wire fencing	Rs 1,87,80,900.00
3.	RDF Plantation over 12.8 ha. @ Rs.19,950/- per ha.	Rs. 2,39,400.00
4	Soil Conservation measures	
	Loose boulder structure 1 mt. size 25nos. @ Rs.1615/-	Rs. 40,375.00
	Loose boulder structure 2 mt. size 20 nos. @ Rs.3200/-	Rs. 64,000.00
	Loose boulder structure 3 mt. size 20 nos. @ Rs.6714/-	Rs.1,34,280.00
	Loose boulder structure 4 mt. size 10 nos. @ Rs.11370/-	Rs. 1,13,700.00
	Total Loose boulder structure	Rs. 3,52,355.00
5.	Special SCM @Rs 17575/- per Ha over 12.8 Ha	Rs 2,24,960.00
6.	Plantation watchers 5 Nos. (5 x 2700 x 12 x 5)	Rs. 8,10,000.00
	Total :-	Rs 2,04,07,615.00
	Add 10% escalation	Rs 20,40,761.50
	Grand Total	Rs 2,24,48,376.50 = Rs 2,24,50,000.00

In case of any increase in the man, material and machinery charges, provision for additional funds will be made as and when required .


(N P PRAMANIK)
GENERAL MANAGER
SAIL-BOLANI ORES MINES


Barbil Range Office
BARBIL RANGE OFFICER

COUNTERSIGNED


Divisional Forest Officer
Keonjhar Division

Technically
Approved

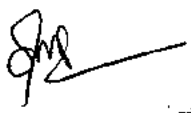

Regional Chief Conservator of Forests
Bourkela Circle

ANNEXURE - V**TOTAL COST OF FENCING, PROTECTION & REGENERATION OF SAFETY ZONE (7.5M)
AROUND THE MINING LEASE OF BOLANI (5.10 SQ MILES ML-1321.4S HA)IRON ORE
MINES**

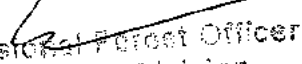
1.	Cost of Barbed wire fencing	Rs 1,87,80,900.00
3.	RDF Plantation over 12.8 ha. @ Rs.19,950/- per ha.	Rs. 2,39,400.00
4	Soil Conservation measures	
	Loose boulder structure 1 mt. size 25nos. @ Rs.1615/-	Rs. 40,375.00
	Loose boulder structure 2 mt. size 20 nos. @ Rs.3200/-	Rs. 64,000.00
	Loose boulder structure 3 mt. size 20 nos. @ Rs.6714/-	Rs.1,34,280.00
	Loose boulder structure 4 mt. size 10 nos. @ Rs.11370/-	Rs. 1,13,700.00
	Total Loose boulder structure	Rs. 3,52,355.00
5.	Special SCM @Rs 17575/- per Ha over 12.8 Ha	Rs 2,24,960.00
6.	Plantation watchers 5 Nos. (5 x 2700 x 12 x 5)	Rs. 8,10,000.00
	Total :-	Rs 2,04,07,615.00
	Add 10% escalation	Rs 20,40,761.50
	Grand Total	Rs 2,24,48,376.50 = Rs 2,24,50,000.00

In case of any increase in the man, material and machinery charges, provision for additional funds will be made as and when required .


(N P PRAMANIK)
GENERAL MANAGER
SAIL-8OLANI ORES MINES


Forest Range Officer
BARBIL RANGE, BARBIL

COUNTERSIGNED


Divisional Forest Officer
Keonjhar Division

5.9

प्रमुख अधिकारी
Area Manager
एच.डी. बी.ओ.एच.
एच.एम.डी. एच.एम.

Annexure-I

REVISED FINANCIAL OUTLAY FOR TOTAL COST OF FENCING, PROTECTION & REGENERATION OF SAFETY ZONE (7.5M) AROUND THE MINING LEASE OF BOLANI (5.10 SQ MILES ML-1321.45 HA) IRON ORE MINES (WAGE RATE – Rs 125.00 , Maintenance 7 years) - CONDITION NO - 2-X

COST ESTIMATE FOR RDF PLANTATION OF 200 SEEDLINGS/HECT.

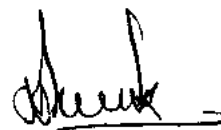
1.	Type of the Plantation.		RDF Plantation.
2.	No. of seedlings to be planted.		200 Nos. per hectare
3.	Spacing to be adopted.		2.5m x 2.5m
4.	Size of pits.		30cm x 30cm x 30cm
5.	Wage rate.		Rs.125.00 per manday.
6.	Species to be planted.		<i>Sissoo, Neem, Harida, Bahada etc.</i>
7.	The user agency will pay the wage rate as and when enhanced.		

0th year (Advance work) Pre-planting operation.

Sl. No.	Item of work	Mandays per ha.	Labour rate @ Rs.125.00	Material cost.	Total.
1	2	3	4	5	6
1.	Survey, Demarcation & pillar posting.	2	250.00	-	250.00
2.	Site preparation.	2	250.00	-	250.00
3.	Cutting of high stumps.	3	375.00	-	375.00
4.	Alignment and stacking of pits	1	125.00	-	125.00
5.	Pitting (30 cm. cube)	8	1000.00	-	1000.00
6.	Cost of raising 300 seedlings (Part)	14	1000.00	750.00	1750.00
	Sub Total	30	3000.00	750.00	3750.00

1stYear/ Planting

7	Cost of raising 300 seedlings(Balance)	6	750.00	-	750.00
8	Carriage of seedlings to site cleaning including casualty replacement.	6	750.00	-	750.00
9	1 st Weeding	2	250.00	-	250.00
10	2 nd Weeding	2	250.00	-	250.00
11	Soil working	2	250.00	-	250.00
12	Manuring /Insecticide application	1	125.00	-	125.00

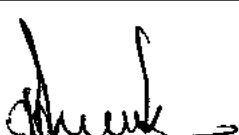


13	Fireline tracing and inspection path	2	250.00	-	250.00
14	Cost of insecticides for plantation	3	-	375.00	375.00
15	Cost of chemical fertilizer for plantation 12 Kg. @ Rs. 35/-	6	-	750.00	750.00
16	Silvicultural operation involving clearance of weeds and cutting of climbers, sigling of shoots on each stool etc.	15	1875.00	-	1875.00
17	Soil Conservation	12	1500.00	-	1500.00
18	Watch and ward	5	625.00	-	625.00
19	Contingencies	3	-	-	375.00
	Sub Total	65	6625.00	1125.00	8125.00
2nd Year Maintenance					
20	Casualty replacement with nursery cost	2	250.00	-	250.00
21	Weeding.	2	250.00	-	250.00
22	Soil working and manuring	2	250.00	-	250.00
23	Fireline tracing.	1	125.00	-	125.00
24	Cost of fertilizer	4	-	500.00	500.00
25	Soil Conservation	6	750.00	-	750.00
26	Watch and ward	8	1000.00	-	1000.00
27	Contingencies	2	-	-	250.00
	Sub Total	27	2625.00	500.00	3375.00
3rd Year maintenance					
28	Weeding and pruning	2	250.00	-	250.00
29	Soil working	2	250.00	-	250.00
30	Fire line tracing.	1	125.00	-	125.00
31	Soil Conservation	6	750.00	-	750.00
32	Watch and ward	6	750.00	-	750.00
33	Contingencies	2	-	-	250.00
	Sub Total	19	2125.00	-	2375.00
4th Year maintenance					
34	Weeding and pruning	2	250.00	-	250.00
35	Fire line tracing.(2 mt. wide fire line over 400 mt. long)	1	125.00	-	125.00
36	Watch and ward	6	750.00	-	750.00
37	Contingencies	1	-	-	125.00

Sub Total		10	1125.00	-	1250.00
5th Year maintenance					
38	Weeding and pruning	2	250.00	-	250.00
39	Fire line tracing.(2 mt. wide	1	125.00	-	125.00
40	Watch and ward	6	750.00	-	750.00
41	Contingencies	1	-	-	125.00
Sub Total		10	1125.00	-	1250.00
6th Year maintenance					
42	Weeding and pruning	2	250.00	-	250.00
43	Fire line tracing.(2 mt. wide fire line over 400 mt. long)	1	125.00	-	125.00
44	Watch and ward	6	750.00	-2137	750.00
45	Contingencies	1	-	-	125.00
Sub Total		10	1125.00	-	1250.00
Grand Total		171	17750.00	2375.00	21375.00

ABSTRACT

Year	Labour(Rs)	Material(Rs)	Contingencies(Rs)	Total(Rs)
0 th Year	3000.00	750.00	0.00	3750.00
1 st Year	6625.00	1125.00	375.00	8125.00
2 nd Year	2625.00	500.00	250.00	3375.00
3 rd Year	2125.00	0.00	250.00	2375.00
4 th Year	1125.00	0.00	125.00	1250.00
5 th Year	1125.00	0.00	125.00	1250.00
6 th Year	1125.00	0.00	125.00	1250.00
Total	17750.00	2375.00	1250.00	21375.00
Person days Equivalent	142	19	10	171
Additional incentive(3%) for Fr/Fg/ Proposed for more than 80% survival and verygood growth during 4th year of maintenance as per recommendations of DFO and RCCF				1853.00
Additional EPA expenses if implemented through VSS at the rate of Rs 1000/- in 0th year , Rs 2000 in 1st Year, Rs.1500 in 2nd Year, Rs .500/- in 3rd year Rs 500/-in 4th Year Rs.500 in 5th Year and Rs 500 in 6th year				6500.00
Total Norm per Hectare in Non JFM mode with incentives				29,728.00
Total cost for plantation over 12.8 Hectares	Rs. 29,728.00 /- x 12.8 Ha = Rs. 3,80,518.40 i.e Rs. 03, 80, 518.00 (Three Lakhs eighty thousand five hundred eighteen only)			

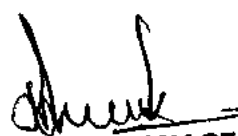

GENERAL MANAGER
 SAIL-BOLANI ORES MINES



	Sub Total	10	1125.00	-	1250.00
5th Year maintenance					
38	Weeding and pruning	2	250.00	-	250.00
39	Fire line tracing.(2 mt. wide	1	125.00	-	125.00
40	Watch and ward	6	750.00	-	750.00
41	Contingencies	1	-	-	125.00
	Sub Total	10	1125.00	-	1250.00
6th Year maintenance					
42	Weeding and pruning	2	250.00	-	250.00
43	Fire line tracing.(2 mt. wide fire line over 400 mt. long)	1	125.00	-	125.00
44	Watch and ward	6	750.00	-2137	750.00
45	Contingencies	1	-	-	125.00
	Sub Total	10	1125.00	-	1250.00
	Grand Total	171	17750.00	2375.00	21375.00

ABSTRACT

Year	Labour(Rs)	Material(Rs)	Contingencies(Rs)	Total(Rs)
0 th Year	3000.00	750.00	0.00	3750.00
1 st Year	6625.00	1125.00	375.00	8125.00
2 nd Year	2625.00	500.00	250.00	3375.00
3 rd Year	2125.00	0.00	250.00	2375.00
4 th Year	1125.00	0.00	125.00	1250.00
5 th Year	1125.00	0.00	125.00	1250.00
6 th Year	1125.00	0.00	125.00	1250.00
Total	17750.00	2375.00	1250.00	21375.00
Person days Equivalent	142	19	10	171
Additional incentive(3%) for Fr/Fg/ Proposed for more than 80% survival and verygood growth during 4th year of maintenance as per recommendations of DFO and RCCF				1853.00
Additional EPA expenses if implemented through VSS at the rate of Rs 1000/- in 0th year , Rs 2000 in 1st Year, Rs.1500 in 2nd Year, Rs .500/- in 3rd year Rs 500/-in 4th Year Rs.500 in 5th Year and Rs 500 in 6th year				6500.00
Total Norm per Hectare in Non JFM mode with incentives				29,728.00
Total cost for plantation over 12.8 Hectares	Rs. 29,728.00 /- x 12.8 Ha = Rs. 3,80,518.40 i.e Rs. 03, 80, 518.00 (Three Lakhs eighty thousand five hundred eighteen only)			


GENERAL MANAGER
 SAIL-BOLANI ORES MINES



REVISED ESTIMATE FOR BARBED WIRE FENCING**(Wage Rate : Rs 125.00)****Estimate for 1 Kilometre.**

1. No. of pillars required 500 nos.

Cost of 1 pillar : Rs. 473.00

Transportation charges : Rs. 203.00

Cost of base fixing : Rs. 203.00

Cost of fixing barbed wire @ 34.00 : Rs. 41.00

Total cost for fixing 1 pillar : Rs. 920.00

Cost for 500 pillars : **Rs. 4,60,000.00**

Cost of barbed wire (1 Qntls) @ 11,000.00

Cost barbed wire (5+2) strand

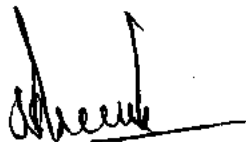
7500 mtrs or 15 Qntls : Rs. 1,65,000.00Total cost for 1 Km. : **Rs. 6,25,000.00**

2. Total cost for fencing 34.10km :
- Rs 2,13,12,500.00**

Maintenance 5% (@ Rs 7,80,037.50) per annum

For 4 yr : **Rs 42,62,500.00**Provision of trespassing gates 12 Nos : **Rs. 60,000.00**

(@Rs 5000/- per gate)

Total Barbed wire fencing for 34.10 kms : Rs 2,56,35,000.00

GENERAL MANAGER
SAIL-BOLANI ORES MINES

ANNEXURE- III (A)**Detail Estimate of Loose Boulder Structure (S.C.M.)****Span-1 mt. Ht. = 0.6 mt. Slope-U/S:- 1:1.5 D/S slope: 1:2**

1. Leveling the unshaped surface of the selected site & layout the structure foundation L.S. 1 MD. Rs. 125.00

2. Excavation of foundation in hard soil within initial lead of 50 mtr. including rough dressing and breaking of clods to maximum size 5 cm. to 7 cm. laying in layer not exceeding 0.3 in depth to strengthening both side U/S approx. bund of loose boulder structure.

Base with apron- $1 \times 3.60 \times 1.60 \times 0.30 =$ Wing wall - $4 \times 0.50 \times 0.30 \times 0.30 =$

1.728

@ Rs. 5556.00 per 100 cum.

0.180

1.908 cum

Rs. 106.00

3. Rough stone dry packing up to GL

Base with apron - $1 \times 3.60 \times 1.60 \times 0.30 =$

1.728

Wing wall - $4 \times 0.50 \times 0.30 \times 0.30 =$ 0.180

1.908 cum

Above GL

Super structure- $1 \times 1.00 \times \frac{2.60 + 0.50}{2} \times 0.60 =$

0.930

2

0.180

Wing wall - $4 \times 0.50 \times 0.30 \times 0.30 =$

0.324

Side wall-

0.432

i. $2 \times \frac{0.3 + 0.9}{2} \times 0.3 =$

0.270

2

0.180

2.316 cum

4.224 cum

ii. $2 \times 0.3 + \frac{0.9 \times 1.2}{2} \times 0.3 =$

2

iii. $2 \times 0.5 \times 0.9 \times 0.3 =$ iv. $2 \times 1.0 \times 0.3 \times 0.3 =$

@Rs. 476.56 per cum.

Rs. 2,013.00**G. Total Rs. 2,244.00****(Rupees Two thousand two hundred forty four) only**

GENERAL MANAGER
SAIL-BOLANI ORES MINES

ANNEXURE III (B)**I. Detail Estimate of Loose Boulder Structure (S.C.M.)**

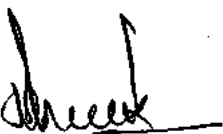
Span-2 mt. Ht. = 0.6 mt. Slope-U/S:- 1:1.5 D/S slope: 1:2

- | | | | |
|--|------|----------|------------|
| 1. Leveling the unshaped surface of the selected site & layout the structure foundation L.S. 1 MD. | | | Rs. 125.00 |
| 2. Excavation of foundation in hard soil within initial lead of 50 mtr. including rough dressing and breaking of clods to maximum size 5 cm. to 7 cm. laying in layer not exceeding 0.3 in depth to strengthening both side U/S approx. bund of loose boulder structure. | | | |
| Base with apron- $1 \times 3.70 \times 3.00 \times 0.30 =$ | 3.33 | | |
| Wing wall - $4 \times 0.50 \times 0.50 \times 0.30 =$ | | | |
| @ Rs. 5510.00 per 100 cum. | 0.30 | 3.63 cum | Rs. 200.00 |
| 3. Rough stone dry packing up to GL | | | |
| Base with apron - $1 \times 3.70 \times 3.00 \times 0.30 =$ | 3.33 | | |
| Wing wall - $4 \times 0.50 \times 0.50 \times 0.30 =$ | 0.30 | | |
| Above GL | | | |
| Super structure- $1 \times 2.00 \times \frac{2.70 + 0.60}{2} \times 0.60 =$ | 1.98 | | |
| | 0.50 | | |
| Wing wall - $4 \times 0.50 \times 0.50 \times 0.50 =$ | 0.72 | | |
| Side wall- | 0.96 | | |
| i. $2 \times \frac{0.50 + 1.10}{2} \times 0.9 \times 0.5 =$ | 0.36 | | |
| | 0.50 | | |
| ii. $2 \times \frac{0.5 + 1.10}{2} \times 1.2 \times 0.5 =$ | | 8.65 cum | |
| iii. $2 \times 0.6 \times 0.6 \times 0.5 =$ | | | |
| iv. $2 \times 1.0 \times 0.5 \times 0.5 =$ | | | |
| @ Rs. 476.18 per cum | | | |

Rs. 4,119.00

G. Total Rs. 4444.00

(Rupees Four thousand four hundred forty four only)


 GENERAL MANAGER
 SAIL-BOLANI ORES MINES

ANNEXURE- III(C)**II. Detail Estimate of Loose Boulder Structure (S.C.M.)**

Span-3 mt. Ht. = 1.0mt. Slope-U/S:- 1:1.5 D/S slope: 1:2.0

1. Leveling the unshaped surface of the selected site & layout the structure foundation L.5. 1 M0. Rs.125.00

2. Excavation of foundation in hard soil within initial lead of 50 mtr. including rough dressing and breaking of clods to maximum size 5 cm. to 7 cm. laying in layer not exceeding 0.3 in depth to strengthening both side U/S approx. bund of loose boulder structure.

Base with apron- $1 \times 5.10 \times 4.00 \times 0.30 =$	6.12		
Wing wall - $4 \times 0.50 \times 0.50 \times 0.30 =$	0.30	6.42 cum	Rs. 353.00

@ Rs. 5498.00 per 100 cum.

3. Rough stone dry packing up to GL

Base with apron - $1 \times 5.10 \times 4.00 \times 0.30 =$	6.12
---	------

Wing wall - $4 \times 0.50 \times 0.50 \times 0.30 =$	0.30
---	------

Above GL

Super structure- $1 \times \frac{4.10 + 0.60}{2} \times 1.00 \times 3.0 =$	7.05
	0.50

Wing wall - $4 \times 0.50 \times 0.50 \times 0.50 =$	1.50
---	------

Side wall-	2.00
------------	------

i. $2 \times \frac{0.50 + 1.50}{2} \times 1.5 \times 0.5 =$	0.60
	0.50

18.57 cum

ii. $2 \times \frac{0.5 + 1.50}{2} \times 2.0 \times 0.5 =$	

iii. $2 \times 0.6 \times 1.0 \times 0.5 =$	
---	--

iv. $2 \times 1.0 \times 0.5 \times 0.5 =$	
--	--

@ Rs. 476.00 per cum

Rs. 8847.00

G. Total Rs. 9,325.00

(Rupees Nine thousand three hundred twenty five only)


GENERAL MANAGER
SAIL-BOLANI ORES MINES

ANNEXURE-III(D)

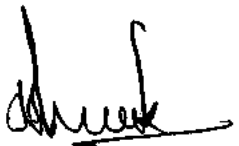
iii. Detail Estimate of Loose Boulder Structure (S.C.M.)

Span-4 mt. Ht. = 1.3mt. Slope-U/5:- 1:1.5 D/5 slope: 1:2.0

1. Leveling the unshaped surface of the selected site & layout the structure foundation L.S. 1 MD. Rs. 125.00
2. Excavation of foundation in hard soil within initial lead of 50 mtr. including rough dressing and breaking of clods to maximum size 5 cm. to 7 cm. laying in layer not exceeding 0.3 in depth to strengthening both side U/S approx. bund of loose boulder structure.
- Base with apron- $1 \times 6.15 \times 5.00 \times 0.30 =$
- Wing wall - $4 \times 0.50 \times 0.50 \times 0.30 =$ 9.225
- @ Rs. 5480.00 per 100 cum. 0.30 9.525 cum Rs. 522.00
3. Rough stone dry packing up to GL
- Base with apron - $1 \times 6.15 \times 5.00 \times 0.30 =$ 9.225
- Wing wall - $4 \times 0.50 \times 0.50 \times 0.30 =$ 0.30
- Above GL
- Super structure- $1 \times \frac{5.15 + 0.60}{2} \times 1.30 \times 4.0 =$ 14.95
- 0.50
- Wing wall - $4 \times 0.50 \times 0.50 \times 0.50 =$ 2.24
- Side wall- 2.99
- i. $2 \times \frac{0.50 + 1.80}{2} \times 1.95 \times 0.5 =$ 1.08
- 0.50
- ii. $2 \times \frac{0.5 + 1.80}{2} \times 2.6 \times 0.5 =$ 31.785 cum
- iii. $2 \times 0.6 \times 1.8 \times 0.5 =$
- iv. $2 \times 1.0 \times 0.5 \times 0.5 =$
- @ Rs. 476.45 per cum

Rs. 15144.00Rs. 15,791.00

(Rupees Fifteen thousand seven hundred ninety one only)


 GENERAL MANAGER
 SAIL-BOLANI ORES MINES

ANNEXURE – IV

Estimate for digging one no of staggered trench of size 2Mtr x 0.5 Mtr x 0.5 Mtr along with Agave Plant on the dugout soil

1. Earth work in excavation of staggered trench in hard soil including Rough dressing and leveling the beds and heaping the dugout soil at the downhill side of the trench and leveling the same too.

Size of the trench = 2.0 Mtr x 0.5 Mtr x 0.5 Mtr = 0.5 Cum

@246.80 per 2.83 Cum

Rs 43.00

2. Cost of Agava Planting on the dugout soil and it's maintenance including weeding, soil working, manuring, cost of fertilizer etc. for seven years

03 nos Agave plants per trench

@ Rs 18.00 per plant on LS

Rs 54.00

TOTAL :-

Rs 97.00

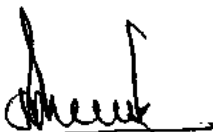
(Rupees Ninety seven) only

Cost of 250 nos of staggered trenches covering one Ha

= 250 x 97

= Rs 24,250.00

Cost of digging staggered trenches over an area of 12.8 ha, as per revised wage of Rs 125/- rate , will be Rs 24,250/- x 12.8 Ha = **Rs 3,10,400/-**



GENERAL MANAGER
SAIL-BOLANI ORES MINES

ANNEXURE - V

REVISED FINANCIAL OUTLAY FOR TOTAL COST OF FENCING, PROTECTION & REGENERATION OF SAFETY ZONE (7.5M) AROUND THE MINING LEASE OF BOLANI (5.10 SQ MILES ML-1321.45 HA) IRON ORE MINES (WAGE RATE - Rs 125.00 , Maintenance 7 years)

TOTAL COST OF THE PROJECT

1.	Cost of Barbed wire fencing	Rs 2,56,35,000.00 /-
3.	RDF Plantation over 12.8 ha. @ Rs.21,375/- per ha.	Rs. 3,80,518.40/-
4	Soil Conservation measures	
	Loose boulder Check dams 1 mt. size 25 nos. @ Rs.2244/-	Rs 56,100/-
	Loose boulder Check dams 2 mt. size 20 nos. @ Rs.4444/-	Rs 88,880/-
	Loose boulder Check dams 3 mt. size 20 nos. @ Rs.9325/-	Rs 1,86,500/-
	Loose boulder Check dams 4 mt. size 10 nos. @ Rs.15791/-	Rs 1,57,910/-
	Total Loose boulder structure	Rs 4,89,390/-
5.	Special SCM @Rs 24250/- per Ha over 12.8 Ha	Rs 3,10,400/-
6.	Plantation watchers 5 Nos. (7 x 3750x 12 x 5)	Rs. 15,75,000.00/-
	TOTAL	Rs 2,83,90,308.40/-
	Add 10% escalation	Rs 28,39,030.84
	SUB TOTAL	Rs 3,12,29,339.24 = Rs 3,12,29,340.00/-
	10% amount to be paid to VSS for motivation	Rs 31,22,934/-
	GRAND TOTAL	Rs 3,43,52,274/- = Rs 343.52 Lakhs

In case of any increase in the man, material and machinery charges, provision for additional funds will be made as and when required.


GENERAL MANAGER
 SAIL-80LANI ORES MINES

Technically Approved

Technically
Approved


Regional Chief Conservator of Forests
Rourkela Circle, Rourkela

29.08.2012

REQUIREMENT OF FUNDS (After revision of wage rate)

The total cost of the implementation of proposed scheme including fencing protection and regeneration by the user agency will be **Rs 343.52 Lakhs** as detailed in **Annexure-V**. For implementation of the above scheme, the above expenditure will be made over the next seven years period. Therefore, budget provision of Rs 343.52 lakhs will be kept by the user agency for implementation of the above fencing, protection and regeneration measures a period of next seven years in their annual budgets. This budget will subject to increase in amount considering the increase in materials and labour charges. The tentative annual expenditure planned for the next seven year for the implementation of the scheme is given in the following table :

Sl. No.	Description	Amount
1.	1 st year plan of expenditure*	Rs 80.00 Lakhs
2.	2 nd year plan of expenditure	Rs 150.00 Lakhs
3.	3 rd year plan of expenditure	Rs 30.00 Lakhs
4.	4 th year plan of expenditure	Rs 30.00 Lakhs
5.	5 th year plan of expenditure	Rs 30.00 Lakhs
6.	6 th year plan of expenditure	Rs 13.00 Lakhs
7.	7 th year plan of expenditure	Rs 10.52 Lakhs
6.	Total:-	Rs 343.52 Lakhs


 GENERAL MANAGER
 SAIL-BOLANI ORES MINES

Technically Approved

Technically
Approved

Regional Chief Conservator of Forests
 Rourkela Circle, Rourkela
 Rourkela

21.08.20

Annexure-IX(B)

BY E-MAIL

OFFICE OF THE FIELD DIRECTOR, SIMILIPAL TIGER RESERVE
-CUM - REGIONAL CHIEF CONSERVATOR OF FORESTS, BARIPADA
Phone No-(06792) 259126, Fax-256705 E-mail : rccfbaripada@gmail.com

Memo No. 1434 /3F-55/2018
Dated, Baripada the 11 th ~~March~~ April, 2018.

To


The Divisional Forest Officer,
Keonjhar(WL) Division.

Sub:- Proposal for Diversion of balance 87.09ha of Sabik Kissam forest land as on 25.10.1980 in addition to already diverted forest land of 1225.78 ha for Iron Ore Mining in their Bolani iron Ore Mines of 1321.45 ha.(5.10Sq Miles) in Keonjhar District,Odisha by M/s Steel Authority of India Ltd.(SAIL) -Approval of 1.5times Safety Zone Plantation Scheme.

Ref: Memo no.1484,dt.09.03.2018 of DFO, Keonjhar Division.

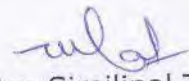
With reference to the above cited memo of Divisional Forest Officer, Keonjhar Division on the captioned subject, in compliance to the condition No.ix (2nd Part) of Stage-I approval of Government of India, MoEF & CC, New Delhi, the afforestation Scheme over 3.345ha degraded forest land(1.5times to the extent to the area 2.23ha.) under Safety Zone in Rebana RF under Brahmanipal Range of Keonjhar(WL) Division against the diversion of 87.09 of Sabik Kissa forest land for the above project at a total financial outlay of Rs.11,99,589.00(Rupees Eleven Lakh Ninetynine thousand five hundred eightynine)only with 10 years maintenance at the wage rate of Rs.213.50 per mandays is hereby technically approved by the undersigned. The approved scheme is sent herewith in two copies for taking necessary action at your end. You are requested to raise demand to the User Agency to deposit the above amount at the earliest.

Encl: As above.


Field Director Similipal Tiger Reserve
-Cum-Regional CCF, Baripada.

Memo No. 1435 /Date. 11-04-2018

Copy alongwith a copy of the approved Scheme of the above project is forwarded to the Additional Principal Chief Conservator of Forests (Forest Diversion & Nodal Officer, FC Act.) O/o the Principal Chief Conservator of Forests,Odisha, Bhubaneswar for favour of information with reference to memo no.1483, dt.09.03.2018 of Divisional Forest Officer, Keonjhar Division in his address.


Field Director Similipal Tiger Reserve
-Cum-Regional CCF, Baripada

Annexure-IX (C)



e-PayOrder Details

e-PayOrder Number CNAAJHZWB1
Debit Status Success

		Date 07-May-2018	
PAY ORRISA CAMPA			
RUPEES (in words) Eleven Lakhs Ninety Nine Thousand Five Hundred and Eighty Nine only		Rs 11,99,589.00	
ACCOUNT NO 00000011180766769			
STATE BANK OF INDIA			
BOLANI	DEBASHISH BEHERA Maker	RAJEEV KUMAR Authorizer 1	RABINDRA NATH OJHA Authorizer 2
"CNAAJHZWB1"			

Counterfoil Description SAIL RMD BOM
Transaction Type NEFT Funds transfer
GSTIN Number 21AAACS7062F2ZP

Debit Account Details

Account No.	Branch	Amount
00000011180766769	BOLANI	11,99,589.00

Credit Account Details

Beneficiary Name/Account No.	Bank/Branch/IFSCCode	Amount	Credit Status	UTR No.
ORRISA CAMPA/150825817936882	NEW DELHI LODHI COMPLEX/NEW DELHI LODHI COMPLEX/CORP0000371	11,99,589.00	Credited to Beneficiary Account	SBIN618127738107

Annexure-X



स्टील अथॉरिटी ऑफ इंडिया लिमिटेड
STEEL AUTHORITY OF INDIA LIMITED

Ref. No. : GM/B- HD-1810

Date: 18th October, 2012

The Divisional Forest Officer,
Keonjhar

Sub: Diversion of 1152.58 Ha of forest land in the 5.1 sq. miles mining lease of Bolani Ores Mines of M/s Steel authority of India Ltd (SAIL) during 2nd RML in Barbil Tehasil, Keonjhar district.

Ref : Memo No. 16828, dt: 18/10/12 of CCF, BBSR

Sir,

With reference to above, following differential amount has been paid in form of RTGS mode in State specific CAMPA A/C No. 344902010105428 on Union Bank of India, Sundar nagar Branch, New Delhi (IFSC Code UBINO. 0534498) as per revised wage rate of ₹ 125/- - vide photo copy of counterfoil of RTGS remittance through SBI, Bolani Branch.

Sl No	Earlier Paid (₹.)	Revised amount (₹)	Additional amount paid (₹)
CA	7256000.00	8300000.00	1044000.00
ACA	32906700.00	62492000.00	29585300.00
Total Differential amount			30629300.00


[Rupees Three crores six lakh twenty nine thousand three hundred only]

We further undertake to pay the additional amount of wage rate if wage rate is revised further.

Thanking you,

Encl: As above

Yours faithfully,


(A.K. Verma)
General Manager (HR)

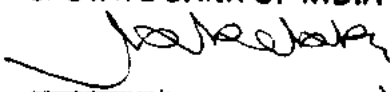


भारतीय स्टेट बैंक
State Bank of India

TO WHOMSOEVER IT MAY CONCERN

It is to certify that, a sum of Rs. 30629300.00(Rupees Three Crore Six Lakhs Twenty Nine Thousand three Hundred only) has been transferred from account no- 11180766769 of SAIL RMD BOLANI ORES MINES to A/c no. 344902010105428 of Union Bank of India, Sundar Nagar, New Delhi of CAMPA ODISHA NEW DELHI on 18/10/2012 through RTGS UTR no SBINH12292336907.

कुले भारतीय स्टेट बैंक
For STATE BANK OF INDIA


शाखा प्रबन्धक/Br. Mgr. Manager
बोलाणी शाखा/Bolani Branch

19/10/2012

दूरभाष : बोलानी- ६२०४, ६२०६, ६२१०, ६२११, ६२१२, ६२३२, ६२४०
TELEPHONE : BOLANI- 6204, 6206, 6210, 6211, 6212, 6239, 6240

स्टील अथॉरिटी ऑफ इण्डिया लिमिटेड
(भारत सरकार का प्रतिष्ठान)
STEEL AUTHORITY OF INDIA LIMITED
(A Government of India Enterprise)

रा मेटैरियल्स डिवीजन
RAW MATERIALS DIVISION

बोलानी ओरस माइन्स
पोस्ट: बोलानी (७५८०३७), जिला : केजोंगर, ओडिसा
BOLANI ORES MINES
P.O. BOLANI (758037) DIST. KEONJHAR, ORISSA.

Earlier deposit of Safety zone

टेलीग्राम : बोलानीओरस-बरबिल
TELEGRAM : BOLANIORES-BARBIL
STD Code : 067671
TELEX No. : 06301-201 BOLIN



No. GM/FC/B- 3359

14th January, 1998

The Divisional Forest Officer,
Keonjhar Forest Division,
Keonjhar

Dear Sir,

We have forwarded you the following cheques:-

- a) CT-400/144677, dt: 27.11.97 for Rs. 1,41,72,878.00
- b) CT-400/145053, dt: 08.01.98 for Rs. 47,50,500.00
- c) CT-400/145104, dt: 13.01.98 for Rs. 16,55,014.00

in compliance to your Demand Notice No. 8055, dt: 26.7.97 and subsequent Demand Notice No. 492, dt: 12.1.98 for :

- (i) cost of compensatory afforestation over an area of 735.12 Hect.
- (ii) plantation over one & half times of the safety zone area in degraded forest elsewhere.
- (iii) cost of penal compensatory afforestation over an area of 833.40 Hect.

The cheque at sl. no 1 above has already been encashed whereas encashment of other two cheques have not yet been materialised. We have taken a letter from the Branch Manager, State Bank of India, Bolani, stating that adequate credit facilities of SAIL-Bolani exists and that encashment will not be a problem as and when presented to them. It is only a matter of day or two for encashment to materialise.

Contd..

Calcutta Office: 10, Camac Street, Industry House (5th & 6th Floors) Calcutta-700 017
Phone : 242-2316, 242-0462, 242-0384 □ Telex : 021-2161 □ FAX 033-2425630
Registered Office: Ispat Bhawan, Lodhi Road, New Delhi 110 003

आप हिन्दी में भी पत्राचार कर सकते हैं
You can make Correspondence in Hindi also

(2)

दूरभाष : बोलानी-६२०४, ६२०६, ६२१०, ६२११, ६२१२, ६२३९, ६२४०
TELEPHONE : BOLANI - 6204, 6206, 6210, 6211, 6212, 6239, 6240

टेलीग्राम : बोलानीओर्स-बरबिल
TELEGRAM : BOLANIORES-BARBIL
STD Code : 067671
TELEX No. : 06301-201 BOLIN

स्टील अथॉरिटी ऑफ इण्डिया लिमिटेड

(एक सरकारी कर्मस्थान)

STEEL AUTHORITY OF INDIA LIMITED

(A Government of India Enterprise)

मैटीरियल्स डिवीजन

RAW MATERIALS DIVISION

बोलानी ओर्स माइन्स

प्लॉट: बोलानी (७५८०३७), जिला : केओन्हार, ओड़ीसा

BOLANI ORES MINES

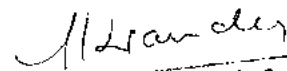
P.O. BOLANI (758037) DIST. KEONJHAR, ORISSA.



During the meeting of our Director with Secretary(Forest), Government of Orissa, it was agreed that deforestation cases of SAIL will be forwarded subject to SAIL giving an undertaking that all dues will be cleared. In line of the above discussion, I hereby give Undertaking that all dues connected with the encashment of cheques will be borne by us. We have already given undertaking earlier to make available one vehicle and Wireless/Walkie-Talkie sets. We request you to kindly forward our application for Stage-II clearance to PCCF, BBSR.

Thanking you,

Yours faithfully,


(A. S. Nandrey)
GENERAL MANAGER

Calcutta Office: 10, Camac Street, Industry House (5th & 6th Floors) Calcutta-700 017
Phone : 242-2316, 242-0462, 242-0384 □ Telex : 021-2161 □ FAX 033-2425630
Registered Office: Ispat Bhawan, Lodhi Road, New Delhi 110 003

आप हिन्दी में भी पत्राचार कर सकते हैं

You can make Correspondence in Hindi also

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For Evaluation Only

To: The Conservator of Forests (Hodal),
Office of the Pr.C.C.P.Orissa,
Bhubaneswar.

Sub:- Diversion of 1050.15 ha. of forest land for
renewal of mining lease in favour of M/S Steel
Authority of India Limited in Bolani Mines in
Keonjhar District. - 271

Ref:- Letter No.8-17/97-FC dt.20.1.97 of Govt. of
India Ministry of Environment and Forests.

With reference to the letter on the subject the
compliance report is submitted herewith in view for favour
of your information and necessary action.

(i) The Tahasilkar, Keonjhar and Telkoi both have submitted the patta for 429.9833 ha. of non forest Govt. land and the same have been submitted vide this office Memo No. 527 dt. 13.1.98. For balance land as per instruction of the Principal Secretary to Govt. of Orissa Forest and Environment Department Bhubaneswar, compensatory afforestation scheme has been prepared in double the degraded forest land and submitted in the above memo.

(ii) The user agency has deposited a sum of Rs. 1,24,97,040/- towards the compensatory afforestation cost through cheque and the amount has been deposited in the State Bank of India, Keonjhar and adjusted in Dr. No. 23 of 12/97

(b) & (c). The user agency has not yet supplied the TATA SUMO, Wireless sets and Walki talkies as indicated in the compensatory afforestation scheme, But the General Manager, M/S Steel Authority of India Ltd of Bolani has given an undertaking to supply the above materials within one month.
~~XXXXXXXXXXXXXXXXXXXX~~

(iii) The user agency has deposited a sum of Rs. 47,50,500/- towards the penal compensatory afforestation through cheque and the amount has been deposited in State Bank of India, Keonjhar vide Treasury Chalan No. BT 3 dt. 15.1.98

(iv) (a) The user agency has deposited a sum of Rs. 16,55,014/- towards fencing and regeneration through cheque and the same has been deposited in the State Bank of India, Keonjhar vide Treasury Chalan No. BT 2 dt. 15.1.98. But

(a) The user agency has deposited a sum of Rs. 19,75,838/- towards cost of plantation one and half times of the safety zone area through cheque and the amount has been deposited in xax to the State Bank of India, Keonjhar and adjusted vide Dr. item No. 23 of 12/97.

(c) The user agency have not yet deposited the compensation of Rs. 37,31,688/- assessed against this project, for this falling in their lease area.

Divisional Forest Officer,
Keonjhar Division.

Memo No.

dt.

Copy submitted to the Conservator of Forests,
Angul Circle, Angul for favour of information and necessary
action.

Divisional Forest Officer,
Keonjhar Division.

①

Environment safety zone deposit on page-2
303/545482
16/2/98
370

Government of Orissa
 Forest and Environment Department

No. 13/2/97.

Dated BSKR the 10th Feb, '98

From

Shri L. Patra,
 Deputy Secretary to Government.

Shri H. N. Choudhry,
 Asst. Inspector General of Forests,
 Government of India, Ministry of
 Environment and Forests, Parysaran Bhawan,
 C.G.O. Complex, Lodhi Road, New Delhi-110003.

Subject:- Diversion of 1050.15 ha. of forest land for
 renewal of mining lease in favour of M/s BIL
 of Bolani mines in Keonjhar District.

Sir,

I am directed to invite reference to your letter
 No. 17/97-C dt. 20.5.97 on the above noted subject and to
 furnish the compliance to the stipulations made by Govt. of
 India therein as under.

1) It is reported by the Principal Chief Conservator of
 Forests, Orissa that out of the identified 735.12 ha. of non-
 forest land 429.98 ha. in 4 villages in Keonjhar District have
 already been mutated in favour of State Forest Department.
 Annex copy of the M.C.R. are enclosed for ready reference. The
 balance 305.14 ha. of identified non-forest land has not yet
 been mutated in favour of this Department. However the D.F.C.
 concerned has identified double the area of degraded forest
 land i.e. $305.14 \times 2 = 610.28$ ha. for the purpose of compensatory
 afforestation since this is a Central sector Project.

ii) The User Agency is required to pay the following
 amount towards the cost of Compensatory afforestation.

a)	In respect of the non-forest land mutated in favour of Forest Department.	
	429.98 ha. x Rs. 17,000/-per ha.	= Rs. 73,07,450.00
	(Scheme submitted with the proposal)	
b)	Degraded forest land now, proposed	
	610.28 ha. x Rs. 8,500/-per ha.	= Rs. 51,87,380.00
	Total:-	<u>Rs. 1,24,94,830.00</u>

It is reported that the User Agency has already
 deposited a sum of Rs. 1,24,97,040/- against the above amount.
 Besides, the D.F.C., Keonjhar Division has intimated that the
 General Manager, BIL of Bolani has given an undertaking to
 supply within one month a Jeep and VHS set as was indicated in
 the original scheme submitted earlier for compensatory affore-
 station for protection of the forest.

The site specific scheme for plantation over the 610.28 ha. of degraded forest land prepared by the D.F.O., Keonjhar Division at a cost of Rs. 51,87,380.00 is enclosed for ready reference.

iii) It is reported that the User Agency has already deposited a sum of Rs. 47,50,500.00 with the D.F.O., Keonjhar towards the cost of Penal Compensatory Afforestation @ Rs. 7500/- per ha.

iv) The total forest area earmarked for safety zone in this case is 175.63 ha.

It has been reported that the User Agency has already deposited Rs. 16,55,014/- towards the cost of protection, fencing and regeneration of the safety zone area. The User Agency has also deposited Rs. 19,75,838/- towards the cost of plantation over a time of the safety zone area.

apart from this, the D.F.O. concerned has intimated that the User Agency has not yet deposited a sum of Rs. 37,31,600/- assessed by D.F.O. towards compensation against the project for illicit felling of trees within the lease hold area. Quantum of compensation and its payment by the User Agency are required to be finalised and the same is to be deposited by the lessee at the earliest possible. In this connection Shri K.A. Gopal, General Manager, SAIL has furnished an undertaking that they will deposit the said penal compensation amount within February 1998 vide his letter dt. 10.2.98 (copy enclosed).

In view of the positions, I would request you to kindly consider to convey the formal approval of Government of India under Section-2 of the Forest (Cons.) Act, 1980 for diversion of the forest land in question in favour of the User Agency, to this Department at the earliest.

Yours faithfully,

Deputy Secretary to Government

Memo No. _____/F&S., dt. the Feb. 1998

Copy with copies of its enclosures forwarded to Chief Conservator of Forests (Central) Eastern Regional Office Kharvelnagar, Shubaneswar for information and necessary action.

Deputy Secretary to Government

Memo No. _____/F&S., dt. the Feb. 1998

Copy forwarded to Pr. Chief Conservator of Forests, Orissa for information and necessary action.

Deputy Secretary to Government

n.e./

P.T.O.

For SE Forest
Approval.

**e-PayOrder Details****e-PayOrder Number** CNAAIUSHA6**Debit Status** Success**Date** 09-Apr-2018**PAY** ORISSA CAMPA**RUPEES (in words)** **Eligteen Lakhs Sixty Two Thousand Two Hundred only****Rs18,62,200.00****ACCOUNT NO** 00000011180766769**STATE BANK OF INDIA****BOLANI****DEBASHISH BEHERA**
Maker**RAJEEV KUMAR**
Authorizer 1**RABINDRA NATH OJHA**
Authorizer 2**"CNAAIUSHA6"****Counterfoil Description** SAIL RMD BOM**Transaction Type** NEFT Funds transfer**GSTIN Number** --**Debit Account Details**

Account No.	Branch	Amount
00000011180766769	BOLANI	18,62,200.00

Credit Account Details

Beneficiary Name/Account No.	Bank/Branch/IFSCCode	Amount	Credit Status	UTR No.
ORISSA CAMPA/150825817936292	NEW DELHI LODHI COMPLEX/NEW DELHI LODHI COMPLEX/CORP0000371	18,62,200.00	Credited to Beneficiary Account	SBIN418099593101

Application for RTGS Remittance
Counterfoil

State Bank Of India

Branch - Bolani

Date : 01/02/2012

Received

From : SAIL-RMD-Bolani
Ores Mines.

By Cheque /

Transfer for

RTGS

On compensatory
afforestation charges

Bank : Union Bank of India

Branch : Sundar Nagar, New
Delhi

Favouring

CAMPA, ODISHA

A/c No. 344902010105428

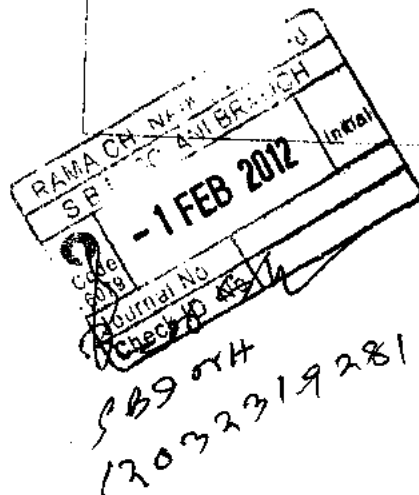
Amount Rs. 32906700.00

Bank's

Charges Rs. 25.00

Total Rs. 32906725.00

(Rupees Three crore twenty
nine lakhs six thousand
seven hundred only)



स्टील अथॉरिटी ऑफ इण्डिया लिमिटेड

(भारत सरकार का प्रतिष्ठान)

STEEL AUTHORITY OF INDIA LIMITED

(A Government of India Enterprise)

रा. मैटेरियल्स डिवीजन

RAW MATERIALS DIVISION

बोलानी ओर्स माइन्स

पोस्ट : बोलानी (756037) जिला : केओम्हार, ओड़ीसा

BOLANI ORES MINES

P.O. BOLANI (756037) DIST. KEONJHAR, ORISSA

No. BOM/ENV/B-715



दूरभाष

ली. ६०२०४, ६०२०६, ६०२१०, ६०२११

६०२१२, ६०२३९, ६०२४०, ६०२४६

TELEPHONE : BOLANI 60204, 60206, 60210, 60211

60212, 60239, 60240, 60246

STD Code : 06767

FAX : 06767-60172

11.06.10

Hand Delivery

To

The Division Forest Officer
Keonjhar

Sub:- Submission of DD for Rs.2,64,29,000.00

Sir,

Please enclosed find herewith a demand draft bearing No. 272679 revalidated on 03/06/10 for Rs 2,64,29,000.00(Two crore Sixty four lakhs twenty nine thousand) only in favour Compensatory afforestation Funds D(CAF), Orissa A/C NoCA-1585. This amount is being paid towards Wild life Management plan.

This is for your kind perusal.

Regards,

Signature
General Manager
Bolan Ores Mines

Yours faithfully,

Signature
General Manager
Bolan Ores Mines

रथीन चटर्जी

जन. प्रबन्धक, रेल-आर.एम.डी. बोलानी

Rathin Chattarjee

General Manager, SAIL- R.M.D. Bolani

Kolkata Office : 100 Camac Street, Industry House (5th & 6th Floors) Kolkata-700 017

Phone : 2282-2316, 2282-0462, 2282-0384 Telex : 021-2182, Fax : 033-22825630

Registered Office : Ispat Bhawan, Lodhi Road, New Delhi - 110 003

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You can make Correspondence in Hindi also

Form No. BOM-24—April 2004—50 Pads

1



स्टील अथॉरिटी ऑफ इण्डिया लिमिटेड
STEEL AUTHORITY OF INDIA LIMITED

रॉ मटेरियल्स डिविजन
RAW MATERIALS DIVISION

बोलानी ओर्स माइन्स
BOLANI ORES MINES

Letter No :GM/B-42 - 0402/2

Dated : 04.02.2014

To

The Divisional Forest Officer,
Keonjhar Division, Keonjhar

Sub: Payment of balance Regional Wild Life Management Fund at revised rate for 1321.45 hectares ML area of 5.10 sq miles ML of Bolani Ore Mines , M/s SAIL

Ref: Your office memo no - 8093/Mining Dt 01-11-2013 & letter No. 20693/F&E dated 05.10.2013 of Special Secretary to Govt. Forest & Environment Department, Odisha, Bhubaneswar .

Sir,

in compliance to your office memo , vide no - 8093/Mining Dt 01-11-2013 and memo of F & E deptt of Govt of Odisha , this is to inform you that an amount of Rs 3,03,93, 350/- (Rupees three crore three lakh ninety three thousand three hundred fifty only) has been deposited towards the the balance amount of Regional Wild Life Management plan for the total lease hold area of 1321.45 hectares of Bolani Ores Mines (5.10 Sq miles ML) , M/s SAIL , on account of upward revision of the rate to Rs 43,000/- per hectare .

The above amount has been deposited through RTGS mode in Compensatory Afforestation Fund (CAF),Orissa S8 Accounts No. SB01025222 of Corporation Bank, CGO Complex, Lodhi Road, New Delhi on 31/01/2014 . The receipt no SBINH14031365239 and certificate of Branch Manager,SBI Bolani is attached herewith as the evidence of the deposit of fund for taking further necessary action at your end .

Thanking you ,

Yours faithfully ,

[Signature]
GENERAL MANAGER
Bolani Ore Mines

Received

[Signature]
Divisional Forest Officer
Keonjhar Division

Enclosed : RTGS receipt no SBINH14031365239 and certificate of Branch Manager,SBI Bolani

**Application for RTGS Remittance
Counterfoil**

State Bank Of India

Branch - Bolani

Date : 31/01/2014

Received

**From : SAIL-RMD-Bolani
Ores Mines.**

**By Cheque /
Transfer for
RTGS
On compensatory
afforestation charges**

Bank : Corporation Bank

**Branch : CGO Complex,
Lodhi Road, New Delhi
Favouring : Compensatory
Afforestation Fund
A/c No. SB01025222**

Amount Rs. 36486280.00

**Bank's
Charges Rs. 56.00**

**Total Rs. 36486336.00
(Rupees three crore sixty
four lakhs eighty six
thousand three hundred thirty
six only)**

LTN

SBINH 14031364494

anadev Xaio 7400	
S.B.I. BOLANI BRANCH	
31 JAN 2014	
Journal No.	
Page No.	

**Application for RTGS Remittance
Counterfoil**

State Bank Of India

Branch - Bolani

Date : 31/01/2014

Received

**From : SAIL-RMD-Bolani
Ores Mines.**

**By Cheque /
Transfer for
RTGS
On compensatory
afforestation charges**

Bank : Corporation Bank,

**Branch : CGO Complex,
Lodhi Road, New Delhi
Favouring : Compensatory
Afforestation Fund
A/c No. SB01025222**

Amount Rs. 30393350.00

**Bank's
Charges Rs. 56.00**

**Total Rs. 30393406.00
(Rupees three crore three
lakhs ninety three thousand
four hundred six only)**

LTN

SBINH 14031365222

S. LOHAR 1921000	
S.B.I. BOLANI BRANCH KEONJHAR	
31 JAN 2014	
No.	
Page	

18-04-2010 14:00

001

M : SAHIL K D DELHI

PAK NO. : 31 11 23465514

APR 19 2010 02:08PM 73

3

99

भारतीय स्टेट बैंक
प्राइवेट लिमिटेड

DATE 18-04-2010

PAY CAMPA AIR NO. 1585 of Corporate Bank New Delhi
को या उभके आदेश पर OR ORDER

रुपये RUPEES Twenty Six Crore Seventy Three Lacs
Thirty Eight Thousand Two Hundred Eighty

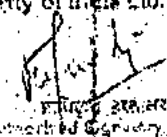
RS. 7673,38,280/-

ऑ. नं. A/c No. ब. नं. LF ई. नं. INTLS

होते भारतीय स्टेट बैंक लि. के लिए तथा एकात्मिक सेवा के
For & on behalf of State Bank of India Ltd.

भारतीय स्टेट बैंक
STATE BANK OF INDIA

R. Chandra



राज्योत्तर क्षेत्र समूह शाखा, नई दिल्ली - 110 001
CORPORATE ACCOUNTS GROUP BRANCH NEW DELHI - 110 001

अधिकृत हस्ताक्षर
Authorised Signatory

अधिकृत हस्ताक्षर
Authorised Signatory

597654 1100022014

Authorized Signatory
Signature

Authorized Signatory
Signature

STATE BANK OF INDIA
CORPORATE ACCOUNTS GROUP BRANCH, NEW DELHI - 110 001
MICCO/207

भारतीय स्टेट बैंक

10813608557

For & on behalf of Steel Authority of India Ltd.
This receipt is valid only if the stamp is present

Rs. 12,74,81,120/-

राष्ट्रिय रुपय द्वादश करोड़ सात लाख अठ्ठासी हजार एक सौ बीस/-
Eight One Thousand One Hundred and Twenty Four Thousand Eight Hundred and Twenty

FOR & ON BEHALF OF

PAY COMPANY A/c CA-1585-Construction B.O.
03/07/2010



भारतीय स्टेट बैंक
State Bank of India

BOLANI BRANCH (06079)
A/TPO: BOLANI
DIST: KEONJHAR
PIN: 758 037
PHONE/FAX: 06767 260378

TO WHOMSOEVER IT MAY CONCERN

It is to certify that, a sum of Rs.6,35,75,700/(Rupees six crore thirty five lakh seventy five thousand seven hundred only) has been transferred from account no 11180766769 of SAIL RMD Bolani Ores Mines, Bolani to account no.344902010105428 of Union Bank of India,Sundar Nagar, New Delhi of CAF, Odisha, New Delhi on 08-03-2016 through RTGS UTR No.SBINRS201630826953046.

STATE BANK OF INDIA

Soneya

Branch Manager.

08/03/2016

**e-PayOrder Details****e-PayOrder Number** CNAAJHZWB1**Debit Status** Success**Date** 07-May-2018**PAY** ORRISA CAMPA**RUPEES (in words)** Eleven Lakhs Ninety Nine Thousand Five
Hundred end Eighty Nine only**Rs.11,99,589.00****ACCOUNT NO** 00000011180766769**STATE BANK OF INDIA****BOLANI****DEBASHISH BEHERA****Maker****RAJEEV KUMAR****Authorizer 1****RABINDRA NATH OJHA****Authorizer 2****"CNAAJHZWB1"****Counterfoil Description** SAIL RMD BOM**Transaction Type** NEFT Funds transfer**GSTIN Number** 21AAACS7062F2ZP**Debit Account Details**

Account No.	Branch	Amount
00000011180766769	BOLANI	11,99,589.00

Credit Account Details

Beneficiary Name/Account No.	Bank/Branch/IFSCCode	Amount	Credit Status	UTR No.
ORRISA CAMPA/150825817936882	NEW DELHI LODHI COMPLEX/NEW DELHI LODHI COMPLEX/CORP0000371	11,99,589.00	Credited to Beneficiary Account	SBIN618127738107



स्टील अथॉरिटी ऑफ इण्डिया लिमिटेड
STEEL AUTHORITY OF INDIA LIMITED
राँ मैटीरियलस डिविजन
RAW MATERIALS DIVISION

RMD/92-957 (F)

28th June, 2014

The Asstt. General Manager
Corporation Bank
CGO Complex
Lodi Road
New Delhi-110003

**SUB: PAYMENT TOWARDS IMPLEMENTATION OF SITE SPECIFIC
CONSERVATION PLAN IN ML-5.1 SQ. MILE MINING LEASE OF
BOLANI ORE MINES OF STEEL AUTHORITY OF INDIA LIMITED,
IN VILLAGE BOLANI, DIST. KENDUJHAR OF ORISSA.**

Sir,

Please find enclosed herewith, a Cheque No. 752416 dated 28th June, 2014 drawn in favour of Adhoc CAMPA A/c. No. SB01025222 for an amount of Rs. 976.07 lakhs (Rupees nine crore seventy six lakhs seven thousand only) towards payment of cost for implication of site specific conservation plan in compliance to the condition no. 2 (xi) stipulated in final forest clearance order of MoEF vide 8-17/1997-FC (pt.) dated 11.12.2012 for diversion of 1152.58 ha. of forest land in the 5.1 Sq. Mile mining lease of Bolani Ore Mines of SAIL during 2nd renewal period at village Bolani, Distt. Kendujhar, Odisha vide demand note no. 4346 dated 26th June, 2014 of Divisional Forest Officer, Keonjhar.

You are requested to acknowledge the receipt of the cheque.

Thanking you,

Yours faithfully,

[Signature]
28/6/2014
(R. DARBARI)
Dy. General Manager (L)

Encl:- A/a

(06564) IFS CODE : SBIN0006564
INTEGRATED OFFICE COMPLEX, LOCHI ROAD,
ISPAT BHAVAN, NEW DELHI - 110003

28062014

DE PRICE ONLY

Adhoc CAMPA A/c NO. SB01025222
Nine crore Seventy six Lakh and Seven Thousand
only 9,76,07,000=00

10113030159

Prefix:
0523500010

Authorised Signatory

Authorised Signatory

For Steel Authority of India Ltd.

0523500010

Annexure-XI

BY SPEED POST**No. J-11015/418/2008-IA.II(M)****Government of India****Ministry of Environment & Forests**

534, Paryavaran Bhavan,
C.G.O. Complex, Lodi Road,
New Delhi-110 003.

Dated 21st December, 2012

To

M/s Steel Authority of India Ltd.
20th Floor, Scope Minar
Laxmi Nagar, Ditt. Centre
Delhi - 110092

Subject: Bolani Iron Ore Mine along with Beneficiation and Pellet Plant of M/s SAIL located at village Bolani, Tehsil Barbil, District Keonjhar, Odisha - (5.1 Sq. mile) - environmental clearance - regarding.

Sir,

This has reference to your letter No. RMD/K/E&L/11/265 dated 14.12.2011 on the subject mentioned above. The proposal is for enhancement of production of iron ore from 5.65 million TPA to 12.0 million TPA (ROM) along with installation of a new beneficiation plant of 12 million TPA throughput and pellet plant of 4.0 million TPA capacity. The project was prescribed Terms of Reference (TOR) on 9.2.2009 for undertaking detailed EIA study for the purpose of obtaining environmental clearance (EC) in accordance with the provisions of the EIA Notification.

2. The mine is located between latitudes 22°05'N & 22°08'N and longitudes 85°17' & 85°20'E. The mine lease area is 1321.45 ha, which includes 1225.78 ha of forestland. Stage-I forestry clearance has been obtained on 12.11.2010 for an area of 1152.58 ha. Mine working will be opencast semi-mechanised involving drilling and blasting. The ultimate working depth in the area will be 452 m AMSL. The groundwater table is 451 m AMSL. The mine working will not intersect with the ground water table. The peak water requirement is estimated as 13,400 kld, which will be met from Karo river and Jhikaria and Chapua nallah. No groundwater will be drawn for the project. Partly, recycled water will be utilized. No groundwater will be withdrawn.

3. No National park / Wildlife sanctuary / Biosphere reserve / Tiger reserve / Elephant reserve, etc., are reported to be located in the core and buffer zone of within 10 km of the periphery of the project site. However, Karo Karampada Elephant Corridor is reported at a distance of 8 km from the mine lease and it was reported that leopard, sloth bear, elephant, barking deer, etc. have been observed.

4. It is estimated that 7.5 million m³ of waste is existing. During the expansion phase 13.729 million m³ of waste will be generated. Part of it will be re-handled and a part will be dumped in the existing active dump and as well as two new dumps to be created. It is estimated that 17.73 million m³ of tailings will be generated. Out of this, 2.75 million m³ will

be beneficiated and utilized, 9.25 million m³ will be sold off and balance 5.73 million m³ of tailings will be stored in the tailing pond. The old tailing pond in this mine was discontinued while the new tailing pond will be in the adjoining mine lease. At the end of the mine life an area of 1033.56 ha will be covered under plantation and an area of 10 ha will be covered under water body. It has been reported that there is no population in the core zone, therefore, displacement of population and R&R has not been envisaged

5. Public hearing has been held on 24.10.2011. It was reported that there is no court case pending against the project. An amount of Rs. 54 lakhs has been earmarked for drinking water supply, an amount of Rs. 902 lakhs has been earmarked for roads, Rs. 17.2 lakhs per annum for education, Rs. 208 lakhs per annum for employment, Rs. 100 lakhs have been earmarked for health and hygiene.

6. The Ministry of Environment and Forests has examined the application in accordance with the EIA Notification, 2006 and hereby accords environmental clearance under the provisions thereof to the above mentioned Bolani Iron Ore Mine along with Beneficiation and Pellet Plant of M/s SAIL located at village Bolani, Tehsil Barbil, District Keonjhar, Odisha (5.1 Sq. mile) subject to implementation of the following conditions and environmental safeguards:

- (i) Environmental clearance is subject to obtaining clearance under the Wildlife (Protection) Act, 1972 from the competent authority, as applicable.
- (ii) The project proponent shall obtain Consent to Establish and Consent to Operate from the State Pollution Control Board, Orissa and effectively implement all the conditions stipulated therein.
- (iii) Forest clearance for 73.20 ha of Safety Zone has not been obtained by the project proponent. This environmental clearance subject to the grant of forest clearance for diversion of 73.20 ha of safety zone within one year.
- (iv) The Company shall submit within 3 months their policy towards Corporate Environment Responsibility which should inter-alia provide for (i) Standard operating process / process to bring into focus any infringement / deviation / violation of the environmental or forest norms / conditions, (ii) Hierarchical system or Administrative order of the company to deal with the environmental issues and for ensuring compliance with the EC conditions and (iii) System of reporting of non compliances / violations of environmental norms to the Board of Directors of the company and / or shareholders or stakeholders.
- (v) The mining operations shall be restricted to above ground water table and it should not intersect the groundwater table. In case of working below the ground water table, prior approval of the Ministry of Environment and Forests and the Central Ground Water Authority shall be obtained, for which a detailed hydro-geological study shall be carried out.
- (vi) Mitigation measures to control RSPM levels shall continue to be implemented and air quality data will also be collected during operation of the mines. The data so collected shall be analysed to see the effectiveness of the mitigation measures implemented.

Based on the same, additional safeguard measures, as may be required shall be implemented in the project.

- (vii) The biological survey shall be repeated during October – December and mid May month to see the existence of wildlife corridors, if any. Based on the same, necessary Wildlife Conservation Plan as may be required shall be prepared and implemented in consultation with the State Forest and Wildlife Department.
- (viii) The biological survey shall also be undertaken to identify the trees with orchids, if any. Such trees, so identified shall be protected and if need be, these trees may be relocated.
- (ix) The project proponent shall ensure that no natural watercourse and/or water resources shall be obstructed due to any mining operations.
- (x) The top soil, if any shall temporarily be stored at earmarked site(s) only and it should not be kept unutilized for long. The topsoil shall be used for land reclamation and plantation.
- (xi) The over burden (OB) generated during the mining operation shall be stacked at earmarked dump site(s) only and should not be kept active for long period. In critical areas, use of geo textiles shall be undertaken for stabilization of the dump. Monitoring and management of rehabilitated areas should continue until the vegetation becomes self-sustaining. Compliance status should be submitted to the Ministry of Environment & Forests and its Regional Office located at Bhubaneswar on six monthly basis.
- (xii) Catch drains and siltation ponds of appropriate size should be constructed to arrest silt and sediment flows from mine working, soil, OB and mineral dumps. The water so collected should be utilized for watering the mine area, roads, green belt development etc. The drains should be regularly desilted particularly after monsoon and maintained properly.

Garland drain of appropriate size, gradient and length shall be constructed for both mine pit and OB dump and sump capacity should 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 should also provide adequate retention period to allow proper settling of silt material. Sedimentation pits should be constructed at the corners of the garland drains and desilted at regular intervals.

- (xiii) Dimension of the retaining wall at the toe of dumps and OB benches within the mine to check run-off and siltation should be based on the rainfall data.
- (xiv) Plantation shall be raised in an area of 33.4B7 ha including a 7.5m wide green belt in the safety zone around the mining lease by planting the native species around OB dump, reclaimed area, mine benches, along the roads etc. in consultation with the local DFD/Agriculture Department. The density of the trees should be around 2500 plants per hectare. Greenbelt shall be developed all along the mine lease area in a phased manner and shall be completed within first five years.
- (xv) Effective safeguard measures such as regular water sprinkling shall be carried out in

critical areas prone to air pollution and having high levels of particulate matter such as around crushing and screening plant, loading and unloading point and transfer points. Extensive water sprinkling shall be carried out on haul roads. It should be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard.

- (xvi) The project authority should implement suitable conservation measures to augment ground water resources in the area in consultation with the Regional Director, Central Ground Water Board.
- (xvii) Regular monitoring of ground water level and quality shall be carried out in and around the mine lease by establishing a network of existing wells and installing new piezometers during the operation. The periodic monitoring [(at least four times in a year- pre-monsoon (April-May), monsoon (August), post-monsoon (November) and winter (January); once in each season)] shall be carried out in consultation with the State Ground Water Board/Central Ground Water Authority and the data thus collected may be sent regularly to the Ministry of Environment and Forests and its Regional Office Bhubneswar, the Central Ground Water Authority and the Regional Director, Central Ground Water Board. If at any stage, it is observed that the groundwater table is getting depleted due to the mining activity, necessary corrective measures shall be carried out.
- (xviii) The project proponent shall obtain necessary prior permission of the competent authorities for drawl of requisite quantity of surface water, if any, required for the project.
- (xix) The safeguard measures as suggested by the Central Groundwater Board vide letter No.21-4(231)/CGWA/SER/2010-1010 dated 11.06.2010 shall be effectively implemented.
- (xx) The project proponent shall practice suitable rainwater harvesting measures on long term basis and work out a detailed scheme for rainwater harvesting in consultation with the Central Groundwater Authority and submit a copy of the same to the Ministry of Environment and Forests and its Regional Office, Bhubneswar.
- (xxi) Vehicular emissions shall be kept under control and regularly monitored. Measures shall be taken for maintenance of vehicles used in mining operations and in transportation of mineral. The vehicles should be covered with a tarpaulin and shall not be overloaded.
- (xxii) No blasting shall be carried out after the sunset. Blasting operation shall be carried out only during the daytime. Controlled blasting shall be practiced. The mitigative measures for control of ground vibrations and to arrest fly rocks and boulders should be implemented.
- (xxiii) Drills shall either be operated with the dust extractors or equipped with water injection system.
- (xxiv) Mineral handling area shall be provided with adequate number of high efficiency dust

extraction system. Loading and unloading areas including all the transfer points should also have efficient dust control arrangements. These should be properly maintained and operated.

- (xxv) Sewage treatment plant shall be installed for the colony. ETP shall also be provided for the workshop and wastewater generated during the mining operation.
- (xxvi) Pre-placement medical examination and periodical medical examination of the workers engaged in the project shall be carried out and records maintained. For the purpose, schedule of health examination of the workers should be drawn and followed accordingly.
- (xxvii) Provision shall be made for the housing of construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.
- (xxviii) The project proponent shall take all precautionary measures during mining operation for conservation and protection of endangered fauna namely elephant, sloth bear etc. spotted in the study area. All the safeguard measures brought out in the Wildlife Conservation Plan so prepared specific to this project site and approved by the Chief Conservator of Forests (Wildlife) shall be effectively implemented. A copy of Wildlife Conservation Plan shall be submitted to the Ministry of Environment and Forests and its Regional Office, Bhubaneswar.
- (xxix) The critical parameters such as RSPM (Particulate matter with size less than 10micron i.e., PM_{10}) and NO_x 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.
- (xxx) 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.
- (xxxi) No change in mining technology and scope of working should be made without prior approval of the Ministry of Environment & Forests and no change in the calendar plan including excavation, quantum of mineral iron ore and waste should be made.
- (xxxii) Atleast four ambient air quality-monitoring stations should be established in the core zone as well as in the buffer zone for RSPM (Particulate matter with size less than 10micron i.e., PM_{10}) and NO_x monitoring. Location 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.

- (xxxiii) Industrial waste water (workshop and waste water from the mine) should be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19th May, 1993 and 31st December, 1993 or as amended from time to time. Oil and grease trap should be installed before discharge of workshop effluents.
- (xxxiv) Personnel working in dusty areas should wear protective respiratory devices and they should also be provided with adequate training and information on safety and health aspects.
- (xxxv) Occupational health surveillance program of the workers should be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed.
- (xxxvi) A separate environmental management cell with suitable qualified personnel should be set-up under the control of a Senior Executive, who will report directly to the Head of the Organization.
- (xxxvii) The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year wise expenditure should be reported to the Ministry and its Regional Office located at Bhubaneswar.
- (xxxviii) 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 Bhubaneswar, the respective Zonal Office of Central Pollution Control Board and 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, Bhubaneswar, the respective Zonal Officer of Central Pollution Control Board and the State Pollution Control Board.
- (xxxix) A copy of the clearance letter shall be sent by the proponent to concerned Panchayat, Zila Parishad/ Municipal Corporation, Urban Local Body and the Local NGO, if any, from whom suggestions/ representations, if any, were received while processing the proposal. The clearance letter shall also be put on the website of the Company by the proponent. The State Pollution Control Board should display a copy of the clearance letter at the Regional office, District Industry Centre and the Collector's office/ Tehsildar's Office for 30 days.
- (xl) The project authorities should advertise at least in two local newspapers of the District or State in which the project is located and widely circulated, one of which shall be in the vernacular language of the locality concerned, within 7 days of the issue of the clearance letter informing that the project has been accorded environmental clearance and a copy of the clearance 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 should be forwarded to the Regional Office of this Ministry located at Bhubaneswar.

7. The Ministry or any other competent authority may alter/modify the above conditions or stipulate any further condition in the interest of environment protection.

8. Failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of the Environment (Protection) Act, 1986.

9. 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 made thereunder and also any other orders passed by the Hon'ble Supreme Court of India/ High Court of Orissa and any other Court of Law relating to the subject matter.

10. Any appeal against this environmental clearance shall lie with the National Green Tribunal, if preferred, within a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.


(Dr. Saroj)
Director

Copy to:

- (i) The Secretary, Ministry of Mines, Government of India, Shastri Bhawan, New Delhi.
- (ii) The Secretary, Department of Environment, Government of Orissa, Secretariat, Bhubaneswar.
- (iii) The Secretary, Department of Mines and Geology, Government of Orissa, Secretariat, Bhubaneswar.
- (iv) The Secretary, Department of Forests, Government of Orissa, Secretariat, Bhubaneswar.
- (v) The Chairman, Central Pollution Control Board, Parivesh Bhawan, CBD-cum-Office Complex, East Arjun Nagar, Delhi-110032.
- (vi) The Chief Conservator of Forests, Regional Office (EZ), Ministry of Environment and Forests, A-3 Chandrashekharapur, Bhubaneswar-751023.
- (vii) The Chairman, Orissa State Pollution Control Board, Parivesh Bhawan, A/118 Nilakantha Nagar, Unit-VIII, Bhubaneswar-751012.
- (viii) The Member Secretary, Central Ground Water Authority, A2, W3 Curzon Road Barracks, K.G. Marg, New Delhi-110001.
- (ix) The District Collector, District Keonjhar, Government of Orissa.
- (x) EI Division, Ministry of Environment & Forests, EI Division, New Delhi.
- (xi) Monitoring File.
- (xii) Guard File.
- (xiii) Record File.


(Dr. Saroj)
Director

Annexure-XII

Annexure-XIII



OFFICE OF THE DIVISIONAL FOREST OFFICER, KEONJHAR DIVISION

Ph. No. 06766-254315, E.mail- dfokjr.od@gov.in

Memo No. 839 / 6F-Mining 58/2016

Dated, Keonjhar the 07-2-2018

To

The Regional Chief Conservator of Forests,
Rourkela Circle, Rourkela

Sub:

Proposal for diversion of balance 87.09 ha of Sabik Kissam forest land as on 25.10.1980 in addition to already diverted forest land of 1225.78 ha for iron ore mining in their Bolani Ore Mines of 1321.45 Ha (5.10 sq miles) in Keonjhar district, Odisha by M/s Steel Authority of India Limited (SAIL).

Ref:

F.No. 8-17/2016-FC dated 12.09.2017 of MoEF&CC , Govt. of India.

With reference to the aforementioned letters on the captioned subject, the Certificate regarding compliance of Schedule Tribe and Other Forest Dwellers (Recognition of Forest Right) Act, 2006 over an area of 87.09 ha of Non-forest land recorded as Forest as on 25.10.1980 in favour of the above mentioned project has been received from the Collector, Keonjhar. The said Certificate in five sets (including original) are sent herewith for favour of kind information and necessary action.

Encl – As Above


**Divisional Forest Officer,
Keonjhar Division**

Memo No. /Dated

Copy along with copy of certificate of FRA, 2006 forwarded to the Addl. Principal Chief Conservator of Forests, Forest Diversion & Nodal Officer, F.C. Act, O/o Principal Chief Conservator of Forests, Odisha, Bhubaneswar for favour of information and necessary action.

11
**Divisional Forest Officer,
Keonjhar Division.**

65
31/1/18

31/1/18

REGIONAL FOREST OFFICE
R No. 1009
Date: 05/02/18

FORM NO.II
(for projects other than linear projects)
Government of Odisha
Office of the District Collector, Keonjhar

No. 191

Dt. 31.01.2018

TO WHOMSOEVER IT MAY CONCERN

In compliance of the Ministry of Environment and Forests (MoEF), Government of India's letter No.11-9/98-FC(Pt) dt.3rd August, 2009 wherein the MoEF issued guidelines on submission of evidences for having initiated and completed the process of settlement of rights under the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights Act), 2006 ('FRA' for short) on the forest land proposed to be diverted for non-forest purposes, it is certified that 87.09 hectares of forest land (non forest land recorded as forest as on 25.10.1980) proposed to be diverted in favour of **Steel Authority of India Ltd.(SAIL)** for the purpose of mining activities in Bolani Ore Mines in Keonjhar District falls within jurisdiction of Bolani and Balagoda villages under Barbil Tahasil. It is further certified that

- the complete process of identification and settlement of rights under the FRA has been carried out for the entire 87.09 hectares of forest land (non forest land recorded as forest as on 25.10.1980) proposed for diversion. A copy of records of all consultations and meetings of the Forest Rights Committee(s), Gram Sabha(s), Sub-Division Level Committee(s) and the District level Committee are enclosed as annexure- 1 to annexure- 24
- the proposal for such diversion (with full details of the project and its implications, in vernacular/local language) have been placed before each concerned Gram Sabha(s) of forest dwellers who are eligible under the FRA.
- the each of concerned Gram Sabha(s), has certified that all formalities/processes under the FRA have been carried out, and that they have given their consent to the proposed diversion and the compensation and ameliorative measures, if any, having understood the purpose and the details of proposed diversion. Copy of Gram Sabha Resolution of village- Balagoda, and Bolani is enclosed as annexure- 11 & 20
- the discussion and decisions on such proposals had taken place only when there was a quorum of minimum 50% of the members of Gram Sabha present.
- No such facilities managed by Government requiring diversion of forest land u/s 3(2) of the Forest Rights Act, 2006 exist over the forest land proposed for diversion.
- the rights of Primitive Tribal Groups and Pre-Agricultural Communities, where applicable have been specifically safeguarded as per section 3(1)(e) of the FRA.

" These certificates are issued subject to decision of Hon'ble High court in WP(C) No.22720 of 2016 "

Ashish Thakara
(Ashish Thakara)
Collector, Keonjhar

Memo No. 192, Rev.Dt. 31.01.2018

Copy of the certificate along with its enclosure (Annexure - 1 to Annexure -24) forwarded to the D.F.O., Keonjhar Division, Keonjhar for information and necessary action.

31.01.18
Addl. District Magistrate,
Keonjhar

Annexure-XIV

(G)

SCHEME**FOR**

**GAP PLANTATION, SOIL & MOISTURE CONSERVATION TO
RESTOCK AND REJUVANATE DEGRADED FOREST WITHIN
100M IN OUTER PERIMETER OF MINING LEASE**

**of 5.10 sq miles ML of M/S SAIL - Bolani Iron Ore Mines
(1321.45 Hectares ML)**

**in compliance
of**

**Condition no - 2(XI) of Stage-I Forest Clearance grant Order
Vide Letter No.8-17/1997-FC(pt.) Dated.12.11.2010
of Govt. of India, Ministry of Environment & Forests, New Delhi**

for

**Diversion of 1152.58 Hects Forest land
within 5.10 sq Miles ML of
Bolani Iron Ore Mine of M/s SAIL,
in Champua Subdivision of Keonjhar District**



SCHEME FOR GAP PLANTING, SOIL & MOISTURE CONSERVATION TO RESTOCK AND REJUVANATE DEGRADED FOREST WITHIN 100M IN OUTER PERIMETER OF MINING LEASE OF BOLANI (5.10 SQ MILES ML-1321.45 HA) IRON ORE MINES OF M/S STEEL AUTHORITY OF INDIA LTD. IN KEONJHAR DISTRICT, ORISSA.

1. INTRODUCTION

Bolani Iron Ore Mine of M/s Steel Authority of India Ltd. is an ongoing Iron Ore Mining Project over an area of 1321.45Ha (5.10 sq miles ML). The tenure of this 5.10 sq. miles ML. was for 30 years from 11.4.1960 till 10.4.90. Application for 1st renewal was submitted on 07.04.89 and the 1st RML was granted for a period of 20 years with effect from 10-04-1990 till 09-04-2010 vide letter no III(A)SM-1/97-10731/SM.8hubaneswar dated 25-11-1999. The forest clearance is co-terminus with the lease. The total ML area involved 1181.66Ha inside Karo Reserve Forest and 44.12Ha of revenue/khesra forest in it. The total forest area broken prior to 25.10.1980 is 316.70 Ha. As per the Stage-II clearance of MoEF vide letter no 8-17/97-FC dt.19.02.1998, the user agency was allowed for diversion of total 1050.15 Ha forest land, with mining over 316.70Ha broken up land, 170.50Ha of virgin forest land and 562.95 Ha of forest land to be protected as such, excluding 175.63 Ha of Safety Zone in the 1st RML period. In the 1st RML period, the user agency has done compensatory afforestation over 429.9833Ha of non forest land and 610.2734Ha. degraded forest within Nayagarh R F.

The Second RML application has been filed on 26.03.2009 and the lease is in deemed renewal. Mining plan for 5.10 sq miles ML for the second renewal (10-04-2010 to 09-04-2030) has been approved by IBM Nagpur. Environmental clearance has been granted by MOEF, Govt of India for production of 5.65 MTPA per annum vide letter no No.J-11015/470/2006-IA.II (M) Dt 04-12-2007. The consent to operate for production of 5.65 MTPA Iron Ore has been granted by OSPC8 and is valid up to 31-03-2012. For the second renewal of the above said ML area, Bolani Iron Ore Mine has filed diversion proposal for total forest land inside 1321.45 hectares mining lease i.e 1152.58 ha. (broken up forest land 392.80 ha. and Virgin forest land 759.78 ha.) excluding 73.2Ha as safety zone. Compensatory afforestation over over 205.0 ha Degraded forest land (twice in extent of differential area of 102.43 Ha of virgin forest land being diverted), has been given within Ateji Reserve Forest of Patna Range of Keonjhar Division.

Stage-I forest clearance has been obtained vide Letter No.8-17/1997-FC(pt.) dated. 12.11.2010 from Govt. of India, Ministry of Environment & Forests, New Delhi for

the above said Diversion of 1152.58 ha. of Forest land subject to compliance of the conditions stipulated therein. Working permission was obtained from Govt. of India, Ministry of Environment & Forests, New Delhi vide No. 8-17/1997-FC(pt.) dated 04-04-2011 with validity up to 11-11-2011 and subsequently vide Letter No. 8-17/1997-FC(pt.) dated 09.11.2011 with validity up to 11-02-2012.

While granting Stage-I approval , the Ministry of Environment and Forest, Govt. of India has stipulated the following condition in **Condition no-xi** : " *User agency in consultation with the State Forest Department shall undertake gap planting and soil & moisture conservation activities to restock and rejuvenate the degraded open forest (having crown density less than (0.4) located in the area within 100m. from outer perimeter of the mining lease*".

2. LOCATION OF ML AREA

Bolani Ores Mines is located 10 Km west of Barbil in Champua sub-division of Keonjhar district of Orissa, adjoining the Boundary of Singhbhum district of Jharkhand. It is spotted in the Survey of India topo- sheet no 73 F/8. The total mining leasehold area of Bolani is 12 sq. Miles and is divided in to two ML areas namely : 5.1 sq. miles ML (Lease - I) and 6.90 sq. miles ML(Lease - II) . The location grid is given as follows :

LEASE AREA	LATITUDE		LONGITUDE	
5.10 sq miles ML (Lease- I)	22° 5'00"N	22° 7'00"N	85° 17'00" E	85° 20'00" E
6.90 sq miles ML (Lease- II)	22° 5'00"N	22° 6'50"N	85° 20'00"E	85° 23'00" E

The leasehold area is flanked by the Kiriburu-Meghahatuburu mines of SAIL on western side, the common boundary being defined by the Interstate boundary of Jharkhand and Orissa. On the eastern side the leasehold shares common boundary with other lease (6.9 sq. miles lease) of M/s SAIL .Though the main iron ore mining area is confined within 5.1 sq. miles Mining Lease area , the ancillary facilities viz., tailing disposal system & tailing dam, OB dumps, iron ore stock piles, loading plant, railway siding, water intake point(Pump house for Ore washing), residential colony, approach road from Barbil etc. are located within SAIL-Bolani's another adjoining mining lease i.e 6.90 sq. miles ML area .

SELECTION OF SITE FOR GAP PLANTING

The degraded forest within 100m in outer perimeter of mining lease of Bolani (5.10 sq miles ML), comes under Karo Reserve Forest of Barbil range of Keonjhar Forest division . In compliance to the condition , the matter has been consulted with concerned authority . Accordingly, unutilized degraded open forest land within 100 meter from outer perimeter of Mining Lease has been identified and enclosed in the table in next page. An area of 38.11 ha has been identified within 100m distance , having density of vegetation less than 0.4 , to be suitable for the purpose of restocking and rejuvenation by undertaking gap planting and soil and moisture conservation activities . A map showing the locations is enclosed . The details of land identified are as follows :

- a. 14.45 Ha. in between ML pillar no 5 & 5/8 in the north western side. In the eastern side , the other lease of M/s SAIL exist .Density of vegetation < 0.4
- b. 2.38 Ha. in between ML pillar no 1/7 & 2/1 in the south eastern side, Village/Khesra forests, inside the other lease of M/s SAIL.
- c. 21.28 Ha. in between ML pillar no 4 & 3/14 in the south-western side. Degraded reserve forest with density of vegetation < 0.4.

The area will be surveyed and demarcated by posting 4 ft height RCC pillars. The location maps are enclosed herewith .The above areas are found to be degraded due to uncontrolled erosion and lack of vegetation (density less than < 0.4) . The present scheme aims at preparation of site specific afforestation scheme over above 38.11 Ha. degraded forest land in R D F Plantation mode with adequate soil and Moisture conservations .

TOPOGRAPHY & DRAINAGE

The above degraded forest lands are steep in south western side and moderately undulating in eastern side . As such , the 5.10 sq miles lease area of Bolani combines the features of hill and valley topography between the southern lease boundary and the Balagoda nala in north with ore bearing zones occurring on the hill top and hill slopes. The hill range rises nearly 390 m from the valley. From the iron lease boundary to the Karo River ground is gently undulating with general elevation about 470 m AMSL. The general

gradient of the hill range is from north west-west to south east -east. At the foot hills from the terrain is gently sloping. On the north eastern portion of the lease boundary the ground is undulating with general elevation varying from 480m to 500m AMSL. The streams are ephemeral in nature .

IDENTIFIED LOCATIONS FOR GAP PLANTING and SMC ACTIVITIES WITHIN 100 METER FROM OUTER PERIMETER OF 5.10 SQ MILES ML

LOCATION	LEGAL STATUS	GPS readings		Suitability	Distance in mtrs	Area (Dist x 100m) (sq m)
		From ML Pillar	To ML Pillar			
In West & North	ML Pillar- 4 to 5 Reserve Forest State boundary with Jharkhand	85° 16' 50.6" 22° 05' 08.2"	85° 20' 19.7" 22° 07' 33.3"	Here Bolani Ore Mines is not having any control over those forest lands .	-	-
In the East #	ML Pillar- 5 to 5/8 Reserve Forest- Other lease of M/S SAIL-BOM (6.90 sq miles ML) Density of vegetation is < 0.4	85° 20' 19.7" 22° 07' 33.3"	85° 20' 10.9" 22° 07' 01.8"	Gap planting and SMC measures will be undertaken at locations ① & ④ shown in the map enclosed.	1445 m	144500 14.45 Ha
	ML Pillar- 1/7 to 2/1 Khesra Forest - Other lease of M/S SAIL-BOM (6.90 sq miles ML) Density of vegetation is < 0.4	85° 19' 07.3" 22° 05' 21.9"	85° 19' 06.9" 22° 05' 13.5"	Gap planting and SMC measures will be undertaken near location ⑦ shown in the map enclosed	238 m	23800 = 2.38 Ha
In South East	ML Pillar- 3 to 3/14 Reserve Forest Other lessees are operating	85° 19' 10.3" 22° 05' 08.4"	85° 18' 07.5" 22° 05' 08.3"	Here Bolani Ore Mines is not having any control over forest lands .	-	-
In South West	ML Pillar- 4 to 3/14 Reserve Forest - No lessee is in operation Density of vegetation is < 0.4	85° 16' 50.6" 22° 05' 08.2"	85° 18' 07.5" 22° 05' 08.3"	Some gap planting and SMC measures will be undertaken at locations ② and ③ shown in the map enclosed	2128 m	212800= 21.28 Ha
TOTAL AREA					3811 m	38.11 Ha

A map showing the above locations is enclosed in **Annexure-I** .

- Plantation of 10,000 saplings have been undertaken in the location around ① during the year 2011 .

CLIMATE

The study area lies in tropical region where climate is characterised by very hot summers and cool winters. Summer is typically from March to June when monthly temperature

ranges from a maximum of 42°C during daytime to a minimum of 15°C at night. Winter is from November to February when the maximum temperature during day goes up to 33°C and minimum temperature at night becomes as low as 8°C. Rainy season is normally from June to middle of October with maximum precipitation on average during the month of August.

RAINFALL

In general Bolani experiences more rainfall compared to Keonjhar, the nearest IMD observatory. At Bolani most of the precipitation occurs during rainy season. The average annual rainfall as recorded at IMD observatory at Keonjhar is 1269.1 mm, 80% of it during the Southwest monsoon i.e June to October . There is very less rain recorded in the year during the months of January, February, April and May.

SOIL QUALITY

The soils of the lease hold area have characteristic reddish tinge and predominant soil type of the region may be classified as red earth & red loam . The dominant colours found in field conditions are dusky red, reddish brown, dark reddish brown, red, dark red etc. The texture of the soil varies from sandy loamy in the regions like afforested waste dump, back filled waste dump, barren land and sandy clay loamy in the areas like agricultural field, old tailing pond and tailing pond discharged area. This type of soil coupled with gravel, boulder etc. allows, free drainage of water, down in the profile causing intense leaching. Most of the soil found to be slightly acidic in nature and this may be due to weathering and bacterial action on available sulphur.

BRIEF DESCRIPTION OF EXISTING VEGETATION

The area consists of vegetation of dry deciduous species like Sal, Piasal, Kurum, Jamun, Dhala, Kendu, Asan etc. with canopy density 0.1 in the southern and western portion and 0.01 in the the north western side inside the adjacent lease . The area in western side has a forest cover of pure sal forests, semi-evergreen(mixed) forests, degraded forest. The forests within 100 m from outer perimeter of 5.10 sq miles ML are part of Karo RF . The forest of study area is Sal dominated followed by Kurchi (*Holarrhena*

ranges from a maximum of 42°C during daytime to a minimum of 15°C at night. Winter is from November to February when the maximum temperature during day goes up to 33°C and minimum temperature at night becomes as low as 8°C. Rainy season is normally from June to middle of October with maximum precipitation on average during the month of August.

RAINFALL

In general Bolani experiences more rainfall compared to Keonjhar, the nearest IMD observatory. At Bolani most of the precipitation occurs during rainy season. The average annual rainfall as recorded at IMD observatory at Keonjhar is 1269.1 mm, 80% of it during the Southwest monsoon i.e June to October. There is very less rain recorded in the year during the months of January, February, April and May.

SOIL QUALITY

The soils of the lease hold area have characteristic reddish tinge and predominant soil type of the region may be classified as red earth & red loam. The dominant colours found in field conditions are dusky red, reddish brown, dark reddish brown, red, dark red etc. The texture of the soil varies from sandy loamy in the regions like afforested waste dump, back filled waste dump, barren land and sandy clay loamy in the areas like agricultural field, old tailing pond and tailing pond discharged area. This type of soil coupled with gravel, boulder etc. allows, free drainage of water, down in the profile causing intense leaching. Most of the soil found to be slightly acidic in nature and this may be due to weathering and bacterial action on available sulphur.

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LOCAL GEOLOGY

Bolani iron ore deposit lies on the western limb of the famous Bonai range. Typical metamorphosed iron bearing sedimentary rocks of upper Precambrian constitute the deposit. The lithology is : Lower Shale, BHQ, Tuff-Phyllite, Laterite and Iron Ore.

OBJECTIVE OF THE SCHEME


The main objective of the present scheme is to fulfil the condition XI stipulated in the grant order of stage-I , vide letter no 8-17/1997-FC(pt.) dated 04-04-2011 of MoEF,GOI and accordingly afforest the selected degraded open forest lands within 100m from outer perimeter 5.10 sq miles ML area of Bolani Iron Ore Mines to restock these degraded forest crop by taking up tending operation of the existing forest crop and supplementing with RDF plantation at the rate of 200 plants per hectare in blank , in consultation with State Forest Department . However at places where the natural regeneration of promising species of forest crops are available, they shall be nourished to also form the future crop of the area. It also aims at enforcing protection measures of the plantations by involving people around under the Joint Forest Management mode . It further seeks to incorporate suitable soil conservation measures with the afforestation works, so as to conserve soil and water for enrichment of the eco-system. The scheme will be implemented in phased manner during the 2nd renewal period .

Hence, the main objective of the present regeneration scheme is as follows :-

- 1) To afforest the degraded forest land and to restore the degraded forest lands by RDF plantation
- 2) Clearly demarcating and fencing the area to dispense with the biotic interferences,
- 3) To improve the micro edaphic conditions by undertaking suitable soil and moisture conservation measures
- 4) To protect the area against encroachment, illicit felling, fire incidences, grazing and all other forms of biotic interference and allow unhindered growth of the saplings.
- 5) To create awareness among the local villagers for protection and maintenance of plantation and the forest for ensuring enrichment of the ecosystem and replacement of the degraded areas with natural green cover.

Proposed technique

To achieve the above objectives, it has been proposed to take up RDF gap plantation @ 200 plants/ha. at the spacing of 2.5 mt X 2.5 mt. in identified gaps of selected degraded open forest patches . The following items of works prescribed in the scheme will be taken up, the detailed expenditure statement of which is enclosed in **Annexure-II.**



WORKS TO BE TAKEN UP : To achieve the above objectives, the following items of work are mainly prescribed to be taken up :

- **SURVEY AND DEMARCATION OF BOUNDARY:** The identified degraded forest lands will be surveyed clearly with reference to the village maps and reserve forest boundary and demarcated by posting 4 ft height R.C.C. pillars at every corner/turning of boundary line and the scheme proposes financial implication for the same.
- **FENCING :** Two types of fencing is proposed to be undertaken in the site. The details of the measurements of the perimeter of the degraded forest lands selected along with the type of fencing to be taken up is given below for reference :

LOCATION	Barbed Fencing in mtrs	Stone wall fencing in mtrs
ML Pillar- 5 to 5/8	1445 m	1645 m
ML Pillar- 1/7 to 2/1	238 m	438 m
ML Pillar- 4 to 3/14	2128 m	2528m

(The above barbed wire fencing coinciding with ML boundary is being done as a part of Safety zone fencing and the cost is not included in the present scheme.)

Stone wall fencing

Taking into consideration of the biotic pressure on the site and the vulnerability of fire hazards, encroachments stone wall fencing is proposed along the outer boundaries of the sites. As the local boulders are available in the region, these locally available stones will be used for the purpose.

Specification of Fencing

The stone fencing would be done as per the following dimensions-

0.9mt. + 0.45mt. X 1.5

2

The cost norm for the stone wall fencing is enclosed as **Annexure- III.**

Barbed wire fencing :

Barbed wire fencing shall be taken up around all the boundaries adjoining to Lease area . Entry gates at suitable point shall be provided to facilitate the departmental staffs to take up and maintain the plantation from time to time. **The barbed wire fencing is already being undertaken as a part of safety zone fencing and hence the cost estimate is not included in this scheme .**

REGENERATION CLEANING AND TENDING OPERATION

The operation aims at tending the existing crop silviculturally to desirable species for ensuring better growth of the plants. It includes removal of inferior, diseased, malformed, dead, drying and defective tree growth and disposal of them either by distributing it among the local villagers or by control burning them at a selected site so as not to damage the new recruits. Apart from it weed eradication and climber cutting is also an integral part as they interfere with the growth of trees and also their regeneration by shrouding them from the sun rays and also through root competition. Hence Site clearance by removing climbers and uprooting Eupatorium and other weeds is also being proposed to be done in the area.

The detailed operation to be carried out is as follows-


- i) Cutting back of herbs and shrubs interfering with the growth of the desirable species.
- ii) Cutting back of individual inferior poles interfering with growth of well formed pole crops.
- iii) Cutting back of malformed and diseased species.
- iv) Cutting of climbers up to hand reach distance.
- v) Cutting of high stumps flush to the ground.
- vi) Singling of coppice shoots coming out from stools retaining the most promising one.
- vii) Pruning of the branches of the pole crops up to hand reach distance.

During the 1st year, climber cutting, and cutting of high stumps, weeds and malformed and diseased species will be done. In the next two years, cutting back of ill grown individuals and singling of coppice in case of desired species will be done in the maintenance activities.

3. PLANTING & POST-PLANTING :

The area will be stocked by way of raising plantation @ 200 plants per hectare in RDF gap plantation method. Taking into consideration the site specific soil condition, existing species growing their naturally and the requirement of the local people the following species are proposed to be planted in the area.

Choice of species : As far as possible, care shall be taken to select indigenous species which are associates of local species . In areas in the periphery in the north more prone



to grazing incidences, some mix of *Chakunda (Samania saman)* may be given.

The list of species to be adopted for the plantation is as follows:

1	Amla	<i>Emblica officinalis</i>
2	Bamboo	<i>Dendrocalamus strictus</i>
3	Karanja	<i>Pongamia pinnata</i>
4	Asan	<i>Terminalia tomentosa</i>
5	Sisoo	<i>Dalbergia sisoo</i>
6	Gambhar	<i>Gmelina arborea</i>
7	Neem	<i>Azadirachta indica</i>
8	Harida	<i>Terminalia chebula</i>
9	Bahada	<i>Terminalia bellerica</i>
10	Kasi	<i>Bridelia retusa</i>

Raising of nursery

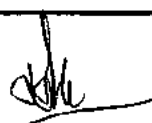
Seedlings required for the plantation shall be raised in the nursery of Bolani ores mines. The Nursery has a capacity of raising 120000 saplings . Nursery works will be undertaken in consultation with state forest department nursery on payment basis . All the infrastructures shall be provided by Bolani Ores mines . Work will be started one year before the year of plantation so that second year seedlings will be available for plantation. 20% extra seedlings shall be raised to compensate and mitigate the eventuality of seedling casualty in the nursery. Standard nursery practices shall be followed for raising of seedlings in polythene bags.

Alignment and stacking

Alignment, stacking and pitting will be taken up in the month of March-April, Pits of size 30cmX 30cmX 30cm will be dug maintaining a spacing of 2.5 mt @ 200 plants per hectare.

Planting

The seedlings will be planted in dug out pits of 30 cm³ maintaing a spacing of 2.5 mt between the pits @ 200 seedlings per hectare. Plantation should be taken up after first regular shower of monsoon and should ideally be completed by end of August. NPK/DAP fertilizer @ 30 gms per plant should be given as basal dose. Anti- termite and insecticide like methyl parathion @ 5 gms. per plant should be applied per pit. Care will be taken to avoid direct contact of the root tip of the plant with that of the insecticide to prevent



damage to the plant. Casualty replacement when required during the planting year and in the second year should be undertaken for which the seedlings shall be raised.

Weeding, Soil working and manuring

For establishment and better growth of the planted seedlings, weeding, soil working and manuring are necessary. It is prescribed to carry out two weedings, soil working and manuring during the first year and second year of plantation and one weeding and soil working during the third year. Weeding and manuring for the first and second year shall be carried out during August- September and the second one during October- November along with soil working during which 30 gms. Of NPK/DAP shall be added to the soil per plant. First weeding shall be area weeding and the second weeding should be strip weeding. The weeding of third year will be area weeding which shall be carried out during August.

Application of Insecticides

The plantation site after planting with good seedlings may in future course of time get infested with diseases owing to influx of insects and pests into the area which usually cause heavy damage to the soft, tender and avidly growing parts of the plant that heavily affects the rate of growth and sometimes causes wide spread casualty of the seedlings. To avoid such incidences foliar spray and ground application of insecticides in at regular intervals usually on a sunny day before fore noon shall be done.

Fireline tracing and maintenance

Fire causes irreparable damage to the plantation and the forest growth during fire season and to prevent such fire out breaks in the area, the plantation area shall be divided into suitable blocks by tracing firelines. Boundaries of the plantation patches and these block lines will be scrapped of forest growth to a width of 3.0 mt. during Feb-March and the cut back materials and the dry leaves stacked along these firelines shall be controlled burnt under direct supervision of the forest staff. This operation is highly essential and the scheme proposes to carry this operation for the first three years

The detailed cost estimate of various operations to be taken up in RDF plantation has been furnished in **Annexure-II** .

Points of importance :

While taking up plantation, the following vital points shall be taken up for consideration :

- All cares be taken to raise healthy seedlings of minimum 2' height and 20% extra of the required stock be raised. Complete 1 year seedlings shall be used in case of Asan, Arjun, Phasi, Neem, Harida, Bahada, Kasi etc. However, in case of Sisoo, Gambhar, Chakunda etc 6 months old seedlings can be used. Pitting shall be invariably done during February – April, i.e before onset of monsoon. In hilly areas, pits shall be dug along the contours. Planting shall be done on the onset of monsoon and should not be delayed.
- Basal dose of 30 grams of NPK and 5 grams of Aldrin be applied at the time of planting. Casualty replacement, weeding and soil working, application of fertilizer and insecticides shall be taken up as per the provisions in the cost-norm at the proper time. Engaging requisite watchers as per norm who shall also take up tracing of inspection path and fire line and maintenance of fence as and when required shall provide watch and ward.
- All out efforts be taken to keep the plantation free from grazing, fire and other biotic interference.

SOIL CONSERVATION MEASURES :

The sites selected for restocking and rejuvenation by afforestation are degraded forest lands and the slope of the identified area varies from steep to moderate with undulating topography and gullies are formed due to heavy erosion. Therefore, soil conservation measure is indispensable and is to be appropriately designed. Taking into the consideration of the degradation of the area due to soil erosion it has been proposed to take up Soil Conservation Measures by construction of **Loose Boulder Checkdam (LBCD)** such as contour bunds, checkdams over the area (1mt., 2mt., 3mt. & 4 mt. span) as follows :

Location	Area in Ha.	Nos. of LBCD			
		1mt	2mt	3mt	4mt
② & ③	21.38	20	10	10	5
① & ④	14.45	10	5	5	3
⑦	2.38	5	5	3	2
TOTAL		35	20	18	10
		@ Rs. 1615/- per LBS = 56,525/-	@ Rs. 3200/- per LBS = 64,000/-	@ Rs. 6714/- per LBS = 1,20,852/-	@Rs. 11370/- per LBS = 1,13,700

The details of estimate of different size of Loose Boulder Structure is given in **ANNEXURE- IV(A),(B),(C) & (D)**.

Special conservation measures

To check soil erosion and the rain water draining out of the area, it has been proposed to take up special conservation measures by digging staggered trenches along the contour over the area @ 250 nos per hectare. The size of the trenches will be 2 Mtr x 0.5 Mtr x 0.5mtr . Digging of staggered trenches will be done during Sept of 1st year. Agave planting will also be taken up on the dugout soil of the trench for it's stabilization and to restrict the dugout soil from re-filling into the trench. Thus an amount of Rs 6,69,723/- is required for 38.11 Ha considering Rs 17,575/- per ha for carrying out such special soil & Moisture conservation measures. The cost norm for the same is enclosed in **Annexure -V**.

WATCH AND WARD

To protect the area against grazing, fire accident and other biotic interference it is proposed to engage the 5 nos of watchers for five years after the year of plantation.

MOTIVATION OF PEOPLE AND PARTICIPATION.

In order to involve the adjoining people in the protection of plantation, meetings are to be conducted in the adjoining villages and to motivate the people in this direction, they will be provided with incentives in shape of different community articles and other different community amenities of fixed and movable type in shape of entry point activities. Health camps shall also be organized in the villages.

EXECUTING AGENCY

In all the cases, the works shall be executed by the User Agency and the entire work shall be carried out through close coordination with the Forest Department. The work will be executed with outsourced man and machinery as and where required . To facilitate this, the user agency shall establish and strengthen specialised executing and supervision departments headed by qualified persons with all required infrastructural facilities . Nursery, plantation manuals , journal and other relevant documents shall be maintained. To facilitate this, the user agency shall bear all the cost of infrastructure required.

INSPECTION, MONITORING AND EVALUATION

For successful implementation of the above proposed programme, intensive inspection and technical guidance from concerned technical wing is required. Sufficient fuel/


conveyance charges for the executing agency and technical experts shall be provided by the user agency for proper execution of these programme.

REQUIREMENT OF FUNDS

The total cost of the implementation of proposed scheme will be **Rs 57,02,000.00** as detailed in **Annexure-VI** . For implementation of the above scheme, the above expenditure will be made over the next five years period . Therefore, budget provision of Rs. 57.02 lakhs will be kept by the user agency for implementation of the above regeneration measures a period of next five years. This budget will subject to increase in amount considering the increase in materials and labour charges. The tentative annual expenditure planned for the next five year for the implementation of the scheme is given in the following table :

Sl. No.	Description	Amount
1.	1 st year plan of expenditure	Rs 10.00 Lakhs
2.	2 nd year plan of expenditure	Rs 10.00 Lakhs
3.	3 rd year plan of expenditure	Rs 15.00 Lakhs
4.	4 th year plan of expenditure	Rs 15.00 Lakhs
5.	5 th year plan of expenditure	Rs 7.02 Lakhs
6.	Total:-	Rs 57.02 Lakhs

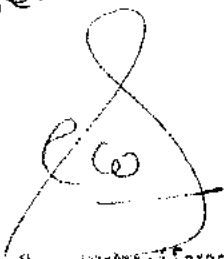

(N P PRAMANIK)
GENERAL MANAGER
SAIL-BOLANI ORES MINE


Range Officer
BARIL RANG, BARIL

Technically
Approved

COUNTERSIGNED


Divisional Forest Officer
Keonjhar Division

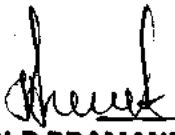

Regional Chief Conservator of Forests
Rourkela Circle

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5.	5 th year plan of expenditure	Rs 7.02 Lakhs
6.	Total:-	Rs 57.02 Lakhs


(N P PRAMANIK)
GENERAL MANAGER
SAIL-BOLANI ORES MINE


Range Officer
BARDIL RANGE, BARBIL

COUNTERSIGNED


Divisional Forest Officer
Keonjhar Division

ANNEXURE - II**COST ESTIMATE FOR RDF PLANTATION OF 200 SEEDLINGS/HECT.**

1.	Type of the Plantation.	RDF Plantation.
2.	No. of seedlings to be planted.	200 Nos. per hectare
3.	Spacing to be adopted.	2.5m x 2.5m
4.	Size of pits.	30cm x 30cm x 30cm
5.	Wage rate.	Rs. 90.00 per manday.
6.	Species to be planted.	<i>Sissoo, Gamhar, Neem, Harida, Bahada etc.</i>
7.	The user agency will pay the wage rate as and when enhanced.	

0th year (Advance work) Pre-planting operation.

Sl. No.	Item of work	Mandays	Labour rate @ Rs.90.00	Material cost.	Total.
1	2	3	4	5	6
1	Survey, demarcation & pillar posting.	2	180.00	-	180.00
2	Site Preparation	2	180.00	-	180.00
3.	Cutting of high stumps	3	270.00	-	270.00
4.	Alignment and stacking pits	1	90.00	-	90.00
5.	Pitting (30 cm cube)	8	720.00	-	720.00
6.	Cost of raising 200 seedling (Part)	14	720.00	540.00	1260.00
	Total	30	2160.00	540.00	2700.00

1stYear Planting Operation

7.	Cost of raising 200 seedlings (Balance)	6	540.00	-	540.00
8.	Carriage of seedlings to site planting including casualty replacement	6	540.00	-	540.00
9.	1 st weeding	2	180.00	-	180.00
10.	2 nd weeding.	2	180.00	-	180.00
11.	Soil working	2	180.00	-	180.00
12.	Manuring(2 doses 15g each)/insecticide application	1	90.00	-	90.00
13.	Fire line tracing and inspection path	2	180.00	-	180.00
14.	Cost of insecticides for plantation	3	-	270.00	270.00
15.	Cost of chemical fertilizer for plantation 12Kg @ 35/-	6	-	540.00	540.00
16.	Silvicultural operation involving clearance of weeds & cutting of climbers, singling of shoots on each stool etc.	15	1350.00	-	1350.00
17.	Soil conservation.	12	1080.00	-	1080.00

18	Watch and ward	5	450.00	-	450.00
19	Contingencies	3	-	-	270.00
	Total	65	4770.00	810.00	5850.00

2nd Year Maintenance

21	Casualty replacement with nursery cost	2	180.00	-	180.00
22.	Weeding.	2	180.00	-	180.00
23.	Soil working and Manuring.	2	180.00	-	180.00
24.	Fire line tracing .	1	90.00	-	90.00
25.	Cost of Fertilizer.	4	-	360	360.00
26.	Soil conservation.	6	540.00	-	540.00
27.	Watch & ward.	8	720.00	-	720.00
28.	Contingency.	2	-	-	180.00
	Total	27	1890.00	360.00	2430.00

3rd Year maintenance

30	Weeding & pruning.	2	180.00	-	180.00
31	Soil working.	2	180.00	-	180.00
32.	Fire line tracing.	1	90.00	-	90.00
33	Soil Conservation	6	540.00	-	540.00
34	Watch & Ward.	6	540.00	-	540.00
35	Contingency.	2	-	-	180.00
	Total	19	1530.00	-	1710.00


4th Year maintenance

36	Weeding and pruning	2	180.00	-	180.00
37	Watch and ward	6	540.00	-	540.00
38	Fire line tracing (2mtr wide fire line over 400 mtr long)	1	90.00	-	90.00
39.	Contingencies	1	-	-	90.00
	Total	10	810.00	-	900.00
	Grand Total	151	11160.00	1710.00	13590.00

ABSTRACT.

Year	Labour (Rs)	Material(Rs)	Contingencies(Rs)	Total (Rs)
0 th Year	2160.00	540.00	0	2700.00
1 st . Year	4770.00	810.00	270.00	5850.00
2 nd . Year	1890.00	360.00	180.00	2430.00
3 rd . Year	1530.00	0	180.00	1710.00
4 th . Year	810.00	0	90.00	900.00
Total	11160.00	1710.00	720.00	13590.00
Person days Equivalent	124	19	8	151
Additional incentive (10%) for VSS/Fr/FG proposed for more than 80% survival and very good growth having 3mtr clear bole during 4 th year maintenance as per recommendation of DFO and RCCF.				1360.00
Additional EPA expenses to VSS at rate Rs. 1000/- in 0 th Year, Rs. 2000/- in 1 st Year, Rs. 1500/- in 2 nd Year, Rs.500/- in 3 rd Year.				5000.00
Total norm per hectare in non JFM mode with incentives				19950.00

Cost for 38.11 Ha. Plantation in non-JFM mode X Rs. 19950.00 = **Rs. 7,60,294.50**




ANNEXURE – III**DETAILS OF ESTIMATE FOR STONE WALL FENCING PER RMT.**

Sl No.	Particulars	Amount in Rs./Cum
1	Stone other than granite picked up broken & per cum. 5 stacked 0.03 cum.	130.00
2	Royalty	70.56
3	Transportation up to 5 Km. lead	120.00
	Total	320.56
4	Mason-0.52 @116.00 <i>165</i>	60.32
5	Semiskilled labour- 0.52 @ 103.00 <i>145</i>	53.56
6	Unskilled labour-0.52 @90.00 <i>125</i>	46.10
7	Unskilled female labour – 0.35 @ 90.00 <i>125</i>	31.05
	Sub- total	512.74
8	Sundries & T.P. etc.	5.16
	Grand Total	517.90 or 518.00

Cost of stone wall fencing for 4611 rmt will be = Rs 518 x 4611

= Rs 23,88,498.00

23,88,498.00



Genl. Manager
S.A. 100-10, 100-10

ANNEXURE-IV(A)

1. Detail Estimate of Loose Boulder Structure (S.C.M.)

Span-1 mt. Ht. = 0.6 mt. Slope-U/S:- 1:1.5 D/S slope: 1:2

1. Leveling the unshape surface of the selected site & layout the structure foundation L.S. 1 MD. **Rs. 90.00**

2. Excavation of foundation in hard soil within initial lead of 50 mtr. including rough dressing and breaking of clods to maximum size 5 cm. to 7 cm. laying in layer not exceeding 0.3 in depth to strengthening both side U/S approx. bund of loose boulder structure.

Base with apron- $1 \times 3.60 \times 1.60 \times 0.30 =$

1.728

Wing wall - $4 \times 0.50 \times 0.30 \times 0.30 =$

0.180

1.908 cum

Rs. 76.00

@ Rs. 3948.00 per 100 cum.

3. Rough stone dry packing up to GL

Base with apron - $1 \times 3.60 \times 1.60 \times 0.30 =$

1.728

Wing wall - $4 \times 0.50 \times 0.30 \times 0.30 =$

0.180

1.908 cum

Above GL

Super structure- $1 \times 1.00 \times \frac{2.60 + 0.50}{2} \times 0.60 =$

0.930

Wing wall - $4 \times 0.50 \times 0.30 \times 0.30 =$

0.180

Side wall-

i. $2 \times \frac{0.3 + 0.9}{2} \times 0.3 =$

0.324

ii. $2 \times 0.3 + \frac{0.9 \times 1.2}{2} \times 0.3 =$

0.432

iii. $2 \times 0.5 \times 0.9 \times 0.3 =$

0.270

iv. $2 \times 1.0 \times 0.3 \times 0.3 =$

0.180

2.316 cum

4.224

Rs. 1,449.00

cum

@ Rs. 343.00 per

cum

G. Total Rs. 1,615.00

(Rupees one thousand six hundred fifteen only)



(N P PRAMANIK)
GENERAL MANAGER
SAIL-BOLANI ORES MINES

ANNEXURE-IV(B)

Detail Estimate of Loose Boulder Structure (S.C.M.)

Span-2 mt. Ht. = 0.6 mt. Slope-U/S:- 1:1.5 D/S slope: 1:2

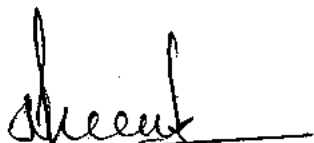
1. Leveling the unshape surface of the selected site & layout the structure foundation L.S. 1 MD. **Rs. 90.00**
2. Excavation of foundation in hard soil within initial lead of 50 mtr. including rough dressing and breaking of clods to maximum size 5 cm. to 7 cm. laying in layer not exceeding 0.3 in depth to strengthening both side U/S approx. bund of loose boulder structure.
- Base with apron- $1 \times 3.70 \times 3.00 \times 0.30 =$ 3.33
Wing wall - $4 \times 0.50 \times 0.50 \times 0.30 =$ 0.30 3.63 cum **Rs. 144.00**
@ Rs. 3948.00 per 100 cum.
3. Rough stone dry packing up to GL
- Base with apron - $1 \times 3.70 \times 3.00 \times 0.30 =$ 3.33
Wing wall - $4 \times 0.50 \times 0.50 \times 0.30 =$ 0.30
Above GL
- Super structure- $1 \times 2.00 \times \frac{2.70 + 0.60}{2} \times 0.60 =$ 1.98
- Wing wall - $4 \times 0.50 \times 0.50 \times 0.50 =$ 0.50
Side wall-
- i. $2 \times \frac{0.50 + 1.10}{2} \times 0.9 \times 0.5 =$ 0.72
- ii. $2 \times \frac{0.5 + 1.10}{2} \times 1.2 \times 0.5 =$ 0.96
- iii. $2 \times 0.6 \times 0.6 \times 0.5 =$ 0.36
- iv. $2 \times 1.0 \times 0.5 \times 0.5 =$ 0.50

8.65 cum @ **Rs. 2,966.00**

Rs. 343.00 per cum

G. Total Rs. 3,200.00

(Rupees three thousand two hundred only)



(N P PRAMANIK)
GENERAL MANAGER
SAIL-BOLANI ORES MINES

ANNEXURE-IV(C)

Detail Estimate of Loose Boulder Structure (S.C.M.)

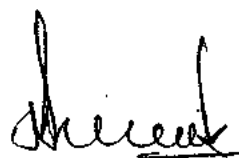
Span-3 mt. Ht. = 1.0mt. Slope-U/S:- 1:1.5 D/S slope: 1:2.0

1. Leveling the unshape surface of the selected site & layout the structure foundation L.S. 1 MD. **Rs. 90.00**
2. Excavation of foundation in hard soil within initial lead of 50 mtr. including rough dressing and breaking of clods to maximum size 5 cm. to 7 cm. laying in layer not exceeding 0.3 in depth to strengthening both side U/S approx. bund of loose boulder structure.
- Base with apron- $1 \times 5.10 \times 4.00 \times 0.30 =$ 6.12
Wing wall - $4 \times 0.50 \times 0.50 \times 0.30 =$ 0.30 6.42 cum **Rs. 254.00**
@ Rs. 3948.00 per 100 cum.

3. Rough stone dry packing up to GL
- Base with apron - $1 \times 5.10 \times 4.00 \times 0.30 =$ 6.12
Wing wall - $4 \times 0.50 \times 0.50 \times 0.30 =$ 0.30
Above GL
- Super structure- $1 \times \frac{4.10 + 0.60}{2} \times 1.00 \times 3.0 =$ 7.05
- Wing wall - $4 \times 0.50 \times 0.50 \times 0.50 =$ 0.50
Side wall-
- i. $2 \times \frac{0.50 + 1.50}{2} \times 1.5 \times 0.5 =$ 1.50
- ii. $2 \times \frac{0.5 + 1.50}{2} \times 2.0 \times 0.5 =$ 2.0
- iii. $2 \times 0.6 \times 1.0 \times 0.5 =$ 0.60
- iv. $2 \times 1.0 \times 0.5 \times 0.5 =$ 0.50
- 18.57 cum @ **Rs. 6.370.00**
Rs. 343.00 per cum

G. Total Rs. 6,714.00

(Rupees six thousand seven hundred fourteen only)


(N P PRAMANIK)
GENERAL MANAGER
SAIL-BOLANI ORES MINES

ANNEXURE-IV(D)

Detail Estimate of Loose Boulder Structure (S.C.M.)

Span-4 mt. Ht. = 1.3mt. Slope-U/S:- 1:1.5 D/S slope: 1:2.0

1. Leveling the unshape surface of the selected site & layout the structure foundation L.S. 1 MD. **Rs. 90.00**

2. Excavation of foundation in hard soil within initial lead of 50 mtr. including rough dressing and breaking of clods to maximum size 5 cm. to 7 cm. laying in layer not exceeding 0.3 in depth to strengthening both side U/S approx. bund of loose boulder structure.

Base with apron- $1 \times 6.15 \times 5.00 \times 0.30 =$ 9.225
Wing wall - $4 \times 0.50 \times 0.50 \times 0.30 =$ 0.30 9.525 cum **Rs. 376.00**
@ Rs. 3948.00 per 100 cum.

3. Rough stone dry packing up to GL

Base with apron - $1 \times 6.15 \times 5.00 \times 0.30 =$ 9.225
Wing wall - $4 \times 0.50 \times 0.50 \times 0.30 =$ 0.30

Above GL

Super structure- $1 \times \frac{5.15 + 0.60}{2} \times 1.30 \times 4.0 =$ 14.95

Wing wall - $4 \times 0.50 \times 0.50 \times 0.50 =$ 0.50

Side wall-

i. $2 \times \frac{0.50 + 1.80}{2} \times 1.95 \times 0.5 =$ 2.24

ii. $2 \times \frac{0.5 + 1.80}{2} \times 2.6 \times 0.5 =$ 2.99

iii. $2 \times 0.6 \times 1.8 \times 0.5 =$

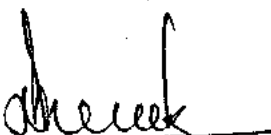
iv. $2 \times 1.0 \times 0.5 \times 0.5 =$

1.08
0.50

31.785 cum @ **Rs. 10904.00**
Rs. 343.00 per cum

G. Total Rs. 11370.00

(Rupees eleven thousand three hundred seventy only)

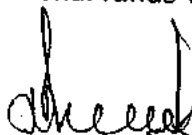

(N P PRAMANIK)
GENERAL MANAGER
SAIL-BOLANI ORES MINES


Annexure

TOTAL COST OF GAP PLANTING, SOIL & MOISTURE CONSERVATION WITHIN 100M IN OUTER PERIMETER OF MINING LEASE OF BOLANI (5.10 SQ MILES ML-1321.45 HA) TO RESTOCK AND REJUVANATE DEGRADED FOREST

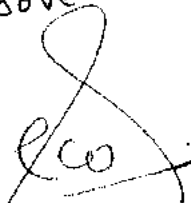
1.	Survey & Demarcation of the area (L/5)	Rs. 2,00,000.00
2.	Cost of Stone wall fencing @ Rs.518/- per rmt	Rs 23,88,498.00
3.	RDF Plantation over 38.11 ha. @ Rs.19,950/- per ha.	Rs. 7,60,294.50
4.	Soil Conservation measures	
	Loose boulder structure 1 mt. size 35nos. @ Rs.1615/-	Rs. 56,525.00
	Loose boulder structure 2 mt. size 20 nos. @ Rs.3200/-	Rs. 64,000.00
	Loose boulder structure 3 mt. size 18 nos. @ Rs.6714/-	Rs.1,20,852.00
	Loose boulder structure 4 mt. size 10 nos. @ Rs.11370/-	Rs. 1,13,700.00
	Total Loose boulder structure	Rs. 3,55,077.00
5.	Special SCM @Rs 17575/- per Ha over 38.11 Ha	Rs 6,69,783.25
6.	Plantation watchers 5 Nos. (5 x 2700 x 12 x 5)	Rs. 8,10,000.00
	Total :-	Rs. 51,83,652.75
	Add 10% escalation	Rs. 5,18,365.27
	Grand Total	Rs. 57,02,018.02 or Rs. 57.02 Lakhs

In case of any increase in the man, material and machinery charges , provision for additional funds will be made as and when required .


(N P PRAMANIK)
GENERAL MANAGER
SAIL-BOLANI ORES MINES


Range Officer
BANGUL RANGE, BARUDA

Technically
Approved.


Regional Chief Conservator of Forests
Rourkela Circle


COUNTERSIGNED


Divisional Forest Officer
Keonjhar Division

**TOTAL CDST OF GAP PLANTING, SOIL & MDISTURE CONSERVATION WITHIN 100M IN
OUTER PERIMETER DF MINING LEASE DF BOLANI (S.10 SQ MILES ML-1321.4S HA)
TO RESTDCK AND REJUVANATE DEGRADED FOREST**

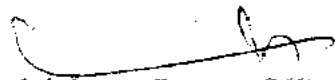
1.	Survey & Demarcation of the area (L/S)	Rs. 2,00,000.00
2.	Cost of Stone wall fencing @ Rs.518/- per rmt	Rs 23,88,498.00
3.	RDF Plantation over 38.11 ha. @ Rs.19,950/- per ha.	Rs. 7,60,294.50
4.	Soil Conservation measures	
	Loose boulder structure 1 mt. size 35nos. @ Rs.1615/-	Rs. 56,525.00
	Loose boulder structure 2 mt. size 20 nos. @ Rs.3200/-	Rs. 64,000.00
	Loose boulder structure 3 mt. size 18 nos. @ Rs.6714/-	Rs.1,20,852.00
	Loose boulder structure 4 mt. size 10 nos. @ Rs.11370/-	Rs. 1,13,700.00
	Total Loose boulder structure	Rs. 3,55,077.00
5.	Special SCM @Rs 17575/- per Ha over 38.11 Ha	Rs 6,69,783.25
6.	Plantation watchers 5 Nos. (5 x 2700 x 12 x 5)	Rs. 8,10,000.00
	Total :-	Rs. 51,83,652.75
	Add 10% escalation	Rs. 5,18,365.27
	Grand Total	Rs. 57,02,018.02 or Rs. 57.02 Lakhs

In case of any increase in the man, material and machinery charges , provision for additional funds will be made as and when required .

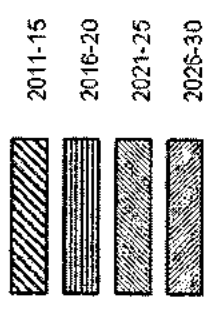

(N P PRAMANIK)
GENERAL MANAGER
SAIL-BOLANI ORES MINES


Forest Range Officer
BARRU RANGE, BARRU

COUNTERSIGNED


Divisional Forest Officer
Keonjhar Division

MAP SHOWING EXISTING & PROPOSED MINING AREAS AND YEAR-WISE AFFORESTATION PLAN INSIDE ML & GAP PLANTATIONS ALONGWITH SMC WORKS WITHIN 100M FROM OUTER PERIMETER OF ML

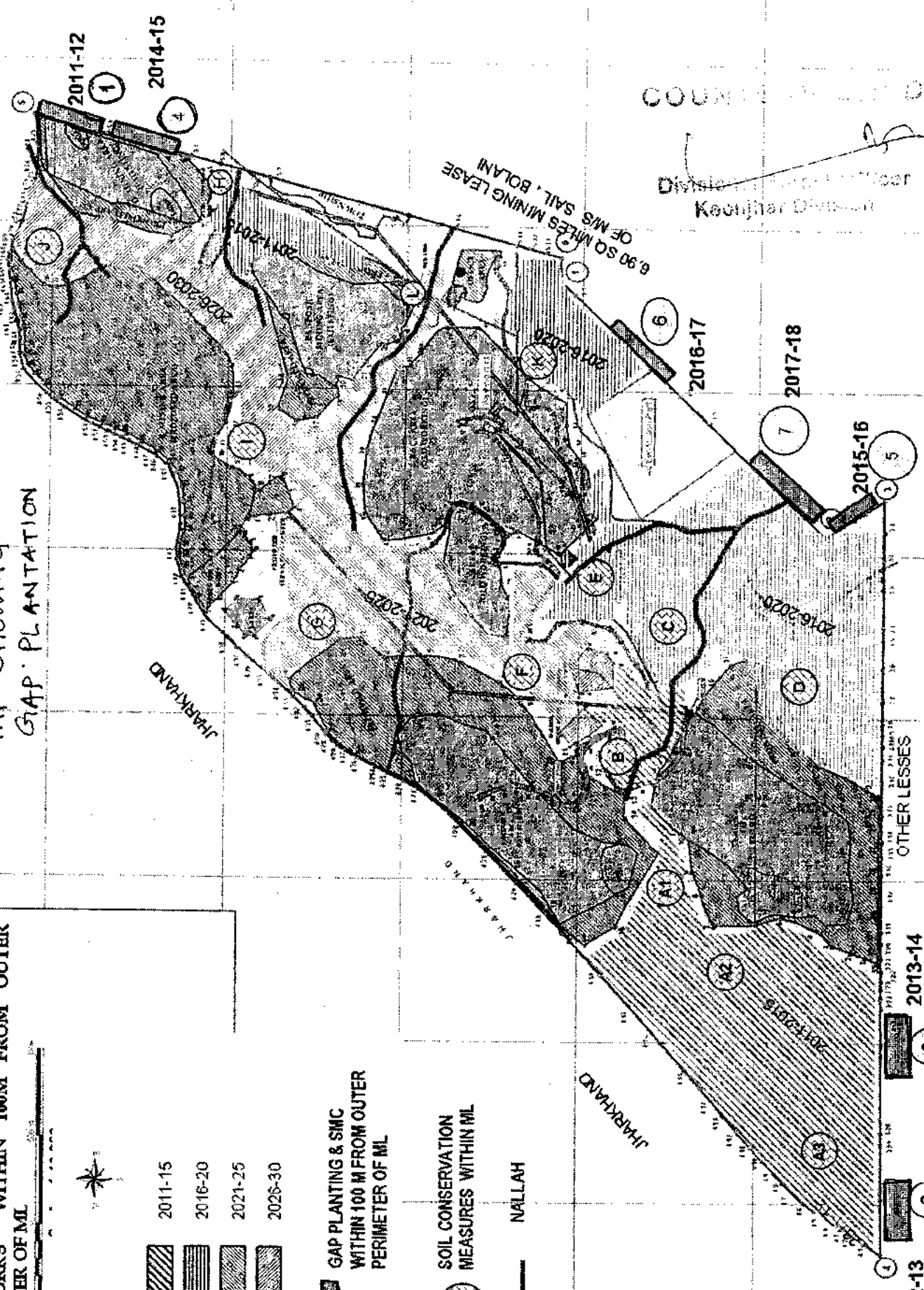


GAP PLANTING & SMC WITHIN 100 M FROM OUTER PERIMETER OF ML

SOIL CONSERVATION MEASURES WITHIN ML

NALLAH

MAP SHOWING GAP PLANTATION



General Manager, Jharkhand
 Jharkhand State
 Jharkhand State
 Jharkhand State

ANNEXURE-II

REVISED FINANCIAL OUTLAY OF PLAN FOR GAP PLANTING, SOIL & MOISTURE CONSERVATION WITHIN 100M IN OUTER PERIMETER OF MINING LEASE OF BOLANI (5.10 SQ MILES ML-1321.45 HA) TO RESTOCK AND REJUVANATE DEGRADED FOREST (WAGE RATE - RS 125/- , 7 year maintenance)

COST ESTIMATE FOR RDF PLANTATION OF 200 SEEDLINGS/HECT.

1.	Type of the Plantation.	RDF Plantation.
2.	No. of seedlings to be planted.	200 Nos. per hectare
3.	Spacing to be adopted.	2.5m x 2.5m
4.	Size of pits.	30cm x 30cm x 30cm
5.	Wage rate.	Rs.125.00 per manday.
6.	Species to be planted.	<i>Sissoo, Neem, Harida, Bahada etc.</i>
7.	The user agency will pay the wage rate as and when enhanced.	

0th year (Advance work) Pre-planting operation.

Sl. No.	Item of work	Mandays per ha.	Labour rate @ Rs.125.00	Material cost.	Total.
1	2	3	4	5	6
1.	Survey, Demarcation & pillar posting.	2	250.00	-	250.00
2.	Site preparation.	2	250.00	-	250.00
3.	Cutting of high stumps.	3	375.00	-	375.00
4.	Alignment and stacking of pits	1	125.00	-	125.00
5.	Pitting (30 cm. cube)	8	1000.00	-	1000.00
6.	Cost of raising 300 seedlings (Part)	14	1000.00	750.00	1750.00
	Sub Total	30	3000.00	750.00	3750.00

1stYear/ Planting

7	Cost of raising 300 seedlings(Balance)	6	750.00	-	750.00
8	Carriage of seedlings to site cleaning including casualty replacement.	6	750.00	-	750.00
9	1 st Weeding	2	250.00	-	250.00
10	2 nd Weeding	2	250.00	-	250.00
11	Soil working	2	250.00	-	250.00
12	Manuring /Insecticide application	1	125.00	-	125.00



13	Fireline tracing and inspection path	2	250.00	-	250.00
14	Cost of insecticides for plantation	3	-	375.00	375.00
15	Cost of chemical fertilizer for plantation 12 Kg. @ Rs. 35/-	6	-	750.00	750.00
16	Silvicultural operation involving clearance of weeds and cutting of climbers, sigling of shoots on each stool etc.	15	1875.00	-	1875.00
17	Soil Conservation	12	1500.00	-	1500.00
18	Watch and ward	5	625.00	-	625.00
19	Contingencies	3	-	-	375.00
	Sub Total	65	6625.00	1125.00	8125.00
2nd Year Maintenance					
20	Casualty replacement with nursery cost	2	250.00	-	250.00
21	Weeding.	2	250.00	-	250.00
22	Soil working and manuring	2	250.00	-	250.00
23	Fireline tracing.	1	125.00	-	125.00
24	Cost of fertilizer	4	-	500.00	500.00
25	Soil Conservation	6	750.00	-	750.00
26	Watch and ward	8	1000.00	-	1000.00
27	Contingencies	2	-	-	250.00
	Sub Total	27	2625.00	500.00	3375.00
3rd Year maintenance					
28	Weeding and pruning	2	250.00	-	250.00
29	Soil working	2	250.00	-	250.00
30	Fire line tracing.	1	125.00	-	125.00
31	Soil Conservation	6	750.00	-	750.00
32	Watch and ward	6	750.00	-	750.00
33	Contingencies	2	-	-	250.00
	Sub Total	19	2125.00	-	2375.00
4th Year maintenance					
34	Weeding and pruning	2	250.00	-	250.00
35	Fire line tracing.(2 mt. wide fire line over 400 mt. long)	1	125.00	-	125.00
36	Watch and ward	6	750.00	-	750.00
37	Contingencies	1	-	-	125.00

	Sub Total	10	1125.00	-	1250.00
5th Year maintenance					
38	Weeding and pruning	2	250.00	-	250.00
39	Fire line tracing.(2 mt. wide	1	125.00	-	125.00
40	Watch and ward	6	750.00	-	750.00
41	Contingencies	1	-	-	125.00
	Sub Total	10	1125.00	-	1250.00
6th Year maintenance					
42	Weeding and pruning	2	250.00	-	250.00
43	Fire line tracing.(2 mt. wide fire line over 400 mt. long)	1	125.00	-	125.00
44	Watch and ward	6	750.00	-2137	750.00
45	Contingencies	1	-	-	125.00
	Sub Total	10	1125.00	-	1250.00
	Grand Total	171	17750.00	2375.00	21375.00

ABSTRACT

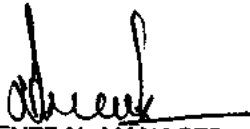
Year	Labour(Rs)	Material(Rs)	Contingencies(Rs)	Total(Rs)
0 th Year	3000.00	750.00	0.00	3750.00
1 st Year	6625.00	1125.00	375.00	8125.00
2 nd Year	2625.00	500.00	250.00	3375.00
3 rd Year	2125.00	0.00	250.00	2375.00
4 th Year	1125.00	0.00	125.00	1250.00
5 th Year	1125.00	0.00	125.00	1250.00
6 th Year	1125.00	0.00	125.00	1250.00
Total	17750.00	2375.00	1250.00	21375.00
Person days Equivalent	142	19	10	171
Additional incentive(3%) for Fr/Fg/ Proposed for more than 80% survival and verygood growth during 4th year of maintenance as per recommendations of DFO and RCCF				1853.00
Additional EPA expenses if implemented through VSS at the rate of Rs 1000/- in 0th year , Rs 2000 in 1st Year, Rs.1500 in 2nd Year, Rs .500/- in 3rd year Rs 500/-in 4th Year Rs.500 In 5th Year and Rs 500 in 6th year				6500.00
Total Norm per Hectare in Non JFM mode with incentives				29,728.00
Total cost for plantation over 38.11 Hectares	Rs. 29,728.00 /- x 38.11 Ha = Rs 11,32,934.08 i.e Rs. 11,32,934.00 (Eleven Lakhs thirty two thousand nine hundred thirty four only)			


GENERAL MANAGER
 SAIL-BOLANI ORES MINES

ANNEXURE – III**DETAILS OF ESTIMATE FOR STONE WALL FENCING PER RMT.**

Sl No.	Particulars	Amount in Rs./Cum
1	Stone other than granite picked up broken & per cum. Stacked 0.03 cum.	180.50
2	Royalty	98.00
3	Transportation up to 5 Km. lead	166.70
	Sub Total	445.20
4	<u>Mason-0.52 @165.00</u>	85.8
5	Semiskilled labour- 0.52 @ 145.00	75.40
6	Unskilled labour-0.52 @125.00	65.00
7	Unskilled female labour – 0.35 @ 125.00	43.75
	Sub- total	269.95
8	Sundries & T.P. etc.	7.16
	Grand Total	722.30

Cost of stone wall fencing for 4611 RMT will be = Rs 722.30 x 4611
= Rs 33,30,525.30



GENERAL MANAGER
SAIL-BOLANI ORES MINES

ANNEXURE- IV (A)**I. Detail Estimate of Loose Boulder Structure (S.C.M.)****Span-1 mt. Ht. = 0.6 mt. Slope-U/S:- 1:1.5 D/S slope: 1:2**

1. Leveling the unshaped surface of the selected site & layout the structure foundation L.S. 1 M0. Rs. 125.00
2. Excavation of foundation in hard soil within initial lead of 50 mtr. including rough dressing and breaking of clods to maximum size 5 cm. to 7 cm. laying in layer not exceeding 0.3 in depth to strengthening both side U/S approx. bund of loose boulder structure.
- Base with apron- $1 \times 3.60 \times 1.60 \times 0.30 =$
- Wing wall - $4 \times 0.50 \times 0.30 \times 0.30 =$ 1.728
- @ Rs. 5556.00 per 100 cum. 0.180 1.908 cum Rs. 106.00
3. Rough stone dry packing up to GL
- Base with apron - $1 \times 3.60 \times 1.60 \times 0.30 =$ 1.728
- Wing wall - $4 \times 0.50 \times 0.30 \times 0.30 =$ 0.180 1.908 cum
- Above GL
- Super structure- $1 \times 1.00 \times \frac{2.60 + 0.50}{2} \times 0.60 =$ 0.930
- Wing wall - $4 \times 0.50 \times 0.30 \times 0.30 =$ 0.180
- Side wall-
- i. $2 \times \frac{0.3+0.9}{2} \times 0.3 =$ 0.324
- ii. $2 \times 0.3 + \frac{0.9 \times 1.2}{2} \times 0.3 =$ 0.432
- iii. $2 \times 0.5 \times 0.9 \times 0.3 =$ 0.270
- iv. $2 \times 1.0 \times 0.3 \times 0.3 =$ 0.180
- @Rs. 476.56 per cum. 2.316 cum
- 4.224 cum**

Rs. 2,013.00**G. Total Rs. 2,244.00****(Rupees Two thousand two hundred forty four) only**

GENERAL MANAGER**SAIL-BOLANI ORES MINES**

ANNEXURE IV (B)

II. Detail Estimate of Loose Boulder Structure (S.C.M.)

Span-2 mt. Ht. = 0.6 mt. Slope-U/S:- 1:1.5 D/S slope: 1:2

1. Leveling the unshaped surface of the selected site & layout the structure foundation L.S. 1 MD. Rs. 125.00

2. Excavation of foundation in hard soil within initial lead of 50 mtr. including rough dressing and breaking of clods to maximum size 5 cm. to 7 cm. laying in layer not exceeding 0.3 in depth to strengthening both side U/S approx. bund of loose boulder structure.

Base with apron- $1 \times 3.70 \times 3.00 \times 0.30 =$ Wing wall - $4 \times 0.50 \times 0.50 \times 0.30 =$

3.33

@ Rs. 5510.00 per 100 cum.

0.30

3.63 cum

Rs. 200.00

3. Rough stone dry packing up to GL

Base with apron - $1 \times 3.70 \times 3.00 \times 0.30 =$

3.33

Wing wall - $4 \times 0.50 \times 0.50 \times 0.30 =$

0.30

Above GL

Super structure- $1 \times 2.00 \times \frac{2.70 + 0.60}{2} \times 0.60 =$

1.98

Wing wall - $4 \times 0.50 \times 0.50 \times 0.50 =$

0.50

Side wall-

i. $2 \times \frac{0.50 + 1.10}{2} \times 0.9 \times 0.5 =$

0.72

ii. $2 \times \frac{0.5 + 1.10}{2} \times 1.2 \times 0.5 =$

0.96

iii. $2 \times 0.6 \times 0.6 \times 0.5 =$

0.36

iv. $2 \times 1.0 \times 0.5 \times 0.5 =$ 0.50

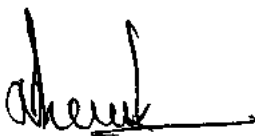
@ Rs. 476.18 per cum

8.65 cum

Rs. 4,119.00

G. Total Rs. 4444.00

(Rupees Four thousand four hundred forty four only)

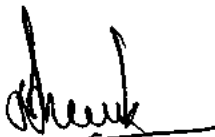


GENERAL MANAGER
SAIL-BOLANI ORES MINES

ANNEXURE- IV(C)**III. Detail Estimate of Loose Boulder Structure (S.C.M.)**

Span-3 mt. Ht. = 1.0mt. Slope-U/S:- 1:1.5 D/S slope: 1:2.0

1. Leveling the unshaped surface of the selected site & layout the structure foundation L.S. 1 M0.			Rs.125.00
2. Excavation of foundation in hard soil within initial lead of 50 mtr. including rough dressing and breaking of clods to maximum size 5 cm. to 7 cm. laying in layer not exceeding 0.3 in depth to strengthening both side U/S approx. bund of loose boulder structure.			
Base with apron- $1 \times 5.10 \times 4.00 \times 0.30 =$	6.12		
Wing wall - $4 \times 0.50 \times 0.50 \times 0.30 =$	0.30	6.42 cum	Rs. 353.00
@ Rs. 5498.00 per 100 cum.			
3. Rough stone dry packing up to GL			
Base with apron - $1 \times 5.10 \times 4.00 \times 0.30 =$	6.12		
Wing wall - $4 \times 0.50 \times 0.50 \times 0.30 =$	0.30		
Above GL			
Super structure- $1 \times \frac{4.10 + 0.60}{2} \times 1.00 \times 3.0 =$	7.05		
Wing wall - $4 \times 0.50 \times 0.50 \times 0.50 =$	0.50		
Side wall-			
i. $2 \times \frac{0.50 + 1.50}{2} \times 1.5 \times 0.5 =$	1.50		
ii. $2 \times \frac{0.5 + 1.50}{2} \times 2.0 \times 0.5 =$	2.00		
iii. $2 \times 0.6 \times 1.0 \times 0.5 =$	0.60		
iv. $2 \times 1.0 \times 0.5 \times 0.5 =$	0.50		
@ Rs. 476.00 per cum			
		18.57 cum	

Rs. 8847.00**G. Total Rs. 9,325.00****(Rupees Nine thousand three hundred twenty five only)**


GENERAL MANAGER
SAIL-BOLANI ORES MINES

ANNEXURE-IV(D)

IV. Detail Estimate of Loose Boulder Structure (S.C.M.)

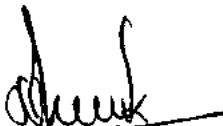
Span-4 mt. Ht. = 1.3mt. Slope-U/S:- 1:1.5 D/S slope: 1:2.0

1. Leveling the unshaped surface of the selected site & layout the structure foundation L.S. 1 M0.				Rs. 125.00
2. Excavation of foundation in hard soil within initial lead of 50 mtr. including rough dressing and breaking of clods to maximum size 5 cm. to 7 cm. laying in layer not exceeding 0.3 in depth to strengthening both side U/S approx. bund of loose boulder structure.				
Base with apron- $1 \times 6.15 \times 5.00 \times 0.30 =$				
Wing wall - $4 \times 0.50 \times 0.50 \times 0.30 =$	9.225			
@ Rs. 5480.00 per 100 cum.	0.30	9.525 cum		Rs. 522.00
3. Rough stone dry packing up to GL				
Base with apron - $1 \times 6.15 \times 5.00 \times 0.30 =$	9.225			
Wing wall - $4 \times 0.50 \times 0.50 \times 0.30 =$	0.30			
Above GL				
Super structure- $1 \times \frac{5.15 + 0.60}{2} \times 1.30 \times 4.0 =$	14.95			
Wing wall - $4 \times 0.50 \times 0.50 \times 0.50 =$	0.50			
Side wall-				
i. $2 \times \frac{0.50 + 1.80}{2} \times 1.95 \times 0.5 =$	2.24			
ii. $2 \times \frac{0.5 + 1.80}{2} \times 2.6 \times 0.5 =$	2.99			
iii. $2 \times 0.6 \times 1.8 \times 0.5 =$	1.08			
iv. $2 \times 1.0 \times 0.5 \times 0.5 =$	0.50			
@ Rs. 476.45 per cum				
		31.785 cum		

Rs. 15144.00

Rs. 15,791.00

(Rupees Fifteen thousand seven hundred ninety one only)



GENERAL MANAGER
SAIL-BOLANI ORES MINES

ANNEXURE-V**Estimate for digging one no of staggered trench of size 2Mtr x 0.5 Mtr x 0.5 Mtr along with Agave Plant on the dugout soil**

1. Earth work in excavation of staggered trench in hard soil including Rough dressing and leveling the beds and heaping the dugout soil at the downhill side of the trench and leveling the same too.

Size of the trench = 2.0 Mtr x 0.5 Mtr x 0.5 Mtr = 0.5 Cum

@246.80 per 2.83 Cum

Rs 43.00

2. Cost of Agava Planting on the dugout soil and it's maintenance including weeding, soil working, manuring, cost of fertilizer etc. for seven years

03 nos Agave plants per trench

@ Rs 18.00 per plant on LS

Rs 54.00

TOTAL :-

Rs 97.00

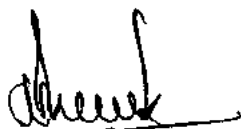
(Rupees Ninety seven) only

Cost of 250 nos of staggered trenches covering one Ha

= 250 x 97

= Rs 24,250.00

Cost of digging staggered trenches over an area of 38.11 ha, as per revised wage of Rs 125/- rate, will be Rs 24,250/- x 38.11 Ha = **Rs 9,24,167.50/-**



GENERAL MANAGER

SAIL-BOLANI ORES MINES

ANNEXURE - VI

REVISED FINANCIAL OUTLAY OF PLAN FOR GAP PLANTING, SOIL & MOISTURE CONSERVATION WITHIN 100M IN OUTER PERIMETER OF MINING LEASE OF BOLANI (5.10 SQ MILES ML-1321.45 HA) TO RESTOCK AND REJUVANATE DEGRADED FOREST (WAGE RATE - RS 125/- , 7 year maintenance)

TOTAL COST OF PROJECT

1.	Survey & Demarcation of the area (L/5)	Rs. 2,70,000.00
2.	Cost of Stone wall fencing	Rs 33,30,525.30
3.	Cost of RDF Plantation	Rs. 11,32,934.00
4.	Soil Conservation measures	
	Loose boulder Check dams 1 mt. size 35 nos. @ Rs.2244/-	Rs 78,540.00
	Loose boulder Check dams 2 mt. size 20 nos. @ Rs.4444/-	Rs 88,880.00
	Loose boulder Check dams 3 mt. size 18 nos. @ Rs.9325/-	Rs 167,850.00
	Loose boulder Check dams 4 mt. size 10 nos. @ Rs.15791/-	Rs 157,910.00
	Total Loose boulder structure	Rs 4,93,180.00
5.	Special 5CM @Rs 24,250/- per Ha over 38.11 Ha	Rs 9,24,167.50
6.	Plantation watchers S Nos. (7 x 3750 x 12 x 5)	Rs. 15,75,000.00
	Total :-	Rs 77,25,806.80
	Add 10% escalation	Rs 7,72,580.68
	Sub Total	Rs 84,98,387.48
	Add 10 % for motivation of V55	Rs 8,49,838.75
	Grand Total	Rs 93,48,226.228 = Rs 93,48,227.000

In case of any increase in the man, material and machinery charges, provision for additional funds will be made as and when required .


GENERAL MANAGER
 SAIL-BOLANI ORES MINES

Technically Approved

Technically
Approved

Regional Chief Conservator of Forests
Rourkela

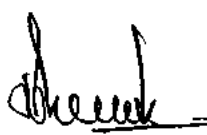
Regional Chief Conservator of Forests
Rourkela Circle, Rourkela

29.08.2012

REQUIREMENT OF FUNDS (After revision of Wage Rate to Rs 125/-)

The total cost of the implementation of proposed scheme for Gap plantation and soil moisture conservation within the 100m from outer periphery of ML boundary will be **Rs 93.48 lakhs** as detailed in **Annexure** . For implementation of the above scheme, the above expenditure will be made over the next seven years period . Therefore, budget provision of Rs. 93.48 lakhs will be kept by the user agency for implementation of the above regeneration measures a period of next seven years. This budget will subject to increase in amount considering the increase in materials and labour charges. The tentative annual expenditure planned for the next seven years for the implementation of the scheme is given in the following table :

Sl. No.	Description	Amount
1.	1 st year plan of expenditure	Rs 10.00 Lakhs
2.	2 nd year plan of expenditure	Rs 20.00 Lakhs
3.	3 rd year plan of expenditure	Rs 20.00 Lakhs
4.	4 th year plan of expenditure	Rs 10.00 Lakhs
5.	5 th year plan of expenditure	Rs 10.00 Lakhs
6.	6 th year plan of expenditure	Rs 10.00 Lakhs
7.	7 th year plan of expenditure	Rs 13.48 Lakhs
	Total:-	Rs 93.48 Lakhs


GENERAL MANAGER
SAIL-BOLANI ORES MINES

Technically Approved

Technically
Approved

Regional Chief Conservator of Forests
Rourkela

Regional Chief Conservator of Forests
Rourkela Circle, Rourkela

29.08.2012

Annexure-XV

Scheme

(H)

For

De-silting of Village Ponds

**Located within 5 Kms radius
of 5.10 sq miles ML of M/S SAIL - Bolani Iron Ore Mines
(1321.45 Hectares ML)**

**in compliance
of**

Condition no - XII of Stage-I Forest Clearance grant Order

**Vide Letter No.8-17/1997-FC(pt.) Dated.12.11.2010
of Govt. of India, Ministry of Environment & Forests, New Delhi**

for

**Diversion of 1152.58 Hects Forest land
within 5.10 sq Miles ML of
Bolani Iron Ore Mine of M/s SAIL,
in Champua Subdivision of Keonjhar District**

Scheme for De-silting of Village Ponds located within 5 Kms radius of M/S SAIL - Bolani Iron Ore Mines (1321.45 Hectares ML)

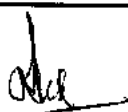
1. INTRODUCTION

Bolani Iron Ore Mine of M/s Steel Authority of India Ltd. is an ongoing Mining Project over an area of 1321.45Ha (5.10 sq miles) and the current mining lease period was valid upto 10.04.2010. The total ML area involved 1181.66 Ha inside Karo Reserve Forest and 44.12 Ha of revenue/khesra forest in it. The total forest area broken prior to 25.10.1980 is 316.70 Ha. In the 1st RML period, as per the Stage-II clearance of MoEF vide letter no 8-17/97-FC dt.19.02.1998, Bolani Iron Ore Mine was allowed for diversion of total 1050.15 Ha forest land, with mining over 316.70Ha broken up land , 170.50Ha of virgin forest land and 562.95 Ha of forest land to be protected as such , excluding 175.63 Ha of Safety Zone in the 1st RML period . The Second RML application has been filed on 26.03.2009 and the lease is in deemed renewal . For the second renewal of the above said ML area , Bolani Iron Ore Mine has filed diversion proposal for total forest land inside lease i.e 1152.58 ha. (8broken up forest land 392.80 ha. and Virgin forest land 759.78 ha.) excluding 73.2 Ha as safety zone. Stage-I forest clearance has been obtained vide Letter No.8-17/1997-FC(pt.) dated. 12.11.2010 from Govt. of India, Ministry of Environment & Forests, New Delhi for the above said Diversion of 1152.58 ha. of Forest land subject to compliance of the conditions stipulated therein. Working permission was obtained from Govt. of India, Ministry of Environment & Forests, New Delhi vide No. 8-17/1997-FC(pt.) dated 04-04-2011 with validity up to 11-11-2011 and subsequently vide Letter No. 8-17/1997-FC(pt.) dated 09.11.2011 with validity up to 11-02-2012.

While granting Stage-I approval , the Ministry of Environment and Forest, Govt. of India has stipulated the following condition in **Condition no-xii** : "**The User Agency shall take up the de-silting of the village tanks and other water bodies located within five km from the mine lease boundary**".

2. LOCATION

Bolani 5.1 sq. miles mining leasehold area is located in villages of Bolani, Balagoda and Karo Reserve Forest (R.F) in Sarbil Tehsil of Champua sub division of Keonjhar district in Orissa. The mine falls under Survey of India topo sheet no. 73 F/8 and is located between 22°05'N - 22°08'N and 85°17'E - 85°20'E. The leasehold area is flanked by the Kiriburu-Meghahatuburu mines of SAIL on western side, the common boundary being defined by



the Interstate boundary of Jharkhand and Orissa. On the eastern side the leasehold shares common boundary with other lease (6.9 sq. miles lease) of M/s SAIL .

3. TOPOGRAPHY

The leasehold area consists of high hills in the western side and valley area in the eastern side . The area lies on the slope of an escarpment running in the SW-NE direction. Elevation of the lease area ranges from 920 m AMSL to 500 m AMSL. Inside the lease there are few peaks the highest of which are at 920 m AMSL near the western boundary and 870 m AMSL near the southern boundary of the lease. The western boundary of the lease is marked by a ridge line. The north western half of the study area is covered with forests.

4. SOIL TYPE

Soil type in the study area varies widely from hard rocks to sandy loam . Areas at higher elevations are usually hard rock consisting of Banded Hematite Quartzite (BHQ) and Banded Hematite Jasper . The top soil in the area is scanty. Whatever top soil is available is rocky in nature . The pH of the soil is slightly acidic in nature . Low hills and hill slopes are extensively lateritized and consist of lateritic profile of 10 to 12m . The laterites area rich in Iron and are very often pisolitic in nature. Bushy vegetation are observed on this soil type. At some places, the lateritic horizons are observed to have a thin soil cover of about 10 to 15 cm on them. The lower elevations are dominantly sandy loam facilitating agriculture and growth of general type of vegetation.

5. CLIMATE

The study area lies in tropical region where climate is characterised by very hot summers and cool winters. Summer is typically from March to June when monthly temperature ranges from a maximum of 42°C during daytime to a minimum of 15°C at night. Winter is from November to February when the maximum temperature during day goes up to 33°C and minimum temperature at night becomes as low as 8°C. The average annual rainfall as recorded at IMD observatory at Keonjhar is 1269.1 mm, 80% of it during the Southwest monsoon .

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6. DRAINAGE

At the eastern side of the lease area, there is a valley, drained by Karo river flowing from SW to NE. The lease area is drained by a number of seasonal drainage channels flowing from SW to NE viz. Chapua nala, Jhikaria nala, Panposh nala, Balagoda nala & Limture to join the Karo River. The Karo river (flowing from SW to NE) is the principal drainage channel of the study area. The study area has a dendritic drainage pattern due to hilly terrain and the area forms part of Karo nadi sub-basin which is perennial by nature. The sub water shed where the project falls is drained mainly by Karo river. Karo river lies at a distance of 1.0 km from the ML boundary .

7. FACTORS FOR SILTATION

Siltation is an inherent problem with ponds, lakes and almost all types of water reservoirs world over. Siltation occurs due to deposition or settling of soil eroded from the shore line, decaying fallen leaves, grass and other vegetative materials and decomposed organic materials settled on pond bottoms. Soil erosion may be attributed as the primary factor responsible for pond siltation in this area. Higher gradient and excess rainfall are the most common reasons of soil erosion. Erosion of Soil occurs from the waste dumps, excavated areas and naturally denuded ground surface. However, looking into the current problem of siltation of the village ponds, the major factor is the erosion of the pond embankments along with air borne dust and decomposition of In-situ aquatic weeds like water hyacinth and other air borne vegetative materials falling into the pond. Air borne sand and dust along with other vegetative materials falling on the pond also add to the process of siltation. As the age of the ponds increase, new layers of silt accumulate on the older ones and the silt layers become thicker. Finally the depth of the pond decreases and it loses its water storage capacity. At this time it needs to be desilted to recover. The best practice against siltation is to desilt the pond bottom at regular intervals as well as taking adequate preventive measures.

8. SELECTION OF PONDS

Information was collected from the village panchayats of Balagoda and Bolani for the location of the village ponds also. The Block Development Officer, Joda was approached to provide insight in to the existing ponds needing de-silting and improvement . The copy of



the communications are enclosed in the **Annexure-I**. A list showing 12 nos village tanks/ponds around the 5.10 SQ miles Mining Lease (1321.45 Ha) area was obtained from the Block Development Officer, Joda for our further survey .

Village Pond (as per map)	Name of the village Pond	Name of the village	Location		Area (in sq m)	Perimeter (in m)
			Latitude	Longitude		
A	Shankajhar Tank	Kolhabarapada	85° 20' 40.7"	22° 03' 39.4"	2000	180
B	Kolhabarapada tank	Kolhabarapada	85° 21' 24.5"	22° 05' 23.0"	1600	160
C	Balagoda Tank	Balagoda	85° 20' 26.7"	22° 06' 34.8"	2000	180
D	Nimtur, WHS	Nimtur	85° 21' 11.3"	22° 07' 23.3"	1520	156
E	Bolani tank	Bolani	85° 19' 40.5"	22° 05' 36.9"	2115	184
F	Dumurta Tank	Bolani	85° 20' 05.7"	22° 04' 38.4"	1000	140
G	Kanarda Tank	Kanarda	85° 18' 57.1"	22° 03' 22.6"	2000	180
H	Lasarda Tank	Lasarda	85° 19' 30.2"	22° 03' 09.5"	2400	200
I	Gamlei Chosebandh	Gamlei	85° 19' 38.3"	22° 02' 22.3"	1400	156
J	Harmath Chosebandh	Harmath	85° 17' 18.3"	22° 03' 32.6"	800	120
K	Haramath Tank	Haramath	85° 17' 19.6"	22° 03' 34.2"	1800	180

For the purpose selecting de-silting of ponds, as per the condition, a GPS survey of the above ponds within the buffer area 5 Kms radius from the boundary of the 5.10 sq miles Mining Lease (1321.45 Ha) was made. The GPS readings were projected on to the digitized topo sheet no 73 F/8 with the help of GIS softwares and locations were plotted on the map . The map is enclosed in **Annexure -III** . As per the GPS survey , 8 nos of village ponds such as B, C, D , E, F, G, J & K come within the buffer area of 5 km radius from ML boundary . Hence, these ponds are selected for undertaking the de-silting jobs. The total combined area of the village ponds is about 12,835 sqm i.e. about 1.3 ha which are to be covered in the scheme. Total length of embankment of the ponds needs to be handled is 1.3 Kms. The location of the village ponds along with sub watershed boundary of the river system is shown in the enclosed map .

POSSIBLE SILTATION OF THE VILLAGE PONDS DUE TO MINING 5.10 SQ MILES ML

The sub water shed where the mining lease falls is drained mainly by Karo River . It is observed that out of the identified village ponds No F & G are not affected much from the storm water carrying any siltation from the lease area as these are located beyond the river Karo. However, siltation in these identified village tanks may occur due to possible

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soil erosion outside of the lease area beyond the sub watershed boundary. Hence de-silting of these village ponds will be considered in subsequent phases.

10. METHODOLOGY

It is proposed to carry out the de-siltation of the identified ponds as above annually, preferably in the dry months of the summer when the ponds shall dry up exposing the silts. The dried silt shall be removed manually or mechanically based on the ground condition. In case of mechanical removal of silts, small excavators such as back-hoe / small hydraulic shovels or pay loader, depending upon the quantity of silt accumulation shall be used. As silt accumulation occurs in the basal area of the tank, the siltation area has been calculated considering 20% reduction in the arial area. For the purpose of evaluation of work required for desiltation, an estimation of siltation in the individual ponds per annum was made, which has been summarized in the following table :

Selected ponds from previous table	Village	Siltation area (in sq m)	Siltation (m3)	
			Annual @0.10m	Past 5 years Accumulation
B	Kolhabarapada tank	1280	128	640
C	Balagoda Tank	1600	160	800
D	Nimtur, WHS	1216	121.6	608
E	Bolani tank	1692	169.2	846
F	Dumurta Tank	800	80	400
G	Kanarda Tank	1600	160	800
J	Harmath Chosebandh	640	64	320
K	Haramath Tank	1440	144	720

As observed in the above table, the accumulation of silt is limited to a maximum of 846m³ quantity and a minimum of 320 m³ in the smallest pond out of the 8 nos. of village ponds identified considering a period of five years. It is proposed to take up the de-siltation work both manually and in mechanized manner.

The work shall comprise of :

- Total desiltation in the five year period.
- Year wise de-siltation for the following four years
- Implementing preventive measures over following four years to minimize re-siltation of the ponds.
- To prevent or slowdown future de-silting, the embankment stabilization by grass turfing, plantation of suitable species and constructing bathing ghat is also included in the de-silting and improvement plan .

a) Five Year Plan :

It is proposed that the ponds having an accumulation of over 1000 m³ shall be desilted by mechanical means and the rest shall be handled manually. It is proposed to deploy one 0.9 m³ back hoe with one 10 tonne tipper for desilting of the pond in a period of two-three days. The machines shall be deployed in a planned manner to complete the work in a shortest time frame.

In case of the smaller ponds where the accumulation of silt is very small, the desiltation operation shall be done manually by engaging a suitable number of manpower.

The ponds shall be allowed to dry up completely during the early summer i.e. during March and April followed with desiltation in the above described manner.

The first year work shall also comprise of the following preventive measures to minimize siltation.

- Providing embankment to the ponds where ever necessary.
- Strengthening the existing pond embankment to check external flow of surface run off in to the pond.
- Regular removal of water hyacinth and other aquatic weeds.
- Seedling of grass on the slopes and top of the embankment to prevent bank erosion.
- Sisal plantation of the embankment to prevent soil erosion
- Plantation of non seeding economic trees like Papaya, Coconut involving the villagers.

b) Subsequent 4 years plan and management:

In the subsequent years, the rate of siltation shall be very less, which can be dealt with manual methods using the local labourers. This will also otherwise help in employment generation, though for a very short period.

c) Preventive Measures & Maintenance:

It is essential to take up preventive measures in order to minimize resiltation of the ponds. Activities like pond bank strengthening and stabilization by way of earth work, grass seeding and plantation of appropriate species shall be taken up in the first year followed by their management in successive four years.

INSPECTION AND MONITORING

In all the cases, the work shall be executed by the User Agency with outsourced man and machinery. To facilitate this, the user agency shall establish it's own executing and supervision cells along with required infrastructural facilities. In order to maintain the quality of work, in house supervision through competent personnel shall be provided. The entire work shall be carried out through close coordination with the Forest Department.

CONCLUSION

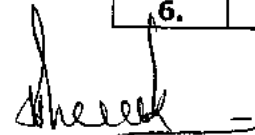
Ponds are very small closed water bodies which are prone to siltation because of the settling of suspended soil particles brought in along with the surface run off during the rainy season. Wind blown dust in the dry season and decomposition of aquatic weeds like water hyacinth also result in siltation. This scheme is prepared to desilt the existing 12 nos. of ponds within the 5 Kms. buffer zone of 5.10 sq miles ML of Bolani Ores Mines and implement appropriate measures in order to prevent/ minimize siltation in the future years. The year wise plan of expenditure is enclosed herewith vide Annexure-II.

REQUIREMENT OF FUNDS

The estimate for the de-silting and improvement of the village tanks has been provided by the Block development officer Joda which is enclosed in **Annexure-I**. On the basis of same, the total improvement cost of the selected village tanks has been estimated to be **Rs 55.0 Lakhs**. For implementation of the above programme of desiltation and improvement of the village ponds, it has been estimated to make an expenditure of Rs. **Rs 55.0 Lakhs** over the next five years period. Therefore, it is proposed to keep a budget on the above proposal for Rs **Rs 55.0 Lakhs** for a period of next five years. This budget will subject to increase in amount considering the increase in hire charges of the machine and increase in the labour charges. The tentative expenditure planned for the next five year for the desiltation of village ponds is given in the following table :

Sl. .	Description	Amount
1.	1 st year plan of expenditure	Rs.15.00 lakhs
2.	2 nd year plan of expenditure	Rs.10.00 lakhs
3.	3 rd year plan of expenditure	Rs.10.00 lakhs
4.	4 th year plan of expenditure	Rs.10.00 lakhs
5.	5 th year plan of expenditure	Rs.10.00 lakhs
6.	Total:-	Rs.55.00 lakhs

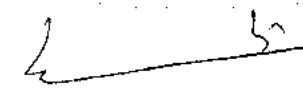
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Approved


(N P PRAMANIK)
GENERAL MANAGER
SAIL-BOLANI ORES MINE


Forest Range Officer
BARBIL RANGE, BARBIL

Regional Chief Conservator of Forest
Rourkela Circle

COUNTERSIGNED


Divisional Forest Officer
Keonjhar Division

INSPECTION AND MONITORING

In all the cases, the work shall be executed by the User Agency with outsourced man and machinery. To facilitate this, the user agency shall establish it's own executing and supervision cells along with required infrastructural facilities. In order to maintain the quality of work, in house supervision through competent personnel shall be provided. The entire work shall be carried out through close coordination with the Forest Department.


CONCLUSION

Ponds are very small closed water bodies which are prone to siltation because of the settling of suspended soil particles brought in along with the surface run off during the rainy season. Wind blown dust in the dry season and decomposition of aquatic weeds like water hyacinth also result in siltation. This scheme is prepared to desilt the existing 8 nos. of ponds within the 5 Kms. buffer zone of 5.10 sq miles ML of Bolani Ores Mines and implement appropriate measures in order to prevent/ minimize siltation in the future years. The year wise plan of expenditure is enclosed herewith vide Annexure-I. The cost of Agave Plantation is given at Annexure-II.

REQUIREMENT OF FUNDS


The estimate for the de-silting and improvement of the village tanks has been provided by the Block development officer Joda which is enclosed in **Annexure I**. On the basis of same, the total improvement cost of the selected village tanks has been estimated to be **Rs 55.0 Lakhs**. For implementation of the above programme of desiltation and improvement of the village ponds, it has been estimated to make an expenditure of Rs. **Rs 55.0 Lakhs** over the next five years period. Therefore, it is proposed to keep a budget on the above proposal for Rs **Rs 55.0 Lakhs** for a period of next five years. This budget will subject to increase in amount considering the increase In hire charges of the machine and increase In the labour charges. The tentative expenditure planned for the next five year for the desiltation of village ponds is given in the following table :

Sl. .	Description	Amount
1.	1 st year plan of expenditure	Rs.15.00 lakhs
2.	2 nd year plan of expenditure	Rs.10.00 lakhs
3.	3 rd year plan of expenditure	Rs.10.00 lakhs
4.	4 th year plan of expenditure	Rs.10.00 lakhs
5.	5 th year plan of expenditure	Rs.10.00 lakhs
6.	Total:-	Rs.55.00 lakhs


(N P PRAMANIK)
GENERAL MANAGER
SAIL-BOLANI ORES MINE


Forest Officer
DHANU BANGE BANNA

COUNTERSIGNED


Divisional Forest Officer
Keonjhar Division

ANNEXURE -I

For n.w.p.

OFFICE OF THE PANCHAYAT SAMITI, JODA.

No 2347

Date 29/9/11

DGM (Geo)

29/9/11

Sr. Manager

To

The General Manager Bolani Ores Mines SAIL(RMD)

Sub: - Submission of the Project list.

Sir,

With ref. to your letter No. 2608 Dtd 26/08/11 I am to submit herewith the list of desilted tanks within 5K.M under Bolani & Balagoda G.P. for taking further action at your end. The job may be taken up after the rains.

Yours faithfully,

Block Development Officer
Joda
Dist- Keonjhar

Balagoda G.P.
Project list

<u>Sl.No.</u>	<u>Name of the Project</u>	<u>Village</u>	<u>Ested. Cost</u>	<u>Remarks</u>
1.	Improvement of Sankhajhar Tank	Kolhabarpada	5,00,000/-	Within 5 kms
2.	Improvement of Kolhabarpada MIP	Kolhabarpada	20,00,000/-	-do-
3.	Improvement of Kolhabarpada Tank	Kolhabarpada	5,00,000/-	_____
4.	Improvement of Balagoda Tank	Balagoda	5,00,000/-	_____
5.	Improvement of Nimtur ,WHS	Nimtur	10,00,000/-	_____

Bolani G.P.
Project list

<u>Sl.No.</u>	<u>Name of the Project</u>	<u>Village</u>	<u>Ested. Cost</u>	<u>Remarks</u>
1.	Improvement of Bolani Tank.	Bolani	5,00,000/-	Within 5 kms
2.	Improvement of Dumurta Tank.	Bolani	5,00,000/-	-do-
3.	Improvement of Kanarda Tank.	Kanarda	5,00,000/-	-do-
4.	Improvement of Lasarda Tank	Lasarda	5,00,000/-	_____
5.	Improvement of Gamlei chasebanha	Gamlei	10,00,000/-	_____
6.	Improvement of Harmath Chosebandh	Harmath	10,00,000/-	_____
7.	Improvement of Harmath Tank	Harmath	5,00,000/-	_____


Block Development Officer
Joda
Dist- Keonjhar


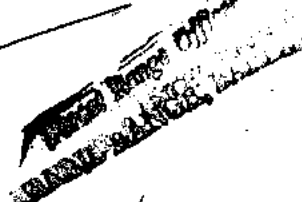
ANNEXURE-II

**COST ESTIMATE FOR DE-SILTING OF VILLAGE PONDS
BASED ON ESTIMATE OF BLOCK DEVELOPMENT OFFICER, JODA
FOR DE-SILTING AND IMPROVEMENT OF THE TANKS**


Ponds	Village	Estimated cost provided by BDO Joda (Rs)
B	Kolhabarapada tank	Rs 5,00,000.00
C	Balagoda Tank	Rs 5,00,000.00
O	Nimtur, WHS	Rs 10,00,000.00
E	Bolani tank	Rs 5,00,000.00
F	Dumurta Tank	Rs 5,00,000.00
G	Kanarda Tank	Rs 5,00,000.00
J	Harmath Chosebandh	Rs 10,00,000.00
K	Haramath Tank	Rs 5,00,000.00
	TOTAL DE-SILTING COST	Rs 50,00, 000.00
	10% escalation	Rs 5,00,000.00
	GRAND TOTAL	Rs 55,00, 000.00

In case of any increase in the man, material and machinery charges, provision for additional funds will be made as and when required .



(N P PRAMANIK)
GENERAL MANAGER
SAIL-BOLANI ORES MINE

Technically
Approved


Regional Chief Conservator of Forests
Rourkela Circle

COUNTERSIGNED



Divisional Forest Officer
Keonjhar Division


ANNEXURE-II

**COST ESTIMATE FOR DE-SILTING OF VILLAGE PONDS
BASED ON ESTIMATE OF BLOCK DEVELOPMENT OFFICER, JODA
FDR DE-SILTING AND IMPROVEMENT OF THE TANKS**

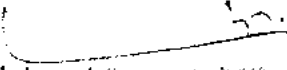
Ponds	Village	Estimated cost provided by BDO Joda (Rs)
B	Kolhabarapada tank	Rs 5,00,000.00
C	Balagoda Tank	Rs 5,00,000.00
D	Nimtur, WHS	Rs 10,00,000.00
E	Bolani tank	Rs 5,00,000.00
F	Dumurta Tank	Rs 5,00,000.00
G	Kanarda Tank	Rs 5,00,000.00
J	Harmath Chosebandh	Rs 10,00,000.00
K	Haramath Tank	Rs 5,00,000.00
	TOTAL DE-SILTING COST	Rs 50,00, 000.00
	10% escalation	Rs 5,00,000.00
	GRAND TOTAL	Rs 55,00, 000.00

In case of any increase in the man, material and machinery charges, provision for additional funds will be made as and when required .


(N P PRAMANIK)
GENERAL MANAGER
SAIL-BOLANI ORES MINE


Forest Range Officer
BARRA RANGE, BARRA

COUNTERSIGNED


Divisional Forest Officer
Keonjhar Division

बिहार, उड़ीसा BIHAR, ORISSA

OF SOLEST LAND FOR
RENEWAL OF 5.10 SQ MILES
MINING LEASE (Showing adjoining
Lease areas)

Scale: 1 : 50,000

FIGURE EDITION

Revised Version from Top Sheet across 1 year in 1975.
(Drawing by sheet-000000)

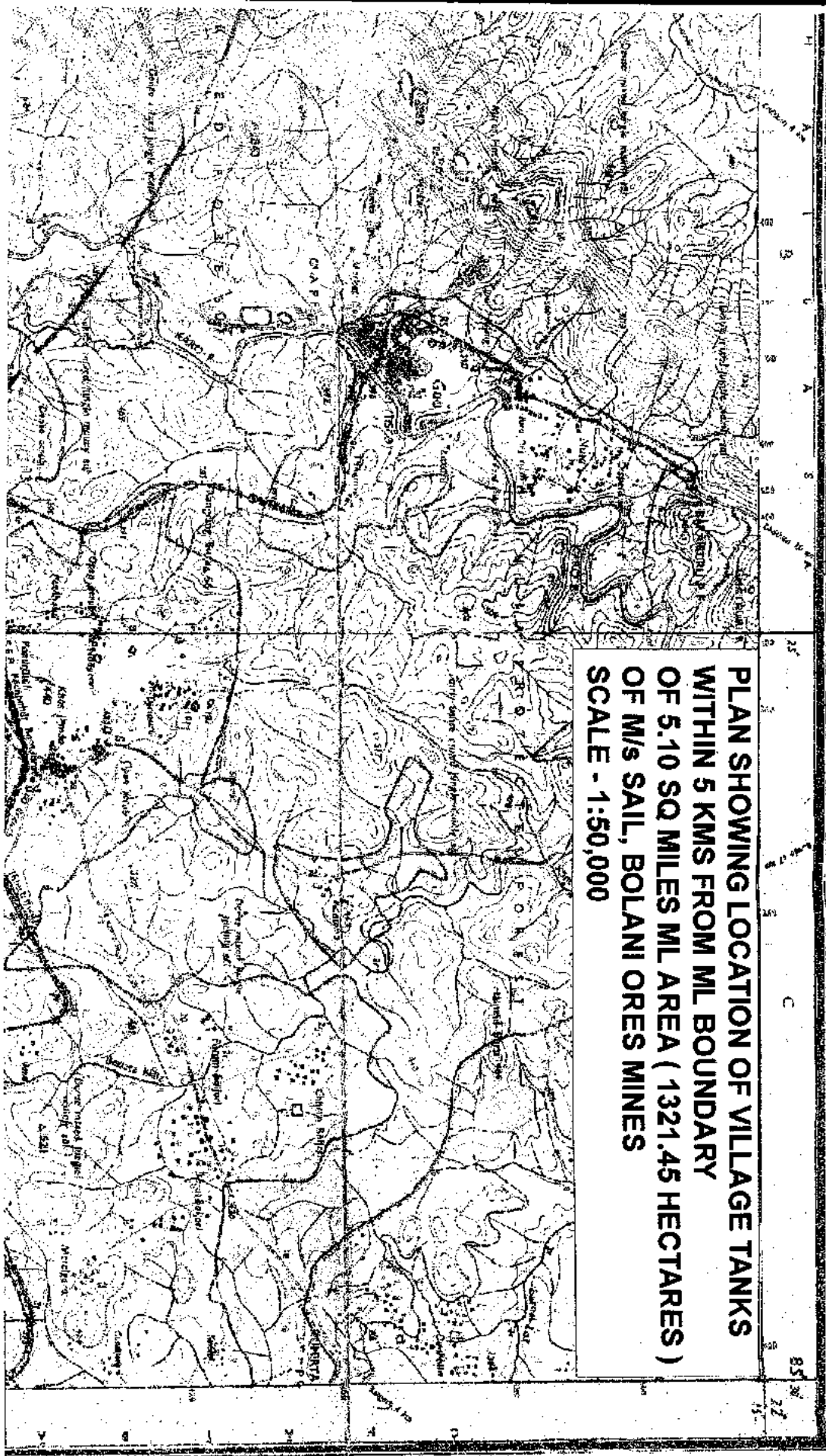
MRG

INDIA

REFER TO THIS MAP AS : 1:50,000
SHEET 73 F/8 FIRST EDITION

NO. 73 F

PLAN SHOWING LOCATION OF VILLAGE TANKS
WITHIN 5 KMS FROM ML BOUNDARY
OF 5.10 SQ MILES ML AREA (1321.45 HECTARES)
OF M/S SAIL, BOLANI ORES MINES
SCALE - 1:50,000



बिहार, उड़ीसा
BIHAR, ORISSA

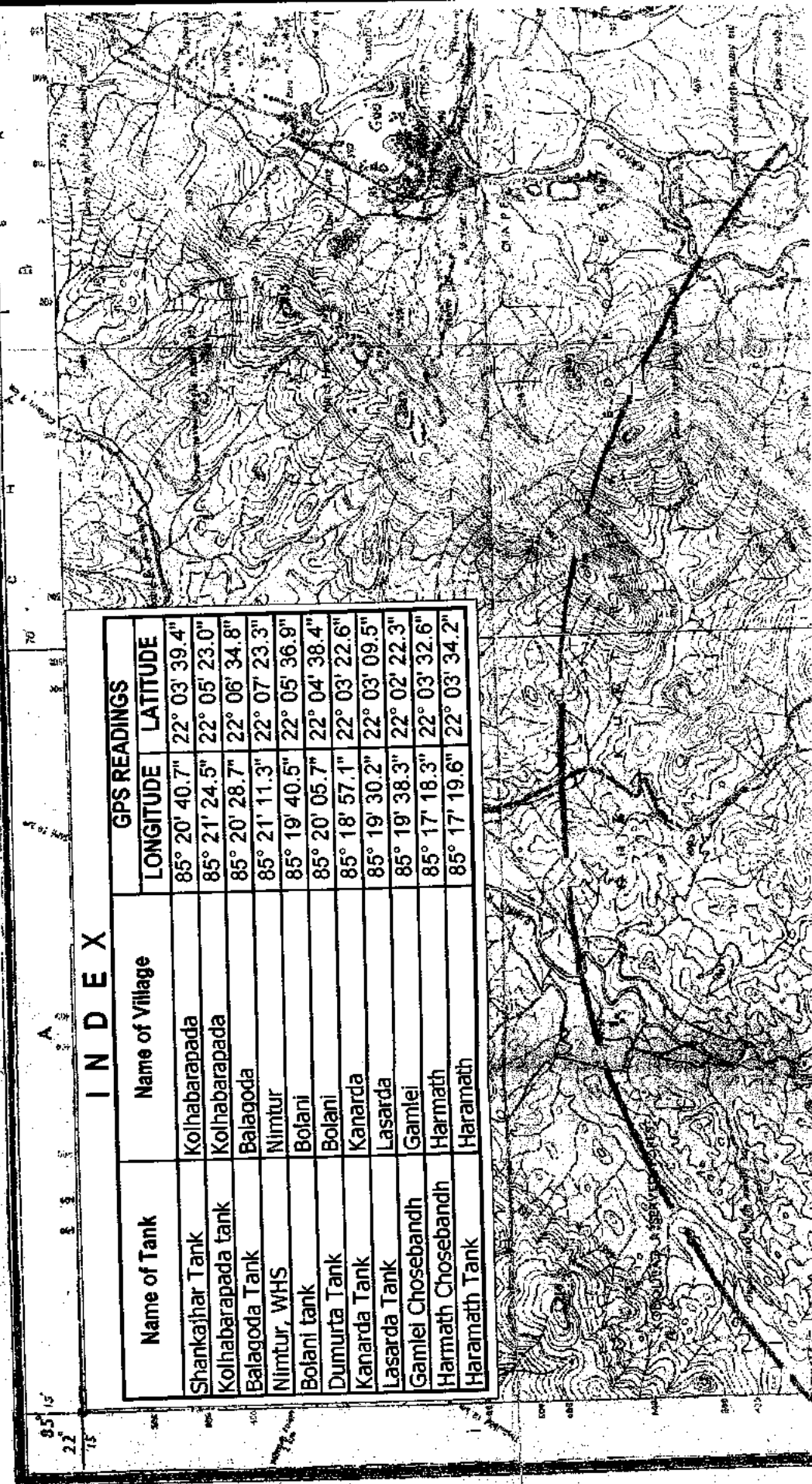
नियंत्रित के लिए नहीं NOT FOR EXPORT

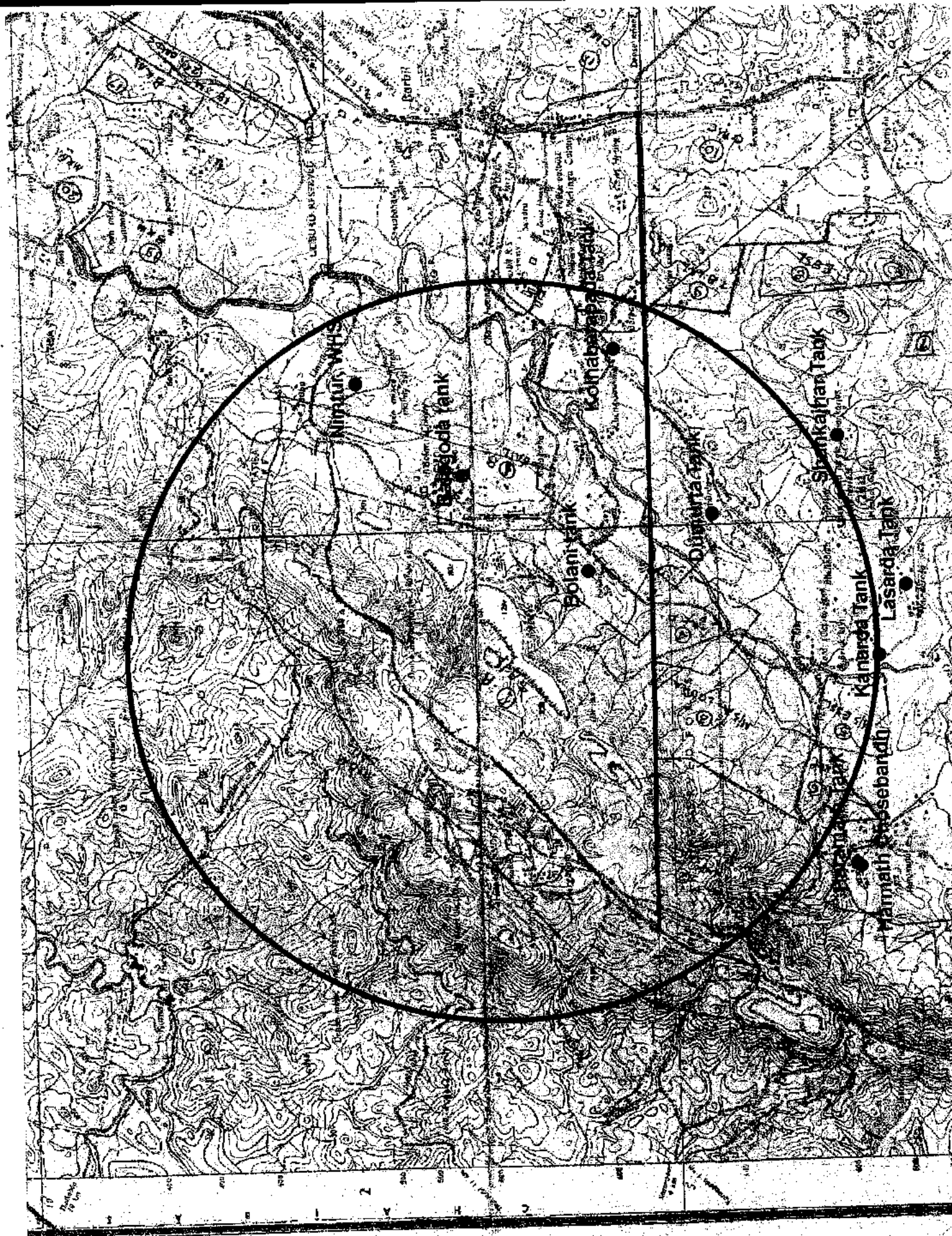
SINGHBHUM DISTRICT.
KENDUJHAR DISTRICT.

Surveyed 1976-77.

I N D E X

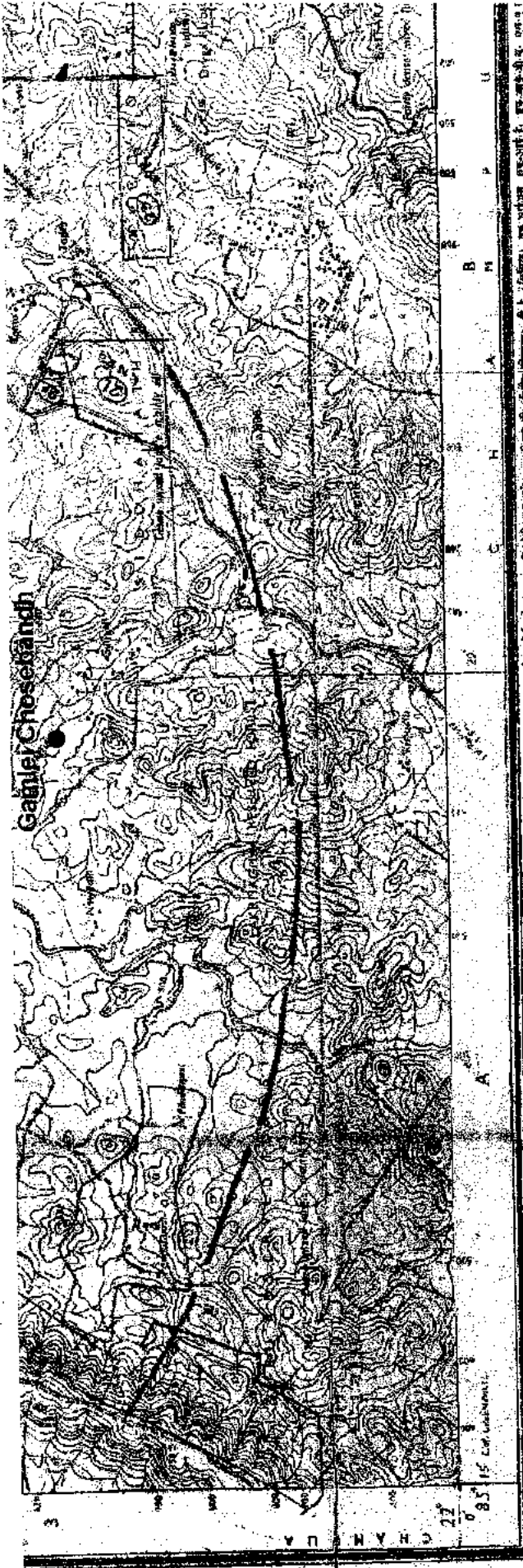
Name of Tank	Name of Village	GPS READINGS	
		LONGITUDE	LATITUDE
Shankajhar Tank	Kolhabarapada	85° 20' 40.7"	22° 03' 39.4"
Kolhabarapada tank	Kolhabarapada	85° 21' 24.5"	22° 05' 23.0"
Balagoda Tank	Balagoda	85° 20' 28.7"	22° 06' 34.8"
Nimtur, WHS	Nimtur	85° 21' 11.3"	22° 07' 23.3"
Bolani tank	Bolani	85° 19' 40.5"	22° 05' 36.9"
Dumurta Tank	Bolani	85° 20' 05.7"	22° 04' 38.4"
Kanarda Tank	Kanarda	85° 18' 57.1"	22° 03' 22.6"
Lasarda Tank	Lasarda	85° 19' 30.2"	22° 03' 09.5"
Gamlai Chosebandh	Gamlai	85° 19' 38.3"	22° 02' 22.3"
Harmath Chosebandh	Harmath	85° 17' 18.3"	22° 03' 32.6"
Haramath Tank	Haramath	85° 17' 19.6"	22° 03' 34.2"







Ganley Chosenangh



1:50,000
SHEET 73 F/A FIRST EDITION
INDIA
Ganley Chosenangh
Survey of India

1:50,000
SHEET 73 F/A FIRST EDITION
INDIA
Ganley Chosenangh
Survey of India

DETAILS OF ADJOINING LEASE

LEASE NO IN MAP	LESSEE	AREA in Ha	MINERAL	VILLAGE
1 A	M/s SAIL	1321.450	Iron	Rolau
1 B	M/s SAIL	1786.740	Iron & Mang.	Bolani & Balayoda
2	M/s NMDC Ltd	1031.081	Iron	Kirbura
3	M/s A.L. Lohia	324.518	Iron	Balaguda
4	M/s K.C. Pradhan	17.100	Iron	Bolani
5	M/s K.C. Pradhan	107.316	Iron & Mang.	Uchuboli
6	M/s K.C. Pradhan	61.015	Iron & Mang.	Hammto
7	M/s K.C. Pradhan	18.770	Iron	Lakraghat
8	M/s K.C. Pradhan	194.196	Iron	Kasia
9	M/s K.C. Pradhan	77.437	Iron	Kasia, Barpada
10	M/s O.M.C.	1794.571	Iron & Mang.	Kasia, Barpada
11	M/s O.M.C.	265.760	Mang.	Dalki
12	M/s B.P.M.E. Ltd	267.760	Mang.	Dalki
13	M/s B.P.M.E. Ltd	1400.873	Iron	Thakurani
14	M/s O.M.C.	1276.865	Iron & Mang.	Thakurani
15	M/s J.R. Pathak	171.363	Iron & Mang.	Thakurani

1:50,000
SHEET 73 F/A FIRST EDITION
INDIA
Ganley Chosenangh
Survey of India

1:50,000
SHEET 73 F/A FIRST EDITION
INDIA
Ganley Chosenangh
Survey of India

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SHEET 73 F/A FIRST EDITION
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Survey of India

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SHEET 73 F/A FIRST EDITION
INDIA
Ganley Chosenangh
Survey of India

Annexure-XVI

ANNEXURE- XVI

**PARAMETERS FOR EVALUATION OF LOSS OF FOREST OVER 87.09 HA.
FOREST AREA REQUIRED FOR DIVERSION FOR NON-FORESTRY USE IN
MINING FOR BOLANI ORE MINES (5.10 SQ. MILES) OF M/S STEEL
AUTHORITY OF INDIA LTD (SAIL) IN KEONJHAR DISTRICT, ODISHA.**

Table- B: Estimation of cost of forest diversion

Sl. No	Parameters	Remarks
1	Eco-system services losses due to proposed forest diversion.	Rs 6,35,75,700/- [Rs.7,30,000/- x 87.09 ha]
2	Loss of animal husbandry productivity, including loss of fodder.	Rs. 63,57,570/- [Rs. 6,35,75,700/- x 10%]
3	Cost of human re-settlement.	Nil
4	Loss of public facilities and administrative infrastructure (roads, building, schools, dispensaries, electric lines, railways, etc.) on forest land, which would require forest land if these facilities were diverted due to the project.	Nil
5	Possession value of forest land diverted	Rs. 1,90,72,710/- [Rs. 6,35,75,700/- x 30%]
6	Cost of suffering to oustees.	Nil
7	Habitat fragmentation cost.	Rs. 3,17,87,850/- [Rs. 6,35,75,700/- x 50%]
8	Compensatory afforestation and soil & moisture conservation cost.	N/A
	Total estimation of cost of forest diversion	Rs. 12,07,93,830/-

Table- C: Existing guidelines for estimating benefits of forest diversion in CBA.

Sl. No	Parameters	Remarks
1	Increase in productively attribute to the specific project.	Rs. 373,68,06,538/-
2	Benefits to economy due to the specific project.	Rs. 24,02,83,711/-
3	No. of population benefited due to the specific project.	Direct- 63 Nos. Indirect- 73 Nos.
4	Economic benefits due to direct and indirect employment due to the project.	Rs. 5,27,23,902/-
5	Economic benefits due to Compensatory afforestation.	Rs.2,51,25,789/-
	Total	Rs. 405,49,39,940/-

CB ratio (calculation is based on available information against the Parameters) \cong 1:33.56


Divisional Forest Officer,
Keonjhar Division.

Annexure-XVII

112

FORM - A

Form for seeking prior approval of Central Government under section 2 of the Forest(Conservation) Act, 1980 for Diversion of forest area

PART - I

(To be filled up by User Agency)

A. General Details

A-
1. Project Details

(i). **Proposal No.** : FP/OR/MIN/17936/2016

(ii). **Name of Project for which Forest Land is required** : 5.10 Sq. Miles ML of Bolani Ores Mines

(iii). **Short narrative of the proposal and Project/scheme for which the forest land is required** : Proposal for diversion of 87.09 ha. Land recorded as forest as on/after 25th October 1980 inside the 1321.45 Ha (5.10 sq miles ML) of M/s SAIL, Bolani Ore Mines in Keonjhar district.

(iv). **State** : Orissa

(v). **Category of the Project** : Mining

(vi). **Shape of forest land proposed to be diverted** : Non Linear

(vii). **Estimated cost of the Project(Rupees in lacs)** : 2402.83711

(viii). **Total Area of Forest Land proposed for diversion(in ha.)**: 87.09

(ix). **Non-Forest Land required for this project(in ha.)**: 8.59

(x). **Total period for which the forest land is proposed to be diverted(in years)**: 20

A-
2. Details of User Agency

(i). **Name** : Raw Materials Division (RMD), Steel Authority of India Limited (SAIL)

(ii). **Address1** : 10 Camac Street, Industry House (4th to 6th floor)

(iii). **Address2** : Kolkata

(iv). **State** : West Bengal

(v). District : Kolkata

(vi). Pin : 700017

(vii). Landmark : NIL

(viii). Email address : bolanifc2016@gmail.com

(ix). Landline Telephone No. : 33-22822316

(x). Fax No. : 33-22825630

(xi). Mobile No. : 8895502478

(xii). Website (if any) : www.sail.co.in

(xiii). Details of Proposals seeking prior approval of Central Government under the Act for diversion of forest land submitted by the User Agency in the past

List of proposal submitted in Past							
S.no	Proposal Status.	Proposal No.	Moef File No.	Area Proposed for Diversion(Ha.)	Area Diverted(Ha.)	Date of In-Principle Approval	Date of Final Approval
NIL							

(xiv). Legal status of User Agency : Central PSU

A- Details of Person Making Application
3.

(i). First Name: Dilip

(ii). Middle Name: NIL

(iii). Last Name: Bhargava

(iv). Gender: Male

(v). Designation: General Manager

(vi). Address 1: Bolani Ores Mines, SAIL-Raw Materials Division, At/Po- Bolani

(vii). Address 2: NIL

(viii). State: Orissa

(ix). District: Keonjhar

(x). Tehsil: Barbil

(xi). Pin: 758037


(xii). Landmark: NIL

(xiii). Email Address: bolanifc2016@gmail.com

(xiv). Landline Telephone No.: 6767-260211

(xv). Fax No.: 06767260172

(xvi). Mobile No.: 8895502478

(xvii). Copy of documents in support of the competence/authority of the person making this application to make application on behalf of the User Agency: 

B. Details of land required for the Project

B- Details of proposal seeking prior approval of Central Government under the Act for
1. diversion of forest land for the Project already submitted in the past

(i). Whether any proposal seeking prior approval of Central Government under the Act for diversion of forest land required for the project has been submitted in the past? : Yes

(ii). Details of proposal seeking prior approval of Central Government under the Act for diversion of forest land for the Project already submitted in the past.

List of proposal submitted in Past							
S.no	Proposal Status	Proposal No.	Moef File No.	Area Proposed for Diversion(Ha.)	Area Diverted(Ha.)	Date of In- Principle Approval	Date of Final Approval
NIL							

B-
2. Details of forest land proposed to be diverted

B-2.1 Details of Divisions involved

Details of Divisions involved			
S.no	Division Name	Forest Land(ha.)	Non-Forest Land(ha.)
1.	Keonjhar	87.09	8.59

B-2.2 Details of Districts involved

District wise breakup			
S.no	District Name	Forest Land(ha.)	Non-Forest Land(ha.)
1.	Keonjhar	87.09	8.59



















B-2.3 Village wise breakup

Villages wise breakup			
S.no	Village	Forest Land(ha.)	Non-Forest Land(ha.)
1	Bolani	62.28	5.1
2	Balagoda	24.81	3.49

B-2.4 Component wise breakup

Component wise breakup			
S.no	Component	Forest Land(ha.)	Non-Forest Land(ha.)
1	Old mining and fines disposal area	23.4	0
2	Storing of minerals/waste	10	0.22
3	Roads, Power/Pipeline & conveyors etc.	2.88	1.02
4	Plants & machineries etc.	30.81	0.42
5	Office & Township	17.46	2.99
6	Unutilised land to be maintained as forest and oth	0.31	3.35
7	Safety Zone	2.23	0.59

C. Maps of forest land proposed to be diverted

Division 1. : Keonjhar																										
<p>(i). Area of forest land proposed to be diverted(in ha.) : 87.09</p> <p>(ii). : Non Linear</p> <p>(a). No. of patches : Six</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th colspan="3">Patch wise details</th></tr> <tr> <th>Patch No.</th><th>Area of Patch(in ha.)</th><th>Kml File of Patches</th></tr> </thead> <tbody> <tr> <td>1.</td><td>0.51</td><td> View File</td></tr> <tr> <td>2.</td><td>61.54</td><td> View File</td></tr> <tr> <td>3.</td><td>15.26</td><td> View File</td></tr> <tr> <td>4.</td><td>0.62</td><td> View File</td></tr> <tr> <td>5.</td><td>3.67</td><td> View File</td></tr> <tr> <td>6.</td><td>4.83</td><td> View File</td></tr> </tbody> </table> <p>(iii). Copy of Survey of India Toposheet indicating boundary of forest</p>			Patch wise details			Patch No.	Area of Patch(in ha.)	Kml File of Patches	1.	0.51	 View File	2.	61.54	 View File	3.	15.26	 View File	4.	0.62	 View File	5.	3.67	 View File	6.	4.83	 View File
Patch wise details																										
Patch No.	Area of Patch(in ha.)	Kml File of Patches																								
1.	0.51	 View File																								
2.	61.54	 View File																								
3.	15.26	 View File																								
4.	0.62	 View File																								
5.	3.67	 View File																								
6.	4.83	 View File																								

land proposed to be diverted:



(iv). Scanned copy of the Geo-referenced map of the forest land
proposed to be diverted prepared by using GPS or Total Station:



D. Justification for locating the Project in forest land and details of alternatives examined:

(i). Copy of note containing justification for locating the Project in forest land:

E. Employment likely to be generated

(i). Whether the Project is likely to generate employment?: No

F. Displacement of People due to the Project, if any

(i). Whether Project involves displacement?: No

G. Details of Cost-Benefit analysis for the Project

(i). Whether the Project requires Cost-Benefit analysis?: No

H. Status of Environmental Clearance

(i). Whether the Project requires Clearance under the Environment (Protection) Act 1986 ?
: Yes

(a). Status of the Environmental Clearance to the Project: EC obtained

(b). Environmental Clearance File No.: J-11015/418/2008-IA.II(M)

(c). Copy of Environmental Clearance to the Project:



(d). Date of grant of Environmental Clearance to the Project: 21 Dec 2012

I. Status of Wildlife Clearance

(i). Whether the Project or a part thereof is located in any Protected Area or their Eco sensitive zone? : No

J. Applicability of special provisions governing Scheduled Areas

(i). Whether the Project or a part thereof is located in a Scheduled Area? : No

K. Status of settlement of rights under the Forest Rights Act, 2006 on the forest land proposed to be diverted

(i). Whether the process for settlement of Rights under the Forest Rights Acts 2006 on the forest land proposed to be diverted has been completed? : No

L. Details of land identified for Compensatory Afforestation

(i). Whether non-forest or Revenue forest land is required to be provided by User Agency?: Not Applicable

(ii). Whether the area of non-forest land or Revenue forest land required to be provided by User Agency for raising Compensatory Afforestation is less than area of forest land proposed to be diverted?: Not Applicable

(iii) . Reason for not providing Non-Forest Land: Not Applicable

M. Mining Details

**M-
1. Details of Mineral Concessions**

(i). Whether the forest land is acquired under Coal Bearing Areas Act: No

(a). Reference number of Letter of Intent for grant of mining lease.(approval letter of the State Mines and Geology Department): Mining lease for 2nd RML was granted & lease deed

(b). Date of issue of the Letter of Intent(LOI) for grant of mining lease: 11 Nov 2014

(c). Copy the Letter of Intent(LOI): 

(d). Total area of the mining lease(in ha.): 1321.45

(e). Area of forest land located in the mining lease(in ha.): 1312.86

**M-
2. Details of Mining Plan**


(i). Date of approval of mining plan: 13 Jan 2010


(ii). Approval authority: Indian Bureau of Mines (IBM)

(iii). Copy of approval of mining plan: 

(iv). Copy of approved mining plan: 

(v). Nature of mining (underground/opencast): Opencast

(vi). Copy of the detailed land use plan in 1:4,000 scale prepared by using GPS or Total Station :  -

(vii). Copy of map of the outer boundary of mining lease area:  [View file](#)

M-
3. Details of prospecting undertaken to assess mineral reserves

(i). Whether detailed prospecting to assess mineral reserve in the lease has been undertaken: No

M-
4. Details of extension (if any) of original prospecting licence issued in the past

(i). Whether detailed prospecting to assess mineral reserve in the lease has been undertaken: No

M-
5. Brief details of prospecting activities undertaken in the mining lease :

(i). Detail of prospecting activity under taken in the mining lease: The applied area for diversion does not contain any mineral.

M-5.1 Details of bore holes drilled for prospecting :

Bore holes drilled for prospecting				
S.no	No. of Bore holes (in forest land)	Diameters(in inch.) forest land	No. of Bore holes (in non-forest land)	Diameters(in inch.) non-forest land
1	nil	0	0	0

M-5.2 Estimated Reserve along with accuracy and confidence level

Estimated Reserve along with accuracy and confidence level						
Minerals	Estimated Reserve (million tones)	% accuracy (+ -)	% confidence level	Estimated Reserve (million tones)	% accuracy (+ -)	Estimated mineral reserve at the end of mining lease (million tons.)
NIL						

M- Details of approval under the Forest (Consevation) Act,1980 obtained for undertaking
6. prospecting activities in the forest land located in the mining lease

(i).Whether approval under the Forest (Conservation) Act, 1980 for undertaking prospecting activities in the forest land located in the mining lease have been obtained Yes

Details of approval under the Forest(Consevation) Act,1980				
MoEF	Date of	Area of forest		To

S.no	File No	approval	land diverted(in ha.)	From Date	Date
1	F.No.8-17/1997-FC (vol.)	12 Nov 2014	1225.25	11 Dec 2012	10 Apr 2030

M-
7. Mineral wise details

(i). No. of minerals: One

Mineral wise details						
Minerals	Estimated reserve in non forest land(million tons.)	Estimated reserve in forest land(million tons.)	Estimated annual extraction(million tons.)	Estimated life of mine(Yrs.)	Total estimated extraction during mining lease period(million tons.)	Estimated mineral reserve at the end of mining lease(million tons.)
Iron Ore	0	0	0	25	0	0

M-
7.1 Proposed use of the minerals proposed to be raised from the mining lease

(i). Proposed use of the minerals proposed to be raised from the mining lease: Captive

(a). Copy note containing details of the linked end-use Project:

(ii). Copy note containing details of the plan for the transportation of the minerals proposed to be raised from the mining lease:

Additional information Details

Documents		
S.No	Documents	Remarks
1		Compliance of EDS vide letter no. 1807/mining dated 08/03/2016 is submitted herewith.
2		JUSTIFICATION OF EMPLOYMENT GENERATION
3		The instant proposal is being submitted for seeking necessary approval for modification of Final Stage-II FC order to include additional 87.09 ha land (DGPS area of 86.43 ha) recorded as forest as on/after 25.10.1980) in the diversion under Forest Conservation Act, 1980.

Print page

Annexure-XVIII

SHAPE FILES & kml FILES